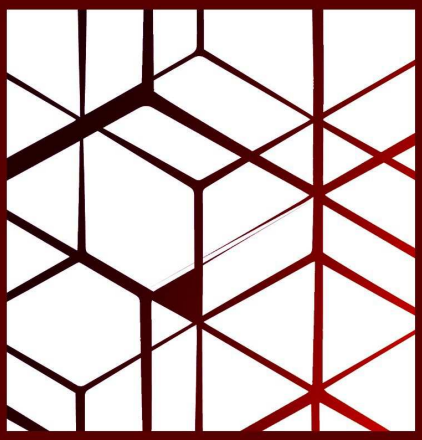
"Do not fear to be eccentric in opinion, for every opinion now accepted was once eccentric."

Bertrand Russell



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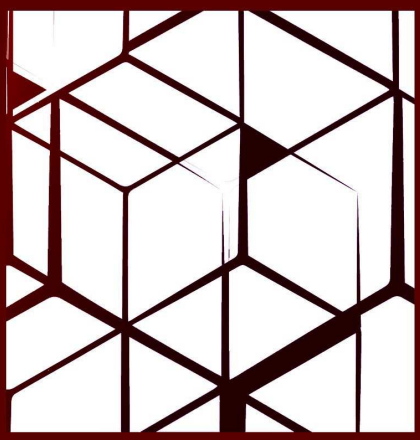

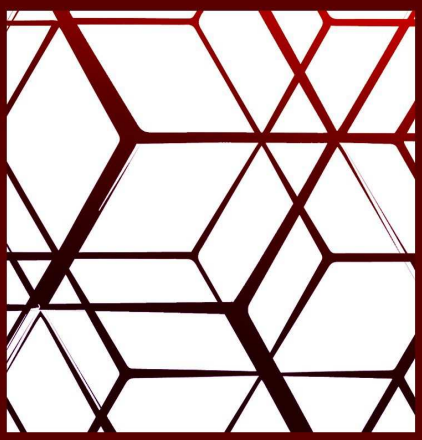

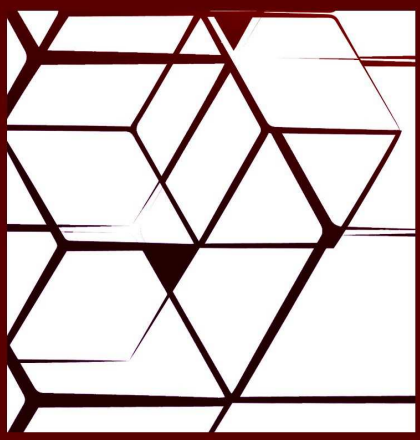

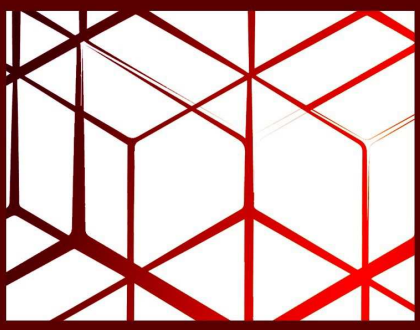

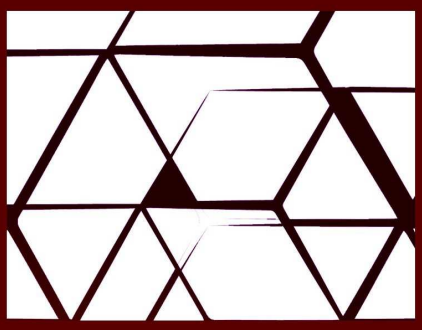

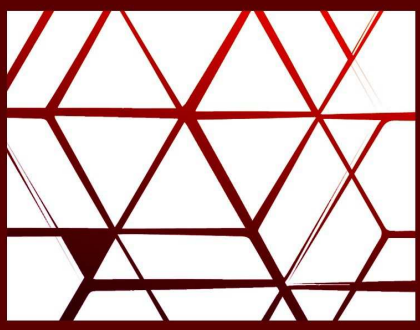

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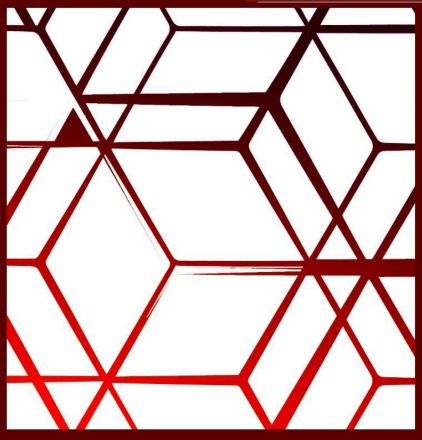
Impact of Covid 19 pandemic on various economic areas: banking, tourism, investment performances etc



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Editorial Foreword

Dear readers,

Recent years have been difficult for humankind which faced a pandemic that was not foreseen as many human losses, immense pressure on the health care systems, and brought a lot of challenges for governments. As expected the world economy has also been impacted in many different ways and more recently the EU economy is also facing the consequences of the Eastern Europe military conflict. It seems that the equilibrium of forces was seriously shaken, new developments are going to emerge and an energy crisis strikes harder than one image a few decades ago.

Socio-economic research is expected to provide new insights into the current situation and new perspectives on sustainable business developments to support economies in the difficult times they pass through.

So, we invite you to discover interesting topics from various economic areas: banking, investments, tourism, public services, the impact of climatic changes in different regions, and more. Authors are experienced researchers and also junior promising researchers, all being united by the same goals – contributing with their work to a more prosperous life and sustainable economic development. They are coming from Taiwan, South Africa, Egypt, the Middle East, and Asian countries such as Indonesia, Malaysia, and India.

We would like to thank our authors for their valuable contribution, reviewers for their hard work and dedication to improving the quality of our publication, and our readers for their attention and citations.

Enjoy your reading!

Prof. Manuela Epure, PhD, MCIM

Deputy Editor-in-chief

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Are Modifications in the ETF's Investment Performance and Risks during the COVID-19 Pandemic Event?

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Abstract. *This study focuses on the impact of the COVID-19 pandemic on the investment performance and systematic risk of ETFs. As a result of the early stages of the COVID-19 outbreak, the impact in China was much greater than that in Taiwan. Therefore, by two ETFs investing higher weighted stocks in the Shanghai and Taiwan markets, the ETFs are used to explore the COVID-19 pandemic effect on the two stock markets. Jensen's alpha and the modified model by Jensen (1968) are coupled with GARCH(1,1) to modify and test ETF's performance and systematic risk. The empirical results show that ETF50 performance may be overestimated by using Jensen's alpha. According to the results of modified Jensen's alpha, there is no evidence that abnormal returns are significantly nonzero in both ETFs and that alpha values have not been changed by the COVID-19 event. After the COVID-19 pandemic began, the SSE50 ETF's systematic risk significantly increased, and the asset size of funds significantly decreased. Therefore, the results supported the significant impact of the COVID-19 pandemic on the SSE50 ETF. There is evidence that the SSE50 ETF affects COVID-19 events, and this result echoes the more severe areas of the COVID-19 pandemic in China.*

Keywords: Cross-Border ETF, Effect of COVID-19 Pandemic, Modified Jensen's Alpha, Systematic Risk, Investment Performance

JEL Codes: C22, C58, G12

1. Introduction

The measurement of risk asset investment performance is a topical subject in the field of securities investment. In the case of different portfolios or assets of different natures and differentiated markets, objectively measuring the investment performance of a variety of portfolios or the performance of assets is a great challenge. In earlier times, the performance indicators derived from the returns of investment portfolios or assets were used to compare the returns of the investment portfolios or assets with the consideration of risks (Sharpe, 1966). Moreover, there were performance indicators to compare the returns of investment portfolios or assets after the adjustment of the risks. These performance indicators are commonly used to measure the investment performance of funds or stocks, such as the Treynor ratio (Treynor, 1965) and Jensen's Alpha (Jensen, 1968). These developed investment performance indicators are now widely used (Ledoit & Wolf, 2008; Roy, 2016; Murari, 2020; Rompotis, 2022), particularly in the evaluation of the Fund's investment performance (Agudo, & Marzal, 2004; Arora, 2015; Omri, Soussou & Goucha, 2019; Grau-Carles, Doncel & Sainz, 2019; Ali, Aqil, Kazmi, & Zaman, 2021).

Two indicators are common measures of investment performance. The Treynor ratio and Jensen's alpha are used to evaluate the performance of investment portfolios or assets after risk adjustment (Arora, 2015; Murari, 2020). The main theoretical basis is derived from the CAPM theory proposed by Sharpe (1964), which is based on the fixed systematic risk in the evaluation period (Fama & French, 1992, 1993; Daniel &

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Titman, 1997). However, there is ample literature indicating that the systematic risk of investment portfolios or risk-weighted assets is not fixed or single (Jagannathan & Wang, 1996; Pettengill, Sundaram & Mathur, 2002; Choudhry, 2005; Chen, Liu, & Yang, 2008; Yayvak, Akdeniz & Altay-Salih, 2015; Rojo-Suárez & Alonso-Conde, 2020; Dębski, Feder-Sempach & Szczepocki, 2021). Meanwhile, the price returns of the investment portfolio or risk-weighted assets may have heterogeneity in asset pricing models (Brailsford & Faff, 1997; Hammami, Jilani & Oueslati, 2013). Therefore, the use of traditional performance indicators to measure investment portfolios or risk-weighted assets tends to cause pricing errors because of the change in systematic risk. In particular, if there is any disaster event impact on price trends in the evaluation period or the market is divided into price adjustment trends, there will be a change in systematic risk in investment portfolios or assets (Bai, Hou, Kung, Li & Zhang, 2019). Therefore, this paper proposes a modified Jensen's alpha to be used to evaluate the change in investment performance when investment portfolios or assets cannot capture the changes in systematic risk in the impact of major events or the change in market price adjustment trends during the evaluation period.

Meanwhile, the proposed index is applied in the measurement of the impact on the investment performance and systematic risk of the ETF 50 (cross-border SSEI 50 ETF in Taiwan list trading) Fund with Taiwan (Shanghai) stock market's blue chips as the underlying stocks before and after the COVID-19 pandemic. The constituents of the Taiwan ETF50 are mainly 50 stocks that track the representative Taiwan Stock Exchange. The constituents of the Yuanda SSE 50 ETF are mainly tracked by 50 major constituents of A-shares in China's Shanghai Stock Exchange, and this ETF has offshore cross-market investment attributes in Taiwan.

The Chinese mainland was the region with the severe impact of the COVID-19 outbreak at the beginning. When to stop the large-scale epidemic of COVID-19, strict control measures were implemented to restrict the lives and activities of residents, which had a greater impact on the economy. Compared with the event of COVID-19 in Taiwan, the epidemic has been properly controlled so that the spread is limited, and the living control measures for residents are less restricted. This study examines two ETFs with major stocks in Taiwan and Shanghai stocks as constituents to understand the difference in the degree of impact of the COVID-19 event on the two places, corresponding to the impact of ETFs on investment performance and systematic risk. The empirical results of this study highlight whether the change in the systematic risk of the stock market has any significant impact on investment performance when the CCOVID-19 event affects ETFs' return risk. In particular, when the degree of impact on the COVID-19 event differs between the Chinese mainland and Taiwan, then the impact on both ETFs. This paper thus determines the impact of the effect of the COVID-19 event on the investment performance and market risk of ETFs.

Finally, the modified Jensen performance indicator proposed in this paper can be used as a performance-risk measurement indicator in the case of non-single fixed systematic risk. The findings contribute to a method for capturing bullish or bearish market price change trends and measuring investment performance in the case of the market environment with the impact of major events.

2. Methodologies

This study aims to explore whether investment performance and market risk for ETFs may change during the COVID-19 pandemic event. The fund investment performance index used in this study is Jensen's alpha, which was proposed by Jensen (1968). The Treynor ratio and Sharpe ratio are only used to make comparisons after fund performance evaluation; thus, Jensen's alpha has been proposed. It has no absolute standard restriction and is used to measure fund investment portfolio performance. Jensen's alpha is mainly

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used to examine the fund's abnormal return rate based on CAPM and the difference between the actual return rate and expected return rate. Jensen's alpha model is described as follows:

$$R_{i,t} - R_{f,t} = J_{i,index} + \beta_i \cdot (R_{M,t} - R_{f,t}) + \varepsilon_{i,t} \quad (1)$$

In Eq. (1), $R_{i,t}$ is the return rate of i^{th} Exchange-Traded Fund (ETF) in the t^{th} period**;** $R_{f,t}$ is the risk-free interest rate in the t^{th} period, represented by the average interest rate of the one-month fixed deposit rate of the five largest banks in Taiwan; $R_{M,t}$ is the return rate of the market investment portfolio in the t^{th} period, represented by Taiwan weighted stock index rate (TAIEX) and Shanghai Stock Exchange Composite Index (SSECI) are used here as the proxy market portfolio return rate of ETF 50 and cross-border SSE50 ETF, respectively. $R_{i,t} - R_{f,t}$ is the excess return rate of the i^{th} ETF in the t^{th} period; $R_{M,t} - R_{f,t}$ is the risk premium of the market investment portfolio in the t^{th} period. $\varepsilon_{i,t}$ is an error. This $\varepsilon_{i,t}$ term, which cannot be explained by the excess return rate of the market investment portfolio in the t^{th} period, is called unsystematic risk. It is assumed that $E(\varepsilon_{i,t}) = 0$ and Var $(\varepsilon_{i,t}) = \sigma^2$, where σ^2 is a constant.

$J_{i,index}$ is the risk premium of the i^{th} ETF, i.e., Jensen's alpha is used to measure fund investment performance; β_i is the systematic risk or market risk of the i^{th} ETF. When Jensen's alpha $J_{i,index}$ is greater, the i^{th} ETF has better performance and vice versa. If Jensen's Alpha $J_{i,index}$ is positive, the i^{th} ETF investment performance is greater than the performance of the risk-adjusted market investment portfolio. Thus, this i^{th} ETF has better investment performance.

If CAPMs' residual variance was heterogeneous, the regression coefficient estimated by Eq. (1) of Jensen's performance index has bias. When the residual error ($\varepsilon_{i,t}$) in Eq. (1) of the Jensen's performance index has condition heterogeneity, GARCH(1,1) is used to adjust and estimate the performance index and systematic risk. Jensen's performance index obtained by adjusting the model is as follows:

$$R_{i,t} - R_{f,t} = J_{i,adj1} + \beta_{i,adj1} \cdot (R_{M,t} - R_{f,t}) + \varepsilon_{i,t} \; ; \; \varepsilon_{i,t} | \Omega_{t-1} \sim N(0, h_{i,t})$$

$$h_{i,t} = \omega_i + \delta_i \cdot h_{i,t-1} + \gamma_i \cdot \varepsilon_{i,t-1}^2 \quad (2)$$

In Eq. (2), $J_{i,adj1}$ is a risk premium adjusted of the i^{th} ETF and estimated by GARCH, i.e., modified Jensen's alpha; $\beta_{i,adj1}$ is the systematic risk of the i^{th} ETF **a**fter modification; and $\varepsilon_{i,t}$ is the error term and has heterogeneity. Thus, Eq. (2) added equation is a heterogeneous equation. $h_{i,t}$ is the heteroscedasticity in the t^{th} period. In addition, Ω_{t-1} is the information set of period t-1. In Eq. **(**2**),** the estimated parameters are ω_i , δ_i, and γ_i which must be greater than 0 and satisfy restrictive conditions $0 \leq \text{Var}(\varepsilon_{i,t}) < \infty$ and$\delta_i + \gamma_i < 1$. In Eq. (2), maximum likelihood estimation (MLE) is used for parameter estimation. Finally, the conditional variance of unsystematic risk ($\varepsilon_{i,t}$) can be captured in Eq. (2) and can be explained by the heteroscedasticity and unsystematic risk of the previous period. This diagnostic checking uses the ARCH effect test to infer whether the null hypothesis ($\varepsilon_{i,t}$ is not heterogeneous) is accepted or rejected.

This study further verifies whether a significant difference exists in Taiwan's ETF investment performance or market risks after the COVID-19 outbreak. It intends to confirm whether modified $J_{i,adj1}$ changes during the COVID-19 outbreak, resulting in significant changes in ETF investment performance and systematic risk. Thus, the dummy variable D_t of the COVID-19 pandemic assumes $D_t = 1$ after the COVID-19 outbreak; assume $D_t = 0$ before the COVID-19 outbreak. In addition, we also verified whether ETF's systematic risk varies significantly during the COVID-19 event. This study presents a test model to

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discuss whether significant differences exist in fund performance and systematic risk after the COVID-19 outbreak. The model is as follows:

$$R_{i,t} - R_{f,t} =$$

$$J_{i,adj2} + \Delta J_i \cdot D_t + \beta_{i,adj2} \cdot \left(R_{M,t} - R_{f,t}\right) + \Delta\beta_i \cdot D_t \cdot \left(R_{M,t} - R_{f,t}\right) + \varepsilon_{i,t}; \varepsilon_{i,t} | \Omega_{t-1} \sim N(0, h_{i,t})$$

$$h_{i,t} = \omega_i + \delta_i \cdot h_{i,t-1} + \gamma_i \cdot \varepsilon_{i,t-1}^2 \quad (3)$$

In Eq. (3), the first equation is the modified Jensen performance index model added to the dummy variable D_t of the COVID-19 event and is used to measure the risk premium and investment performance before the COVID-19 outbreak. ΔJ_i is the i^{th} fund risk premium change after the COVID-19 outbreak and is used to measure the difference in investment performance before and after the COVID-19 outbreak; $\beta_{i,adj2}$ is the i^{th} fund systematic risk after modification and is used to measure the i^{th} fund of systematic risk before the COVID-19 outbreak; $\Delta\beta_i$ is the systematic risk change after the COVID-19 outbreak and is used to measure the difference in the systematic risk before and after the COVID-19 outbreak.

3. Data and Empirical Results

3.1. Data

The study collected daily intraday highest, lowest, and closing prices of two ETFs listed on the Taiwan Stock Exchange, the Yuanta/P-shares Taiwan Top 50 Exchange Traded Funds (shorter form: “ETF 50”; Code: 000050) and the Yuanta/A-shares Shanghai Stock Exchange 50 ETF (shorter form: “SSE 50 ETF”; Code: 006206), as well as daily market trading information for stock markets in Taiwan and Shanghai, including the Taiwan Weighted Stock Price Index (shorter form: “TAIEX”) and the Shanghai Composite Index (shorter form: “SSECI”). In addition, the average interest rate of one-month fixed deposits of Taiwan's five major banks is collected. During the study period, from 1/3/2017 to 26/1/2022, there were a total of 1242 daily trading data. These study data are taken from the Database of Taiwan Economic Journal (TEJ).

3.2. Empirical Results

Figure 1 shows the line charts of the daily closing price (see Chart 1 to Chart 4) and spike charts for the daily excess return rate (see Chart 5 to Chart 8) of ETF50, SSE50 ETF, TAIEX, and SSECI. From the daily closing price of line charts (Chart 1 to Chart 4), they found that in the early stages of the COVID-19 outbreak (1/20/2020), the four closing prices of ETF50, SSE50 ETF, TAIEX, and SSECI were affected by the short term and showed a declining trend in the first quarter of 2020. As the epidemic is gradually under some control and a series of stimuli by the local government has saved the economy from recession (including interest rate cuts and bailout policies). In the second quarter of 2020, the stock price trend began to show an upward trend. Roughly, ETF50 is better than TAIEX; TAIEX is superior to SSECI and SSE50 ETF.

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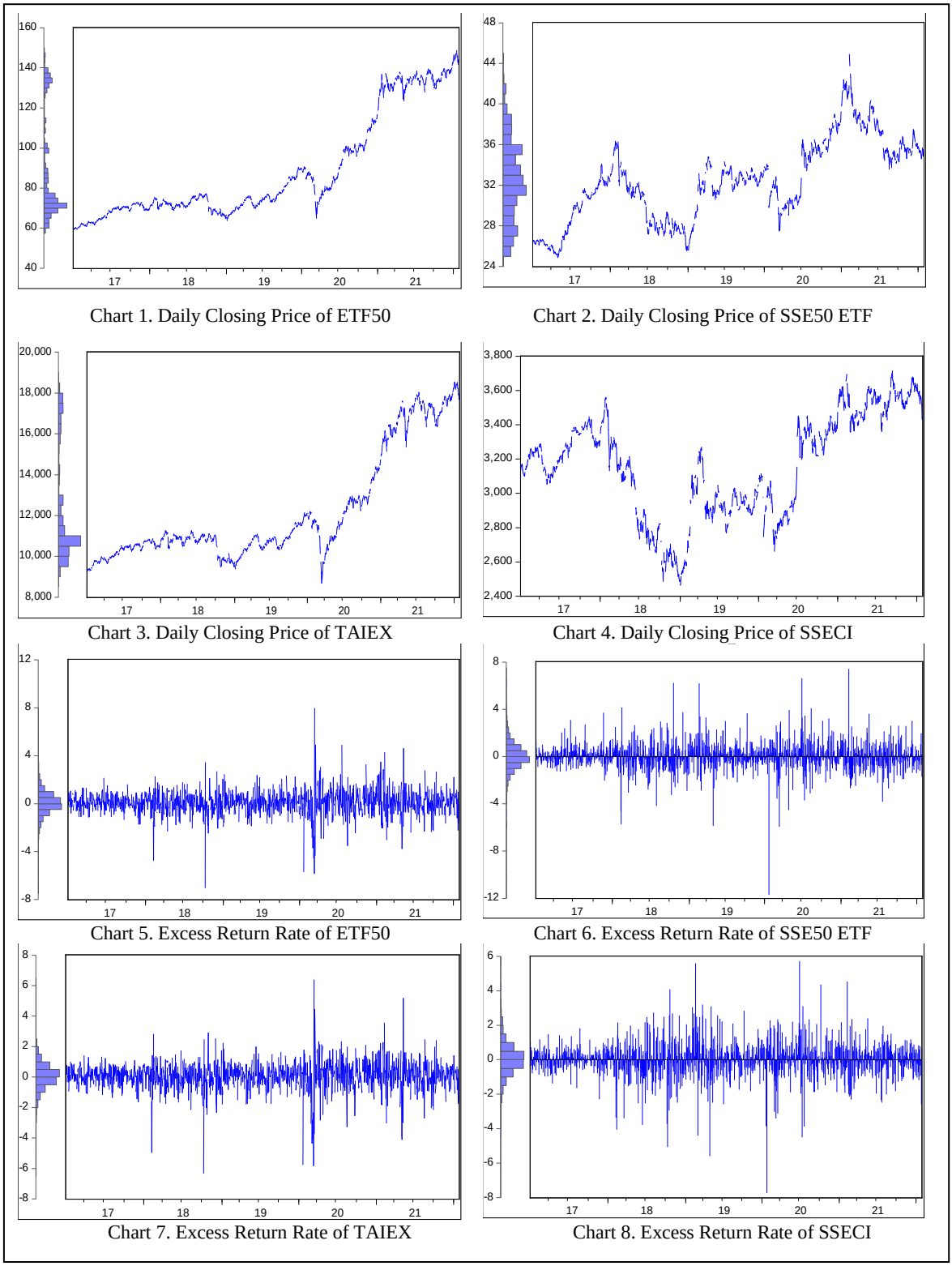

Chart 1. Daily Closing Price of ETF50

Chart 2. Daily Closing Price of SSE50 ETF

Chart 3. Daily Closing Price of TAIEX

Chart 4. Daily Closing Price of SSECI

Chart 5. Excess Return Rate of ETF50

Chart 6. Excess Return Rate of SSE50 ETF

Chart 7. Excess Return Rate of TAIEX

Chart 8. Excess Return Rate of SSECI

Fig. 1: Statistical diagram of the daily closing price and excess return rate (Obs. =1242).

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Second, in the spike charts of the daily excess return rate (see Chart 5 to Chart 8), it was found that in the early stages of the outbreak (1/20/2020), the SSE50 ETF had a daily excess return rate of nearly -12%, and the SSECI had an excess return rate of nearly -8%. These daily excess return rates are lower than the return rates of approximately -6% for ETF50 and TAIEX. This shows that the Shanghai stock market was more negatively affected in the early stage of the COVID-19 outbreak, while the Taiwan stock market remained stable due to the epidemic, leading to the stock price in the SSECI and SSE50 ETF. The highest daily excess return rate of ETF50 was nearly 8%, which was approximately 6% higher than that of TAIEX. China was gradually under control after the outbreak, and the highest daily excess return rate of the SSECI and SSE50 ETFs was nearly 6% at the beginning of the third quarter of 2020. The COVID-19 pandemic being controlled, vaccine development and technological advances in dealing with the virus have led to a gradual reduction in the magnitude of the changes in the excess return rate. Judging from the structure of the distribution chart, ETF50 and TAIEX are inclined to positively excess return rate, and the best performance is the ETF 50, which may be related to the proper control of the COVID-19 epidemic in Taiwan.

Figure 2 shows the line charts of the daily turnover rate of ETF50, TAIEX, SSE50 ETF, and SSECI (see Chart 1 to Chart 4) and the spike charts of the daily high-low price spread (see Chart 5 to Chart 8). The line charts of the daily turnover rate (see Chart 1 to Chart 4) found that ETF50 rose at one point in the early days of the COVID-19 outbreak (1/20/2020) but then gradually showed a steady downward trend, showing a stable state of investor confidence. Due to out-of-control doubts in Taiwan in the second quarter of 2021, which led to the implementation of control measures to further restrict people's activities by the local government and caused panic in the stock market, it was found that the daily turnover rates of TAIEX and SSE50 ETF soared to approximately 2.0% and 8%, respectively, at the same time. Therefore, it was found that the SSE50 ETF in the daily turnover rate part, there was a higher linkage with the daily turnover rate of the Taiwan stock market, reflecting that the SSE50 ETF was affected by the panic of local investors about the rising epidemic crisis in Taiwan.

Second, in the spike charts of the daily high-low price spread (see Chart 5 to Chart 8), it was found that during the initial outbreak around March 2020 and the second quarter of 2021, ETF50 and TAIEX's daily high-low price spread were expanding at the same time. Especially when the crisis of home-grown infections in Taiwan's second outbreak of COVID-19 was more severe than in the early days of the COVID-19 outbreak, the daily high-low price spread expanded even higher than in the early stages of the epidemic. The SSE50 ETF is similar to the SSECI's sharp rise in the daily high-low price spread, mainly concentrated in the first and third quarters of 2020, in line with the more serious damage caused by the early stage of the COVID-19 epidemic for the Chinese mainland. According to the spike charts of the daily high-low price spread (see Chart 5 to Chart 8), it can be observed that the information asymmetry (daily high-low price spread) in the local stock market increases when the epidemic tends to break out. It is worth noting that the impact of the daily high-low price spread (information asymmetry) for ETFs is mainly from the listing market of the invested constituent stocks for the local COVID-19 epidemic situation.

Table 1 shows descriptive statistics, unit root tests, and t-tests of pairwise difference values between the after- and before-COVID-19 outbreak. The statistical whole period is from January 3, 2017, to December 26, 2022, totaling 1242 trading days. The COVID-19 pandemic event date of January 23, 2020, was a lockdown announced by the Wuhan city of China to contain the widespread epidemic of the COVID-19 virus (Liu & Lee, 2020). The COVID-19 pandemic event date was used to divide the period into two subperiods before (Obs.=748) and after (Obs.= 494) the COVID-19 pandemic event.

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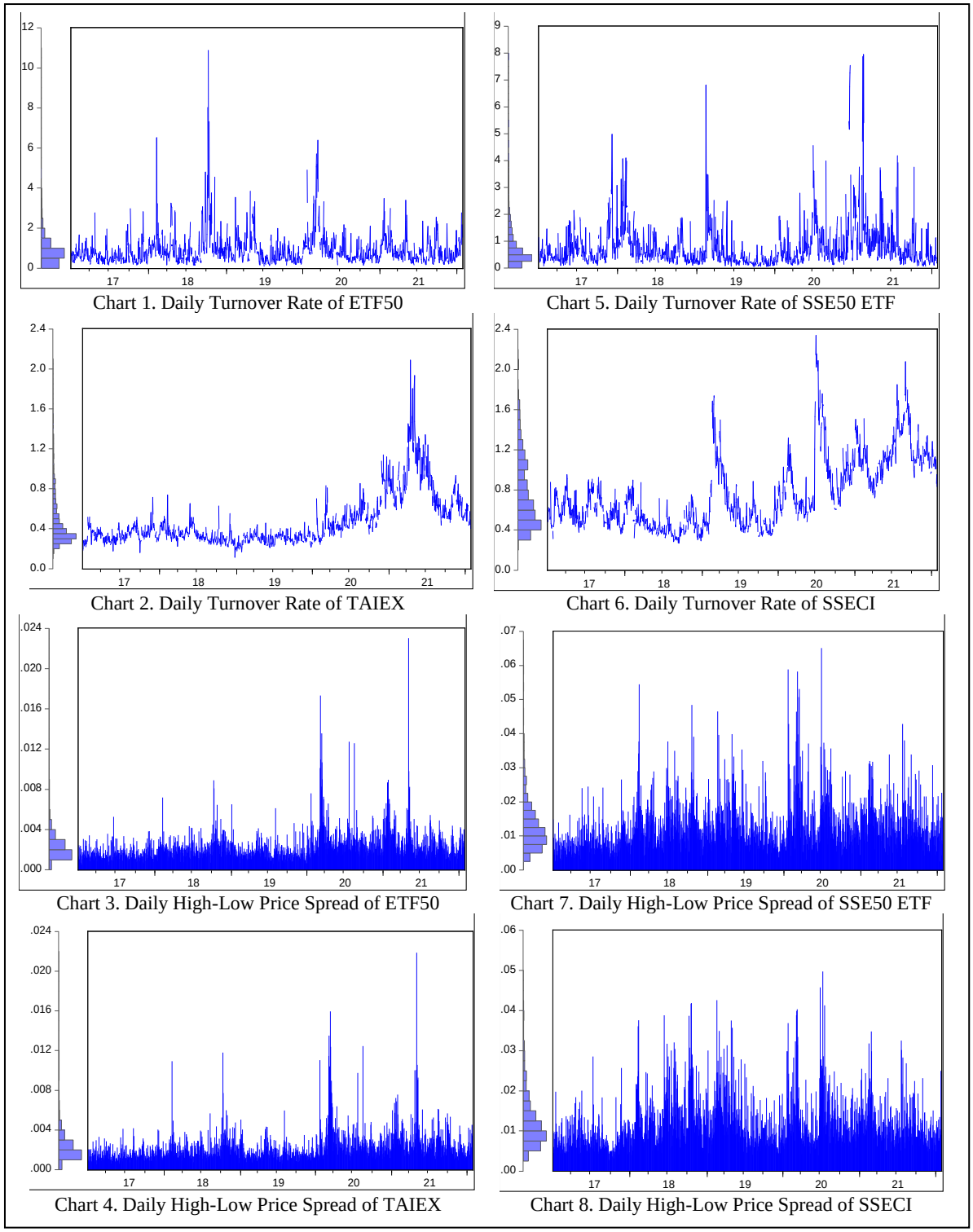

Fig. 2: Statistical diagram of the daily turnover rate and high-low price spread (Obs. =1242).

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Table 1: Descriptive statistics, unit root tests, and t-tests of the pairwise difference values between the after- and before-COVID-19 outbreak (2017.1.3 ~ 2022.1.26)

Portfolio	Period	The whole period (Obs.=1242)		Before-COVID-19 (Obs.=748)		After-COVID-19 (Obs.= 494)	
	Estimate / Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
ETF50	Closing Price***	88.846	25.997	71.771	6.255	114.701	23.018
	Excess Return Rate#	0.075	1.048	0.058	0.829	0.101	1.312
	Market Value***	89984.5	46146.0	61948.3	23754.1	132436.1	38819.9
	Turnover Rate	0.924	0.837	0.890	0.858	0.975	0.801
	SPREAD*	0.002	0.002	0.002	0.001	0.003	0.002
TAIEX	Closing Price***	12210.13	2679.61	10564.33	583.02	14702.15	2688.32
	Excess Return Rate#	0.056	0.962	0.038	0.752	0.083	1.213
	Market Value ***	36746999.0	8534854.0	31453828.0	1968829.0	44761760.0	8403309.0
	SPREAD***	0.002	0.002	0.002	0.001	0.003	0.002
	Turnover Rate ***	0.468	0.254	0.326	0.069	0.683	0.281
	PBR***	1.867	0.287	1.702	0.093	2.117	0.302
	PER***	18.169	3.030	16.617	1.3128	20.520	3.363
SSE50 ETF	Closing Price ***	32.397	3.940	30.322	2.783	35.539	3.304
	Excess Return Rate#	0.031	1.242	0.041	1.118	0.015	1.411
	Market Value ***	4216.2	2225.3	5652.7	1673.4	2041.0	592.0
	Turnover Rate ***	0.803	0.873	0.673	0.669	0.999	1.085
	SPREAD***	0.013	0.008	0.012	0.007	0.015	0.008
SSECI	Closing Price ***	3161.551	297.643	3038.223	249.057	3348.291	266.457
	Excess Return Rate#	0.014	1.059	0.004	1.022	0.028	1.113
	Market Value ***	35361923.95	5867675.08	31458209.79	2077689.88	41272810.98	4690000.50
	SPREAD***	0.012	0.007	0.012	0.007	0.013	0.007
	Turnover Rate ***	0.767	0.357	0.570	0.214	1.065	0.322
	PBR***	1.249	0.173	1.336	0.166	1.118	0.070
	PER***	12.944	1.609	13.198	1.717	12.560	1.345

NOTE: *, **, and *** represent significance at the 10%, 5%, and 1% levels on the t-tests of the paired difference variables between the after- and before-COVID-19 outbreak, respectively. # indicates significance at the 5% level on the t-statistic of the Phillips-Perron unit root test. Market Value in ETF50, SSE50 ETF, and TAIEX used units of million NTD, whereas SSECI used units of million RMB. SPREAD is the daily high-low price spread (Paule-Vianez, Prado-Román & Gómez-Martínez, 2020), where SPREAD = (high price – low price)/average of the high price plus low price; PBR showed that the price-book ratio = market price per share/book value per share; PER showed that the price-to-earnings ratio = market price per share/earnings per share.

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Table 1 shows that the average excess return rates of ETF50 (SSE50 ETF) and TAIEX (SSECI) are 0.075% (0.031%) and 0.056% (0.014%) during the whole study period, respectively, and the average excess return rate of ETF50's (SSE50 ETFs) is more than the market index of TAIEX (SSECI). The Taiwan stock market has an average excess return rate that is more than three times higher than that of the Shanghai stock market, while the ETF50's average excess return rate is more than twice as high as that of the SSE50 ETF. These results indicate that the overall performance of investing in the Taiwan stock market will be better than that of investing in the Shanghai stock market.

In addition, the SSECI's average market value was RMB 35,361,923.95 million, which was greater than TAIEX's average market value of NTD 36,746,999.0 million, but the average market value of the SSE50 ETF was NTD 4,216.2 million, which is much less than the average market value of NTD 89,984.5 million for the ETF50. These statistics show that the SSE50 ETF is not generally favored by investors in the Taiwan stock market.

The results of the t-tests on the pairwise difference values between the after- and before-COVID-19 outbreak for study variables. At a significance level of 1%, it can be found that the average daily closing prices, market value, daily high-low price spread, and daily turnover rate will be significantly larger after the COVID-19 outbreak than before the outbreak on TAIEX and SSECI. The average PBR and average PER of TAIEX (SSECI) on the COVID-19 pandemic will be significantly greater than (less than) in the before-outbreak period. TAIEX and SSECI have inconsistent results, and the Shanghai stock market will have a significantly lower average PBR and average PER after the COVID-19 outbreak, which may be partly related to the impact of Sino-US trade frictions on the confidence of market investors.

At a significance level of 1%, the average closing price and average market value of the ETF50 and the average closing price, average turnover rate, and average SPREAD of the SSE50 ETF show that the after-COVID-19 outbreak will be significantly larger than in the before-outbreak period. It is worth noting that the average market value of the SSE50 ETF after COVID-19 (NTD 2,041.0 million) was significantly smaller than that in the before-outbreak period (NTD 5,652.7 million). The SSE50 ETF listed on the Taiwan stock market after the after-COVID-19 outbreak shows a serious contraction in fund asset size due to the nature of cross-border investments in China's equities. A possible reason is that the COVID-19 pandemic has exacerbated the risk (uncertainty) of cross-border investment, which is related to the risk aversion of investors in the Taiwanese market. This result illustrates that due to the COVID-19 pandemic event, there may be a negative impact on the development of Taiwanese ETFs invested across the Shanghai stock market. This study does not infer that after the COVID-19 outbreak, the average daily excess return rate at ETF50, TAIEX, SSE50 ETF, and SSECI will be significantly larger than before the outbreak. Whether it had a severe impact on parts of China (Wuhan) in the early stages of the COVID-19 outbreak or the fact that Taiwan was well controlled by the spread of COVID-19 compared to the world, the long-term investment performance of the two stock markets was not significantly affected after the COVID-19 outbreak.

Finally, the unit root tests are the results of validation that take the Phillips-Perron tests (Phillips & Perron, 1988) and are in the form that considers intercept and temporal trends. At a significance level of 5%, the t-statistics of ETF50, TAIEX, SSE50 ETF, and SSECI sequences of the daily excess return rate were estimated by Phillips-Perron tests, and the estimated t-statistics of these four sequences were found to be significant. Therefore, it can be inferred that the four sequences of daily event return rates do not have unit roots, which is consistent with the property of stationarity. This property is required in Eq. (1) through (3).

Table 2 shows changes in the performance and systematic risk of ETFs before and after the COVID-19 pandemic event using models of Jensen's alpha and modified Jensen's alpha. First, PARTI shows the ETF's performance index $J_{i,index}$, and systematic risk β_i estimated by the conventional Jensen's alpha model

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based on the ordinary least squares (OLS) method. At the significance level of 1%, the t-statistic of ETF50 (SSE50 ETF) systematic risk β_i is 111.3705 (32.6262) and is significantly greater than zero, and ETF 50 (SSE50 ETF) systematic risk β_i is 1.0386 (0.7977) more than (lower than) 1. This result found that the risk of ETF 50 (SSE50 ETF) carries an above (below) risk of the market portfolio. ETF 50 (SSE50 ETF) of Jensen's alpha index $J_{i,index}$= 0.0165 (0.0198); the t-statistic is 1.8392 (0.7657) and (not) significantly more than (equal to) zero. This result shows that ETF 50 has significant positive performance over the long term, while the SSE50 ETF cannot prove that Jensen's alpha index is not zero.

Table 2: The changes in the performance and systematic risk on ETFs testing the after- and before-COVID-19 events using models of Jensen's alpha and the modified Jensen's alpha (2017.1.3 ~ 2022.12. 26)

PART I. $$R_{i,t} - R_{f,t} = J_{i,index} + \beta_i \cdot (R_{M,t} - R_{f,t}) + \varepsilon_{i,t} \quad (1)$$

Parameter / Fund	$J_{i,index}$	-	β_i	-	-	-	R^2 / $l(\theta)$	**ARCH Test (F- stat.)**
ETF50	0.0165* (1.8392)	-	1.0386*** (111.3705)	-	-	-	0.9091 -330.59	14.5675***
SSE50 ETF	0.0198 (0.7657)	-	0.7977*** (32.6262)	-	-	-	0.4619 -1646.58	10.4893***

PART II. $$R_{i,t} - R_{f,t} = J_{i,adj1} + \beta_{i,adj1} \cdot (R_{M,t} - R_{f,t}) + \varepsilon_{i,t}; \varepsilon_{i,t} | \Omega_{t-1} \sim N(0, h_{i,t})$$
$$h_{i,t} = \omega_i + \delta_i \cdot h_{i,t-1} + \gamma_i \cdot \varepsilon_{i,t-1}^2 \quad (2)$$

Parameter / Fund	$J_{i,adj1}$	-	$\beta_{i,adj1}$	ω_i	δ_i	γ_i	R^2 / $l(\theta)$	**ARCH Test (F- stat.)**
ETF50	0.0125 (1.4834)	-	1.0432*** (149.6881)	0.0114*** (4.6885)	0.7407*** (19.6532)	0.1496*** (6.7996)	0.9091 -273.41	0.1912
SSE50 ETF	0.0102 (0.4168)	-	0.8429*** (48.1513)	0.2989*** (4.4088)	0.4904*** (5.0053)	0.1501*** (6.4260)	0.4604 -1606.96	0.0246

PART III. $$R_{i,t} - R_{f,t} = J_{i,adj2} + \Delta J_i \cdot D_t + \beta_{i,adj2} \cdot (R_{M,t} - R_{f,t}) + \Delta\beta_i \cdot D_t \cdot (R_{M,t} - R_{f,t}) + \varepsilon_{i,t}$$
$$; \varepsilon_{i,t} | \Omega_{t-1} \sim N(0, h_{i,t}), \quad h_{i,t} = \omega_i + \delta_i \cdot h_{i,t-1} + \gamma_i \cdot \varepsilon_{i,t-1}^2 \quad (3)$$

Parameter / Fund	$J_{i,adj2}$	ΔJ_i	$\beta_{i,adj2}$	$\Delta\beta_i$	ω_i	δ_i	γ_i	R^2 / $l(\theta)$	**ARCH Test (F- stat.)**
ETF50	0.0171 (1.6168)	-0.0153 (-0.9118)	1.0438*** (97.3142)	-0.0007 (-0.0518)	0.0116*** (4.6721)	0.7362*** (19.2916)	0.1516*** (6.8175)	0.9091 -273.01	0.1847
SSE50 ETF	0.0396 (1.2716)	-0.0754 (-1.4956)	0.7703*** (34.1296)	0.1747*** (5.3845)	0.2898*** (4.5861)	0.4917*** (5.2707)	0.1565*** (6.2389)	0.4613 -1599.10	0.0188

NOTE: In part I, numbers in parentheses are t-statistics. In parts II and III, the numbers in parentheses are z-statistics; *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

At a significance level of 5%, if the F-statistics of the ARCH effect test are the significant results, it can be inferred that the residual term $\varepsilon_{i,t}$ exhibits heteroscedasticity in the Jensen's alpha model of Eq. (1). The results estimated from the F-statistic of the ARCH test of ETF 50 (SSE50 ETF) are equal to 14.5675

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(10.4893). These F-statistics are significant. This result shows that the residual sequence of the traditional Jensen model exhibited heterogeneity in ETF 50 (SSE50 ETF).

Second, PART II in Table 2 shows Jensen's alpha model modified based on GARCH(1,1), as well as the modified performance index $J_{i,adj1}$, and systematic risk $\beta_{i,adj1}$ is estimated by maximum likelihood estimation (MLS). At the significance level of 1%, the modified systematic risk of ETF 50 (SSE50 ETF) is $\beta_{i,adj1}$= 1.0432 (0.8429); the t-statistic is 149.6881 (48.1513), which is significantly greater than zero, and the modified Jensen's alpha is $J_{i,adj1}$= 0.0125 (0.0102). The t-statistic is 1.4834 (0.4168), which is not significantly more than zero. There is therefore no evidence to support that ETF50 (SSE50 ETF) investment performance has significantly positive abnormal returns. The estimated parameters of ARCH and GARCH are δ_i=0.7407 (0.4904) and γ_i=0.1496 (0.1501) in ETF50 (SSE50 ETF). At the significance level of 1%, they are significantly greater than zero. Thus, it supports that residual error has heterogeneity in ETF50 (SSE50 ETF). Moreover, it is found that in the F-statistic of the ARCH test of ETF50 (SSE50 ETF) equal to 0.1912 (0.0246) estimated by PART II, namely, the traditional Jensen's alpha model, the residual error heterogeneity is fully explained by GARCH (1, 1) and disappeared in ETF50 (SSE50 ETF).

In Table 2, PART III is the modified Jensen model based on the effect of the COVID-19 pandemic. Estimation of the modified performance index $J_{i,adj2}$ and the modified systematic risk $\beta_{i,adj2}$ can also verify the ETF50 (SSE50 ETF) performance index variation parameter ΔJ_i and systematic risk variation parameter $\Delta\beta_i$ after the COVID-19 outbreak. At the significance level of 1%, the systematic risk of ETF50 (SSE50 ETF) is $\beta_{i,adj2}$ = 1.0438 (0.7703); the t-statistic is 97.3142 (34.1296), which is significantly greater than zero. The modified Jensen's alpha of ETF50 (SSE50 ETF) is $J_{i,adj2}$ = 0.0171 (0.0396); the t-statistic is 1.6168 (1.2716), which cannot prove that the argument is significantly greater than zero. Thus, it supports that ETF50 (SSE50 ETF) investment performance will significantly have positive abnormal returns. As seen in PART III in Table 2, the ETF50 (SSE50 ETF) estimated coefficients of performance index difference and systematic risk difference are ΔJ_i = -0.0153 (-0.0754) and $\Delta\beta_i$ = -0.0007 (0.1747), and the t-statistics are -0.9118 (-1.4956) and -0.0518 (5.3845), respectively. At the significance level of 5%, the performance index difference is not significantly lower than zero, and thus, it does not support that ETF50 (SSE50 ETF) investment performance significantly decreased after the COVID-19 outbreak. In addition, the systematic risk difference is significantly more than zero in the SSE50 ETF, which supports that the market risk of the SSE50 ETF significantly increases after the COVID-19 outbreak.

By comparison of PART I and PART II, ETF50 investment performance confirmed the existence of results greater than zero by the conventional Jensen's Alpha model, but after considering the influence of heterogeneity of the residual terms in the modified Jensen's alpha model based on GARCH (1, 1). It can be found that the originally significant positive abnormal return is reduced and the significance disappears. This study found that the conventional Jensen's alpha is overrated, and the systematic risk is underestimated in the conventional Jensen's beta.

Observing the impact of the COVID-19 epidemic in Part III, it was observed that the alpha value ($J_{i,adj2} + \Delta J_i$) after COVID-19 was lower than the before-outbreak alpha value ($J_{i,adj2}$), while the SSE50 ETF beta value ($\beta_{i,adj2} + \Delta\beta_i$) after COVID-19 was significantly higher than the before-outbreak beta value ($\beta_{i,adj2}$). Therefore, the systematic risk of the SSE50 ETF fund in the after-COVID-19 outbreak will be significantly increased, which may be related to the larger impact of the Chinese mainland in the early stages of the COVID-19 outbreak. However, since the outbreak of COVID-19 in Taiwan, there have been only sporadic community infections, and there is no comprehensive regulatory regime in place and therefore has less impact on economic activity, implying that there has been no significant change in alpha and beta values after the COVID-19 pandemic. Finally, the event effect of the COVID-19 pandemic exists only within the

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systematic risk (the size of fund assets) of the SSE50 ETF, echoing the results of the outbreak control of the COVID-19 pandemic.

4. Conclusions

This study discusses the impact of the COVID-19 event on (cross-border) ETFs' systematic risk and investment performance and the deficiency of the conventional Jensen performance evaluation model that does not consider heterogeneity in residual error. Its evaluation result of the fund performance index may have a pricing error in ETF 50. Moreover, the COVID-19 pandemic event with higher infectious disease risk can change systematic risk in cross-border SSE 50 ETFs, and significantly, the Fund-Size has decreased. These findings suggest that the COVID-19 pandemic event has an impact on the capital market.

5. References

[1] Agudo, L. F., & Marzal, J. L. S. (2004). An analysis of Spanish investment fund performance: Some considerations concerning Sharpe's ratio. *Omega, 32*(4), 273–284. https://doi.org/10.1016/j.omega.2003.11.006.

[2] Ali, M. A., Aqil, M., Kazmi, S. H. A., & Zaman, S. I. (2021). Evaluation of risk-adjusted performance of mutual funds in an emerging market. *International Journal of Finance & Economics*, 1–14. https://doi.org/10.1002/ijfe.2486

[3] Arora, K. (2015). Risk-adjusted performance evaluation of Indian mutual fund schemes. *Paradigm, 19*(1), 79– 94. https://doi.org/10.1177/0971890715585203

[4] Bai, H., Hou, K., Kung, H., Li, E. X. N., & Zhang, L. (2019). The CAPM strikes back? An equilibrium model with disasters. *Journal of Financial Economics, 131*(2), 269–298. https://doi.org/10.1016/j.jfineco.2018.08.009.

[5] Brailsford, T. J., & Faff, R. W. (1997). Testing the conditional CAPM and the effect of intervaling: A note. *Pacific-Basin Finance Journal, 5*(5), 527–537. https://doi.org/10.1016/S0927-538X(97)00018-8.

[6] Chen, C. P., Liu, Y. S., & Yang, J. J. W. (2008). Turnover-size effect, time-varying and asymmetry of market beta on Taiwan stock returns. *Journal of Statistics and Management Systems, 11*(3), 487–498. https://doi.org/10.1080/09720510.2008.10701325

[7] Choudhry, T. (2005). September 11 and time-varying beta of United States companies. *Applied Financial Economics, 15*(17), 1227–1242. https://doi.org/10.1080/09603100500358742

[8] Daniel, K., & Titman, S. (1997). Evidence on the characteristics of cross sectional variation in stock returns. *Journal of Finance, 52*(1), 1–33. https://doi.org/10.2307/2329554

[9] Dębski, W., Feder-Sempach, E., & Szczepocki, P. (2021). Time-varying Beta—The case study of the largest companies from the Polish, Czech, and Hungarian stock exchange. *Emerging Markets Finance and Trade, 57*(13), 3855–3877. https://doi.org/10.1080/1540496X.2020.1738188

[10] Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *Journal of Finance, 47*(2), 427–465. https://doi.org/10.1111/j.1540-6261.1992.tb04398.x

[11] Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics, 33*(1), 3–56. https://doi.org/10.1016/0304-405X(93)90023-5

[12] Grau-Carles, P., Doncel, L. M., & Sainz, J. (2019). Stability in mutual fund performance rankings: A new proposal. *International Review of Economics and Finance, 61*, 337–346. https://doi.org/10.1016/j.iref.2018.01.018

[13] Hammami, Y., Jilani, F., & Oueslati, A. (2013). Mutual fund performance in Tunisia: A multivariate GARCH approach. *Research in International Business and Finance, 29*, 35–51. https://doi.org/10.1016/j.ribaf.2013.02.001.

[14] Jagannathan, R., & Wang, Z. Y. (1996). The conditional CAPM and the cross-section of expected returns. *Journal*

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
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URL: http://www.reaser.eu
e-mail: editors@reaser.eu

of Finance, 51(1), 3–53. https://doi.org/10.1111/j.1540-6261.1996.tb05201.x

[15] Jensen, M. (1968). The performance of mutual fund in the period 1945-1964. *Journal of Finance, 23*(2), 389–416. https://doi.org/10.1111/j.1540-6261.1968.tb00815.x

[16] Ledoit, O., & Wolf, M. (2008). Robust performance hypothesis testing with the Sharpe ratio. *Journal of Empirical Finance, 15*(5), 850–859. https://doi.org/10.1016/j.jempfin.2008.03.002

[17] Liu,Y. S., & Lee, L. (2020). The impact of COVID-19, day-of-the-week effect, and information flows on Bitcoin's return and volatility. *Journal of Asian Finance, Economics and Business, 7*(11), 45–53. https://doi.org/10.13106/jafeb.2020.vol7.no11.045

[18] Murari, K. (2020). Risk-adjusted performance evaluation of pension fund managers under social security schemes (National Pension System) of India. *Journal of Sustainable Finance and Investment*, https://doi.org/10.1080/20430795.2020.1857635

[19] Omri, A., Soussou, K., & Goucha, N. B. S. (2019). On the postfinancial crisis performance of Islamic mutual funds: The case of Riyad funds. *Applied Economics, 51*(18), 1929–1946. https://doi.org/10.1080/00036846.2018.1529403

[20] Paule-Vianez, J., Prado-Román, C., & Gómez-Martínez, R. (2020). Economic policy uncertainty and Bitcoin. Is Bitcoin a safe-haven asset?. E*uropean Journal of Management and Business Economic*s, 29(3), https:// doi.org/10.1108/EJMBE-07-2019-0116

[21] Pettengill, G., Sundaram, S., & Mathur, I. (2002). Payment for risk: Constant beta vs. dual-beta models. *Financial Review, 37*(2), 123–136. https://doi.org/10.1111/1540-6288.00008

[22] Phillips, P. C. B., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika, 75*(2), 335–346. https://doi.org/10.1093/biomet/75.2.335

[23] Rojo-Suárez, J., & Alonso-Conde, A. B. (2020). Consumer sentiment and time-varying betas: Testing the validity of the consumption CAPM on the Johannesburg stock exchange. *Investment Analysts Journal, 49*(4), 303–321. https://doi.org/10.1080/10293523.2020.1814046

[24] Rompotis, G. G. (2022). The ESG ETFs in the UK. *Journal of Asset Management,* https://doi.org/10.1057/s41260-021-00251-z

[25] Roy, S. (2016). Another look in conditioning Alphas on economic information: Indian evidence. *Global Business Review, 17*(1), 191–213. https://doi.org/10.1177/0972150915610723

[26] Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risks. *Journal of Finance, 19*(3), 425–442. https://doi.org/10.1111/j.1540-6261.1964.tb02865.x

[27] Sharpe, W. F. (1966). Mutual fund performance. *Journal of Business, 39*, 119–138. http://dx.doi.org/10.1086/294846

[28] Treynor, J. L. (1965). How to rate management investment funds?. *Harvard Business Review, 43*, 63–75.

[29] Yayvak, B., Akdeniz, L., & Altay-Salih, A. (2015). Do time-varying Betas help in asset pricing? Evidence from Borsa Istanbul. *Emerging Markets Finance and Trade, 51*(4), 747–756. https://doi.org/10.1080/1540496X.2015.1046346

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"Lazy banks" and "Safe asset" Hypothesis: Is it the answer to Public Debt and Financial Development Indicators Puzzle in Emerging Markets?

Morad Abdel-Halim[1] and Ghazi Al-Assaf[2]

Abstract. *This paper investigates the role of public debt in financial development in an emerging market namely, Jordan. Based on previous empirical research, we test the empirical prediction of two hypotheses for the role of public debt: "safe asset" vs "lazy banks". Using annual data throughout 2008 to 2018 and using the Fixed Effect (FE) and Bias Correction Fixed Effects (BCFE) methodologies that control for both unobservable banks specific and time-specific variables. We find that public debt has a positive impact on financial development after controlling for Banks size, and Banks risk. ROA, Capital Adequacy, and Banks Capitalization. The results provide weak evidence consistent with the "Safe Asset" hypothesis that banks choose to invest in treasury securities as safe assets.*

Keywords: Safe Asset, Lazy Banks, Bias Correction Fixed Effects, Financial Development.

JEL Codes: G - Financial Economics

1. Introduction

Large public sector borrowing from the domestic banks is related to a high level of profitability, but depressed efficiency and deepening of the banking sector; this resembles the "lazy bank" view in the literature (Hauner, 2009). The effect of public debt in financial development has been thought of in terms of a positive effect it can play in developing financial sectors by providing a relatively safe asset; called the "safe asset" view. Notwithstanding, the other view called a "lazy banks" view reveals that: developing banking sectors holding large public debt may progress more gradually because banks that primarily lend to the public sector could become too satisfied to have the initiative to develop the banking market under the difficult conditions in developing countries. Note that "lazy" does not suggest a value judgment here, as it reveals rational behavior on the part of the banks. Whereas often quoted in policy circles, this view has been absent from the academic literature (Hauner, 2009).

Furthermore, this paper will address the case of which financial development impacted when the Banks system became the main lender for the government by employing panel data methodologies for the banking sector financial development and efficiency indicators. Thus, the proposed paper will be guided by the following questions: What is the impact of a bank's holdings of treasury debt instruments on the financial development indicators in the Jordanian banking industry? Which theory applies in the Jordanian banking industry "lazy banks" or "safe assets"?

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The outcomes of this paper will help policymakers to answer the following concern: determine the degree of banking sector efficiency by examining the theory of "lazy banks" or "safe assets". Lastly, the findings of the proposed study will act as preliminary guidance for further examination of the subject.

This paper investigates the validity of the two contrasting views of the role of public debt in financial development based on bank-level data for 13 banks in Jordan. Our results are overall more favorable to the "Safe Assets" view. Greater public debt holding by domestic banks raises their efficiency.

2. Literature Review and Hypotheses Development

Previous studies have comprehensively investigated government debt's impact on financial development and how financial development impacts economic growth and its volatility, mainly in developing countries. The above concepts generate many research interests due to their conflicting and long-lasting state in economic theory.

For these reasons, this section reviews the theories and empirical investigations conducted on these topics. Principally, if there is an impact of Banks holding treasury debt instruments on bank lending behavior and financial development indicators.

2.1. Financial Development and Bank Lending Behavior

There is some research evidence to suggest that Banks play a vital role in economic development since they are considered one of the key sources of firms' financing in many developing countries (Beck et al., 2000).

Bank lending commonly donates to the financial deepening of an economy, which has a positive effect on aggregate output and economic activity (King and Levine,1993). Moreover, understanding bank lending behavior is critical for bank management in preserving the soundness of a banking system. Nevertheless, bank lending behavior is neither unchanging in the cross-section nor overtime. Instead, it is mainly driven by the business model chosen by bank owners. Privately-owned banks classically follow business models that purpose to profit maximization, while state-owned banks tend to follow social welfare-oriented purposes and deviate from strict profit maximization (Behr et al. 2013).

Over the last several decades, developing countries considerably infuse an enormous amount of money into state-controlled banks to improve economic growth. This results in substantial credit growth by the banking system in emerging economies. The bank credits help to feed economic growth in these countries. Moreover, numerous problems exist in the banking system in developing countries where bank lending is mostly affected by the government (Qian et al., 2015).

Knowing that bank lending behavior is significant in emerging markets where the problem of non-performing loans is considered a key problem for economic growth. (Vo, 2018) found an interesting outcome of the mechanism that identifies the bank lending behavior in an emerging market. First, is a low degree of bank lending constancy. Secondly, bank lending is relying on both bank-specific and macroeconomic factors. lastly, there is a statistically significant effect of bank market structure on bank lending behavior. This could offer several vital implications for the policymaking process, particularly if foreign banks tend to be tighter lending supply dynamics (Albertazzi and Bottero, 2014; Popov and Van Horen,2015). On the other hand, (Mishra et al., 2014) suggested that monetary policy may be a highly unreliable tool with which to follow macroeconomic stabilization in countries that are considered by a poor institutional environment and an uncompetitive banking sector, both of which are common properties in low-income countries.

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Mainly, minor, less liquid, poorly capitalized and high credit-risk banks face a greater decrease in lending after limiting the monetary policy. Unlike developed countries, empirical evidence from developing economies delivers more decisive outcomes about the existence of the bank lending channel. Notwithstanding that the bank lending channel is more applicable in developing economies, its intensity varies across countries. Given that the bank lending channel goes through the financial system, the level of financial development might well affect its effectiveness. In very poorly developed financial systems, monetary policy variations might be less effective and take longer to affect the bank's lending supply (Carranza et al., 2010). At the early stage of development, banks' lending might well be restricted because capital is rare. As financial development proceeds, monetary policy might affect banks' lending to a greater extent.

2.2. Financial Development and Government Debt

There is little research that investigates the effect of public debt on financial development. Public debt can have a positive effect on the profit of financial institutions (Hauner, 2009); nevertheless, huge public debt can also harm bank efficiency and crowd out private investments. The relationship leftover is questionable so far, several studies demonstrated it is hurtful to financial development, for instance, (Hauner, 2009; Ismihan & Ozkan, 2012), etc. The impact is particularly severe when the government is unsuccessful to repay and selects to default on the debt.

Besides, studies suggest that public debts (government treasury bills and bonds) provide security, high liquidity, and a steady flow of profits that can strengthen the stability of the financial sector. Bank lending to the government (as government bonds) can be deemed as comparatively predictable debt management and thus, can protect the banks' assets (Hauner, 2009; Dungey et al., 2019). Once banks have loaned a big amount of savings to the government, they are likely to have a good opportunity to protect their assets and be comparatively more profitable1, and this shows a tendency to make banks raise the holding of government bonds. The government bonds holding permitted banks to offset the highly risky lending to the private sector lending and similarly weak legal and institutional structure, particularly in developing countries. Government borrowing also helps the banks to get over the legal and institutional weakness by helping banks to use public debt as an obvious guarantee in repurchase agreements (Kumhof and Tanner, 2005). collateral plays the main role in developing a country's derivatives markets along with payment and settlement systems (Hauner, 2009). Subsequently, remaining government debt is considered a safe investment for banks and is important in additional enhancements in financial development in developing countries.

Public debt allows additional savings to be used since government bonds can rise the depositors' willingness to intermediate their savings into investment in a commonly risky market (Kumhof &Tanner, 2005). Absent a benchmark yield curve in the weak bond markets in developing countries causes some difficulties for the market at pricing the credit risks and equities (Kumhof & Tanner, 2005), and drivers to difficulty in the variation of risk exposures due to the derivative markets are also weak. Government bonds in these countries can enable development by providing a good benchmark yield curve to enable the pricing of corporate bonds and equities (Hauner, 2009).

On the other hand, when banks are required to hold huge public debt, this can result in a negative outcome. Banks are usually weak to reject the government's borrowing under such circumstances. This has no motivation in developing deposit and private credit markets. Protected and reliable profits from government borrowings could decrease the banks' motivations to improve efficiency and become too satisfied to actively develop the banking market. Furthermore, the government's effects on the pricing and loanable funds of banks could reduce real interest rates and cause inadequate savings. Financial organizations' high

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government debt holdings are usually proposed to offset the credit risk in private credit. Nevertheless, legal and institutional limitations are vital too. No one can enforce the government if it is imperfect institutional. (Kumhof and Tanner, 2005) found that the size of government debt held in financial organizations has a strong negative relation to the quality of law and organizations. The security of the public debt portfolio is a prerequisite for banks and hence, a country's public debt management prudence is critical for the strength of its financial system. Additional concerns relating to this issue are when public debt is high; the repayment of debt is a subject of debate. The market holds no information admission to the decision of the government and the market may act on their expectation.

Once more, the role of public debt on financial development which was investigated by (Hauner,2009), reveals that public sector credit has a negative impact on financial development when conducting both country level and banking level analysis. These results are in parallel with the "Lazy Bank" view which shows that banks earn a profit when making loans to the government but this mitigates the efficiency of the banking sector.

The results of large public sector borrowing from the domestic banking sector are also appropriate policy issues, given the continuing discussion on optimal debt structures. Numerous developing country governments have mitigated their external obligation over recent years and increasingly depend on domestic funding. Whereas this mitigates macroeconomic risks, the rapid rise in the share of domestic credit absorbed by the public sector in several developing countries raises questions about the impacts on the development of the financial sector. Many previous studies investigating the determinants of financial development did not include an indicator of public sector financing, and those that did found insignificant results (Boyd et al., 2001).

The role of public debt in financial development has been allied with what is called the "safe asset" view. It stresses the positive role public debt can present in developing financial sectors by giving a comparatively safe asset. Therefore, the "safe asset" view holds, that without the availability of public debt, fewer savings would be utilized, and borrowers would face higher borrowing costs and shorter maturities. "safe asset" and "lazy banks" views do not need to be mutually exclusive: the impacts of public debt on financial development may well be non-linear, with positive effects raise to a threshold of the share of credit allocated to public debt, and negative effects above it, also greater public debt holdings by domestic banks increase their profitability but reduces their efficiency if public debt surpasses a certain threshold or if it linked with financial repression. (Hauner,2009).

Hauner, (2009) proposed the lazy bank's hypothesis that suggests that more public debt holdings by domestic banks increase their profitability but decrease their efficiency and reduce financial deepening over time. Additionally, (Hauner, 2009) found that public debt holding by banks only has a negative effect when it interacts with financial repression. Inspired by the fact that most emerging economies tend to finance economic growth by bank lending, thus the first hypothesis was conducted relying on the nature of the Jordanian structure of the financial system which tends to behave like the previous studies' results, and this led to anticipate that there is a negative relationship between bank lending to the government and bank efficiency which commonly used as a financial development indicator.

Ho: Bank lending to the government has no significant impact on financial development.

3. The Empirical Model

In most models, the degree of financial development is expected to be exogenous. But understanding what determines the importance of financial markets or their degree of development is at least as important as

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measuring their effects on growth. For if indeed financial intermediation affects growth, it raises the question of what gets financial markets off the bottom, whether it expects them to develop during a particular sequence, and what explains their relative development. as an example, bank lending to firms has generally appeared first, followed by stock and bond markets, and eventually credit.
The theoretical papers that dealt with the determinants of financial development for instant banks' lending behavior have led to the publication of many empirical papers. These papers rely on cross-sectional data and, on average, to explore the bank lending behavior of financial development, this paper uses the below model to examine the impact of government borrowing from the Banks sector on bank lending behavior and financial development indicators as explained by many lines of literature to provide a complete picture of the role of banks' lending behavior, and also to determine the degree of banking sector efficiency by examining theory "lazy banks" or "safe assets" which will be examined for the first time on the context of Jordan market. According to the safe assets view, public debt has a positive impact on financial development, however, the lazy bank theory claims that public debt has a negative impact on financial development (Hauner,2009). Therefore, the impact of government lending on profitability and efficiency is examined in standard models of efficiency, as measured by its lending-deposits spread ratio (***Spread***), and profitability, as measured by a bank's return on equity (***ROE***). Specifically, two equations are estimated by using static and dynamic panel estimation approaches using the following models' equations:

$$Spread_{i,t} = \alpha + \beta_1 GovLend_{i,t} + \beta_2 ROA_{i,t} + \beta_3 Size_{i,t} + \beta_4 CPTL_{i,t} + \beta_5 Liqy_{i,t} + \beta_6 Risk_{i,t} + \beta_7 CADI_{i,t} + \varepsilon_{i,t} \ldots\ldots\ldots (1)$$

And

$$ROE_{i,t} = \alpha + \beta_1 GovLend_{i,t} + \beta_2 Size_{i,t} + \beta_3 CPTL_{i,t} + \beta_4 Liqy_{i,t} + \beta_5 Risk_{i,t} + \beta_6 CADI_{i,t} + \varepsilon_{i,t} \ldots\ldots\ldots (2)$$

i = 1 ,..., n
t = 1, ..., T
$\varepsilon_{i,t}$: Identically independently distributed error term
ß: matrix of regression coefficients.

where ***Spread*** is the lending-deposits spread ratio, which is equal [(interest income / earning assets) – (interest expense/interest-bearing liabilities)] for bank i at time t, with i = 1, ..., T, α is the constant term. This variable captures the efficiency of the banking system. This variable will be used as a measure of financial development (Abedifar et al. 2018). Besides, other efficiency measures that could be used for institutions include indicators such as bank net interest margin (Čihák et al. 2013 and Sanfilippo-Azofra et al. 2018), overhead costs to total assets, non-interest income to total income, and cost to income ratio (Levine, 2002; Čihák et al. 2013). The results of previous studies reveal that the financial structure is not a particularly useful way to differentiate financial systems (Levine, 2002) and not a good anticipator of growth in a cross-country growth framework: neither bank-based nor market-based financial systems are related to economic growth (Levine, 2002). Also, Low bank efficiency increases the deadweight loss created by financial intermediation, which is also detrimental to financial development (Fry, 1995). ***ROE*** is a measure of bank profitability, which is calculated as the return on equity, (Čihák et al. 2013).
This study also employs several variables that hypothetically explain the bank lending behavior of Jordanian commercial banks. These include numerous bank-specific, market structure, and macroeconomic variables as follows:
GovLend is the proxy for bank lending behavior, measured by bank government lending to total assets ratio. This indicator also reflects the financial strength and soundness of the bank since the local authority determines the lending growth rate by relying on the evaluation of commercial bank soundness (Vo, 2018).

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Size is a measure of bank size, calculated as the logarithm of the total assets at the end of the year (Vo, 2018; Sanfilippo-Azofra et al. 2018). ***Risk*** is a proxy for bank risk, which is measured by the provisions for credit risk divided by total assets at the end of the year (Vo, 2018). ***ROA*** is a measure of bank productivity, which is calculated as the return on assets (Vo, 2018). ***Liqy*** is the ratio of securities, cash, and due from banks to total assets. More liquid banks can usually grant more (Kashyap and Stein, 2000; Sanfilippo-Azofra et al. 2018). ***CPTL*** is the ratio of total equity to total assets. Higher capitalized banks tend to have higher loan growth rates (Kishan and Opiela, 2006; Sanfilippo-Azofra et al. 2018, Vo, 2018). ***CADI*** is a measure of capital adequacy, which is measured by the common capital asset ratio at the end of the year (Vo, 2018).

3.1 Methodological Framework

The several ways to estimate parameters of Eq. (1) and (2), or some modification thereof, each has its own set of pros and cons. The lack of a single or dominating 'optimal' methodology in the context of cross-bank panel data is evidenced by a large number of specifications and models previously used. The advantages of removing a lagged dependent variable are largely reliant on the nature of the data formation process, which can be explained through theory. Exclusion may be justified where the lag is used as an empirical tool to address weak persistence (Auto-Correlation) in the error terms.
At this stage of the analysis, the Breush-Pagan Lagrange Multiplier (LM) test was performed to determine whether or not there are Bank-specific unobservable variables by employing the LM test. Furthermore, this paper tested whether there was a relationship between the individual effects and the explanatory variables or not by the Hausman test method, and here it is worth knowing that the Hausman test is not an alternative for the LM test. But it functions to check the decision by LM test.
On the other hand, the data-gathering process is fundamentally dynamic – i.e., past realizations of the outcome have a significant impact on the marginal effect of other factors – failure to appropriately account for these dynamics is likely to introduce significant bias.
Since the error term picks up unobserved effects, the pooled ordinary least squares (POLS) estimator is biased and inconsistent; thus, the error term is associated with the model's lagged dependent variable (Blundell et al. 2001). Because of this positive association, the POLS estimator is biased upwards. By degrading the equation, the fixed effects (FE) estimator resolves this type of inconsistency. Individual effects are eliminated with this estimator (Bond 2002).
Demeaning, on the other hand, may cause the so-called Nickell bias, which eventually causes the FE estimator to be biased and inconsistent when dealing with dynamic models if T is finite (Nickell 1981). The Nickell bias arises because, regardless of the size of N, the demeaned error term is related to the lagged dependent variable. As a result of these findings, FE estimations are biased downward. When employing the fixed effects estimator, one way to address the Nickell bias is to apply a bias-correction technique. This is exactly what Everaert and Pozzi (2007) and De Vos et al. (2015) implement with their bootstrap-based bias correction fixed effects (BCFE) estimator. Furthermore, Bun and Carree (2005) developed a simple asymptotic approximation depending on a first stage fixed effects dynamic panel model, which is used in the BCFE model.
Compared to the ordinary FE estimator and the generalized method of moments (GMM) estimator, the Bootstrapped based bias-corrected FE estimator has several advantages. First: the FE estimator, for instance, has lower standard deviations than the GMM estimator (Kiviet 1995). Second, because the FE estimator does not require a judgment on which instruments to use and how many, the FE estimates are more stable than the GMM estimates (Roodman 2009). Third, unlike the ordinary FE estimator, the Bias corrected FE estimator does not have the same limitations.
The Nickell bias is addressed in the coefficients, resulting in estimates that are aligned for fixed T (De Vos et al. 2015). Forth, unlike the Instrumental Variables (IV)/GM estimators, it does not necessitate the specification of ideal, valid instruments, which the IV/GMM estimator's attributes are heavily reliant on. Fifth, unlike analytical techniques (e.g., Bias-corrected Least-squares Dummy Variable (LSDVC)), BCFE

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uses non-parametric bootstrapping to perform bias correction and so does not rely on stringent parametric distributional assumptions. In short panels, BCFE surpasses GMM in terms of bias reduction and efficiency, while also producing superior inferences than LSDVC.

3.2 Data and Sample

Data of bank efficiency (lending-deposits spread) and the other variables as (bank government lending, total assets, provisions for credit risk, operation costs, return on assets ratio, the ratio of securities, cash, and due from banks, and the ratio of total equity to total assets), used from the financial statements data for all Jordanian commercial banks to cover the period 2008-2018. On the other hand, the Non-Jordanian Banks and the Islamic Banks' data are excluded because the data of government lending (core variable) is not available and it's mostly covered by Jordanian commercial Banks on its data. Noting that the years 2020 and 2019 are not included in the sample period to avoid the effect of COVID-19.

4. Results and Discussions

Table 1: Descriptive Statistics

Spread is the lending-deposits spread ratio, which is equal [(interest income / earning assets) – (interest expense/interest-bearing liabilities)]. ROE is the return on equity calculated as net income divided by total equity. GovLend is Banks government lending to total assets ratio. Size is the logarithm of the total assets at the end of the year. Risk is the provisions for credit risk divided by total assets at the end of the year. ROA is the return on assets. Liqy is the ratio of securities, cash, and due from banks to total assets. CPTL is the ratio of total equity to total assets. CADI is a measure of capital adequacy, which is measured by the common capital asset ratio at the end of the year.

Stats	Mean	Median	St. Div	Min	Max
Spread	0.079	0.076	0.019	-0.016	0.123
ROE	0.103	0.093	0.098	-0.014	1.043
GovLend	0.208	0.196	0.088	0.000	0.459
Size	9.306	9.288	0.428	8.441	10.413
Risk	0.005	0.004	0.004	0.000	0.022
ROA	0.013	0.013	0.005	-0.002	0.025
Liqy	0.229	0.218	0.060	0.126	0.367
CPTL	0.136	0.138	0.030	0.011	0.220
CADI	0.176	0.164	0.047	0.107	0.367

(Source: Authors based on data from financial statements data for all Jordanian commercial banks)

Table 2: Regression Results

This table shows the results for the association between financial development indicators: efficiency and profitability (Spread and ROE), and government lending. The dependent variables in all specifications are Spread and ROE. All other variables are as defined earlier except for L. Spread which is defined as the lagged of the lending-deposits spread ratio and L.ROE which is defined as the lagged return on equity. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Variables	Spread (Efficiency)		ROE (Profitability)	
	FE	BCFE	FE	BCFE
L.Spread		0.35***		

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Variables	Spread (Efficiency)		ROE (Profitability)	
	FE	BCFE	FE	BCFE
L.ROE				0.205***
GovLend	0.097***	0.081**	-0.061	-0.108
Size	-0.014	-0.020	-0.283***	-0.502***
Risk	0.065*	0.492	-2.786*	-1.421
ROA	0.899**	0.566*		
Liqy	0.021	0.045	-0.186	0.152
CPTL	-0.051	-0.046	-3.428***	-3.879***
CADI	0.0139**	0.077	1.004***	1.030***
R^2	0.16		0.08	
Lagrange multiplier (LM) test	9.63 (0.001)		24.67 (0.000)	
Hausman test	24.77 (0.001)		30.82 (0.000)	

Denote that (BCFE) is referring to Bias Correction Fixed Effects and FE is referring to Fixed Effects.
(Source: Authors based on data from financial statements data for all Jordanian commercial banks)

This paper implements the Breush-Pagan Lagrange Multiplier (LM) test to examine whether or not there are Bank specific unobservable variables and as table (2) results show that individual effects, time effects, and individual and time effects aren't random. According to the LM test result, the estimation was made using the fixed effect model.

Hausman test was conducted for the Efficiency model and shows the following results: (Chi^2) $\chi 2=24.77$, probability value =0.001 and for the Profitability model (Chi^2) $\chi 2=30.82$, probability value =0.000. Since these values were smaller than 0.05, it was decided that there was an endogeneity problem in the model. In this case, it is necessary to analyze with the fixed effects model and this result supports the LM test results.

Results are presented in table (2). The FE test to examine the effect of our focus variable GovLend on Profitability and Efficiency. We also use the BCFE model, which is known to be more efficient under "well-behaved conditions". Table (2) regression findings demonstrate the influence of the independent variables on Profitability and Efficiency after carefully using the FE test following the model used by Hauner (2009). Besides Size, CPTL, CADI, and Risk none of the other variables are significant for the regression with Profitability specification. In the case of the regression for Efficiency, the variables Size, ROA, CADI, and Risk are seen to be significant. The positive coefficient on GovLend is significant in both Profitability and Efficiency using the FE model.

Following Hauner (2009), who finds a significant and positive relationship for GovLend on Profitability and Efficiency. Therefore, the "safe asset" view holds with strong evidence because both results for Profitability and Efficiency have a significant and positive relationship with government lending, but if one of them has a significant and positive relationship and the other has just a positive but not significant relationship this may lead to weak evidence of holding "safe asset" theory as our analysis results shows. We checked for the effect on BCFE models and noticed that similar results are obtained for the main variables GovLend as was obtained for the FE model and so we conclude that even after testing for the effect of GovLend on Profitability and Efficiency with the BCFE model, the outcome remains significant.

5. Conclusions

In this paper, the effect of government lending on financial development indicators (efficiency and profitability) was investigated using the panel data analysis method to test the "Lazy banks" and "Safe asset" views for a sample of 13 banks at one of the emerging market countries which is the Jordanian market.

At the LM tests result conducted to define the applicable panel data analysis method, it was found that individual and time effects weren't random, for that reason an analysis with the fixed-effect model was

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carried out. According to the analysis results, it was determined that government lending has a positive effect on financial development. The analysis results also show weak evidence of the "Safe Asset" view as found by Hauner (2009).

Thus, the findings have important policy implications as they show that Jordanian government borrowing is expected to crowd out private sector credit by banks and this will not be beneficial to the financial development and the economy as a whole if the borrowed funds are channeled to the productive sector of the economy. In addition, the study shows that a consequence of the borrowing is the increase in domestic credit particularly from the banking sector to the government. This study has therefore provided researchers with an incentive for further work in this evolving research area.

6. References

[1] Abedifar, P., Molyneux, P., & Tarazi, A. (2018). Non-interest income and bank lending. *Journal of Banking & Finance*, *87*, 411-426.
[2] Albertazzi, U., & Bottero, M. (2014). Foreign bank lending: evidence from the global financial crisis. *Journal of International Economics*, 92, S22-S35.
[3] Beck, T., Levine, R., & Loayza, N. (2000). Finance and the Sources of Growth. *Journal of financial economics*, 58(1-2), 261-300.
[4] Behr, P., Norden, L., & Noth, F. (2013). Financial constraints of private firms and bank lending behavior. *Journal of banking & finance*, 37(9), 3472-3485.
[5] Blundell, R., Bond, S., & Windmeijer, F. (2001). Estimation in dynamic panel data models: improving on the performance of the standard GMM estimator. *Emerald Group Publishing Limited.*
[6] Bond, S. R. (2002). Dynamic panel data models: a guide to microdata methods and practice. *Portuguese economic journal*, 1(2), 141-162.
[7] Boyd, J., Levine, R., Smith, B., (2001). The impact of inflation on financial sector performance. *Journal of Monetary Economics* 47, 221–248.
[8] Bun, M. J., & Carree, M. A. (2005). Bias-corrected estimation in dynamic panel data models. *Journal of Business & economic statistics*, 23(2), 200-210.
[9] Carranza, L., Galdon-Sanchez, J. E., & Gomez-Biscarri, J. (2010). Understanding the relationship between financial development and monetary policy. *Review of International Economics*, 18(5), 849-864.
[10] Čihák, M., Demirgüč-Kunt, A., Feyen, E., & Levine, R. (2013). Financial development in 205 economies, 1960 to 2010 (No. w18946). *National Bureau of Economic Research*.
[11] Everaert, G., & Pozzi, L. (2007). Bootstrap-based bias correction for dynamic panels. *Journal of Economic Dynamics and Control*, 31(4), 1160-1184.
[12] De Vos, I., Everaert, G., & Ruyssen, I. (2015). Bootstrap-based bias correction and inference for dynamic panels with fixed effects. *The Stata Journal*, 15(4), 986-1018.
[13] Fry, W. (1995). Money, Interest, and Banking in Economic Development. *Canadian Journal of Development Studies*, 16, 312-312.
[14] Hauner D. (2009). Public debt and financial development. *Journal of Development Economics* 88, 171–183.
[15] Ismihan, M., & Ozkan, F. G. (2012). Public debt and financial development: A theoretical exploration. *Economics Letters*, 115(3), 348-351.
[16] Kishan, R. P., & Opiela, T. P. (2006). Bank capital and loan asymmetry in the transmission of monetary policy. *Journal of Banking & Finance*, 30(1), 259-285.
[17] Kiviet, J. F. (1995). On bias, inconsistency, and efficiency of various estimators in dynamic panel data models. *Journal of econometrics*, 68(1), 53-78.
[18] King, R., Levine, R., (1993). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics* 108, 717–737.

ISSN: 2247-6172, ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1/ 2022), pp. 18-
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[19] Kumhof, M., & Tanner, E. (2005). Government debt: a key role in financial intermediation. IMF Working Paper WP/05/57, *International Monetary Fund*, Washington D.C.
[20] Levine, R. (2002). Bank-based or market-based financial systems: which is better? *Journal of financial intermediation*, 11(4), 398-428.
[21] Mishra, P., Montiel, P., Pedroni, P., & Spilimbergo, A. (2014). Monetary policy and bank lending rates in low-income countries: Heterogeneous panel estimates. *Journal of Development Economics*, 111, 117-131.
[22] Nickell, S. (1981). Biases in dynamic models with fixed effects. Econometrica: *Journal of the econometric society*, 1417-1426.
[23] Popov, A., & Van Horen, N. (2015). Exporting sovereign stress: Evidence from syndicated bank lending during the euro area sovereign debt crisis. *Review of Finance*, 19(5), 1825-1866.
[24] Qian, J., Strahan, P. E., & Yang, Z. (2015). The impact of incentives and communication costs on information production and use: Evidence from bank lending. *The Journal of Finance*, 70(4), 1457-1493.
[25] Roodman, D. (2009). A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics*, 71(1), 135-158.
[26] Sanfilippo-Azofra, S., Torre-Olmo, B., Cantero-Saiz, M., & López-Gutiérrez, C. (2018). Financial development and the bank lending channel in developing countries. *Journal of Macroeconomics*, 55, 215-234.
[27] Vo, X. V. (2018). Bank lending behavior in emerging markets. *Finance Research Letters*, 27, 129-134.

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Measuring Client's Feelings on Mobile Banking

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Abstract.
Mobile banking is relatively a new service offered by banks around the world. Banks are obliged to keep investing in new technologies as otherwise, they would lose competitiveness and market share. It is, although interesting, to know how clients react to these innovation efforts.
This study aims to understand the client's responses to bank innovation, especially to mobile banking technology in Albania. An online experiment is conceived based on Experimental Design Principles. Participants evaluate combinations of messages (elements) about mobile banking and rate each combination. The collected data are used to create individual models and later a general model to calculate the statistical relevance of each of the messages. The models use ordinary least squares regression and advanced data mining techniques (k—means clustering) to analyze the data and classify participants accordingly.
At the end of the analyses, a set of two or three mindsets are depicted to show what pushes participants in the study in their decision-making process. These mindsets help banks understand clients' reactions and allow banks to address different issues to serve their clients better.

Keywords: Bank; Clients; Mind Genomics Technology; Mobile Banking; Statistical Models

JEL Codes: G2

1. Introduction

Mobile banking is offering its services to the large public not long after the introduction in the market of smartphones. Because of the facilities it provides, and the easiness of use, soon it became a necessity for the banks to provide such a service to their customers; an application for an instant and reliable access. Although the success of this new technology was rapid and widespread, some questions are still raised concerning mobile banking as to what extent it affects the future of banking as well as the direct impact on banks' profits. There is still a need to assess the competitive advantage that the banks will gain in the market and what are the best paths to follow to guarantee the obtained success. Adequate use and future advancements of new technology must come after a feasibility study of the adoption phase.

Thus, several studies worldwide have addressed the issue of the acceptance of this new technology. (L'Hostis & Wannemacher, 2015) provide a detailed analysis of the landscape of mobile banking. Some authors have developed a technology acceptance model that integrates the innovation diffusion theory, perceived risk, and trust in the classic TAM (Technology Acceptance Model) model to shed light on what factors determine user acceptance of mobile banking applications (Muñoz-Leiva et al., 2017). (Aboelmaged & Gebba, 2013) undertook a study aiming to extend the understanding regarding mobile banking adoption through integrating the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB).

(Lu et al., 2015) designed a new hybrid model, the multiple attribute decision-making (MADM) model, which combines decision-making trial and evaluation laboratory (DEMATEL) for building an influential network relationship map (INRM), DANP (DEMATEL-based ANP) for determining the influential weights

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of criteria. They also use the VIKOR method using the influential weights to evaluate and integrate the criteria in the gaps and reduce the gaps to satisfy the users' behavior needs based on INRM. Others (Baptista & Oliveira, 2015) have advanced the body of knowledge on mobile banking acceptance by proposing an innovative and comprehensive theoretical model that combines the extended unified theory of acceptance and use of technology.

The image of banking would be impacted by the technology and more specifically by mobile banking; this is what the banks claim (Yu, C. S. 2012). The main feature of mobile banking is that it affects three important areas of banking marketing such as banking transactions, the visibility of the bank in new markets, and e-commerce (Shaikh, A. A., & Karjaluoto, H. 2015).

The mobile banking adoption issue in specific countries has been widely discussed in the research community. (Jehan & Ansari, 2018) brings the experience and the lessons learned during the adaptation of this technology in Saudi Arabia. (Tan et al., 2010) investigate the factors that affect the adoption of online banking in Malaysia. They found that social influences, perceived usefulness, trust, and ease of use were positively associated with adopting online banking. (Yee - Loong Chong et al., 2010) showed that perceived usefulness, trust, and government support are all positively associated with the intention to use online banking in Vietnam. (Shaikh & Karjaluoto, 2015) explore the current trends in e-banking in the Pakistani banking sector to provide an easy interface to their customers who avail of the e-banking services without any physical presence in the bank vicinity. (Arvidsson, 2014), (Ilollari et al., 2020) studied consumers' attitudes on starting using mobile payment services. Others (Yu, 2012) used the Unified Theory of Acceptance and Use of Technology (UTAUT) to investigate what impacts people to adopt mobile banking.

(Mortimer et al., 2015) study the adoption of mobile banking technologies in emerging Asian economies split across Thailand and Australia. They find that perceived ease of use, usefulness, and perceived risk were the primary determinants of mobile banking adoption for Australian consumers.

In their study (Nagaraj & Singh, 2017) adapted the Technology Acceptance Model (TAM) and Perceived Web Security (PWS) construct to understand the adoption of IB services in India. They heavily use the Perceived Usefulness (PU) and Perceived Ease of Use (PEoU) as the two main determinants to evaluate the Attitude towards Use (ATU) and Intention to Use (INTU) internet banking services. The same study also included Perceived Web Security (PWS) as one of the constructs in understanding the attitude and behavioral intention of the customers in adopting IB services. (A & Nassar, 2012) modified the existing Unified Theory of Acceptance and Use of Technology (UTAUT) model and added new and removed existing factors to adjust this model to the local environment. They added to the existing UTAUT model a new moderator factor called the influence of education. Also, they augmented the current set of elements with the Reliability, Design Issues, and Security issues as the three technology-related factors to the UTAUT model.

For the previous generations, the checkbook was the outcome of their relationship with their bank, but with the changing technology and the way, the banks operate everything is changing. It is less likely that the coming generation will ever use checks. With this expansion in technology, the way people communicate has drastically changed. Nowadays mobile phones have become an important asset when doing online shopping, chatting, etc. Mobile technology also changed the way people satisfy their banking needs.

Mobile banking is a new trend (Sanader, 2014). Thus, the relationship people have with their banks has changed, but also with their mobiles. New brands are acting as "money vaults" for consumers (Illollari & Gjino, 2013). The financial services providers make sure that they are the first ones to change the future of Mobile Money, i.e., the banking location, shopping, and making payments. These financial service providers play an essential role and they should ensure that they are not losing ground in this sector.

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Nowadays, successful customer experiences will require robust technology investments, collaborations with competitors, and client strategy. This new context could greatly benefit the banks if they were open-minded, eager to learn, and provide security lessons, and marketing, drawn from developing markets (Boar, 2002). Some financial analysts have stated that taking the industry as a whole, the upside from mobile banking will be limited, and value creation may be neutral at best (Gjino. & Ilollari (Findiku)., 2014).

On the other hand, the profit and revenue opportunities are considerable at the individual banks' level. In general, banks operate their business with a primary purpose - maximizing profit (Artur Ribaj et al., 2020). Opportunities of mobile banking may have approached the prospect, but these opportunities can create worth value if banks consider three prospective:

1. The broader "mobile" industry

Mobile technology is already creating value for a range of non-banks, mobile phone manufacturers, and online pioneers. These users can produce new services and apps, generate more data traffic, offer social networking and afford marketing services. Banks may want to rap into these new sources of value or at least find partners that will give them a slice of the action.

2. Bank profits

Banks will need to develop an accurately differentiated ultra-convenient mobile banking user experience to gain share in home markets. Creating this new environment is the reason that will expand relationships with customers, permitting banks to cross-sell risk-based and liability products (A. Ribaj & Ilollari, 2019).

3. Banking industry

It will be wise for the banking industry to generate value from the new profit sources (new customers, new products) by charging for mobile's greater opportuneness and lowering costs.

Online banking already seems to be hitting a threshold of acceptance, with some consumers skipping over this stage of financial engagement and moving directly to mobile banking. This service is already requested because the customers' requests increase simultaneously as the technology develops. Most banks already offer mobile banking functionality; the challenge going forward will be to execute a differentiator strategy from a customer experience and revenue perspective. So that the banks are more competitive with each other, they are aware that they should be offering the latest products and functionalities. Furthermore, they should bring and implement innovation (Gomber et al., 2018).

As more innovative Smartphone applications are developed within and outside the financial services sector, the ability for banks to keep pace becomes both more critical and more complex. New devices and new tools increase engagement and contextual interaction with those banks that seize the opportunity. As the penetration of Smartphones increases, customer expectations are growing as well. So, as stated above, the banks are forced to follow the technology developments to respond to their customers' needs.

By building an agile, best-in-class mobile infrastructure, the impact can be realized through increased differentiation, lower-cost customer acquisition, improved channel efficiency, improved customer retention, and more significant revenues through up-selling and cross-selling of services and products merchant-funded rewards (Chuang, 2019).

By designing, executing, and optimizing a successful mobile banking plan integrated with a more comprehensive multichannel strategy, banks are better positioned for future mobile banking.

Nowadays, almost every service, request, or need is turning into a virtual service. As a result, the banking services are in the customers' hands through their smartphones, where they make their mobile transfers. The bank cash desks are not as crowded as they used to be because of the innovations in the area (Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. 2018).

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Several studies have addressed the issue of what influences people to trust the e-banking approach (Xiao et al., 2017), (Ilollari & Gjino, 2013).

The data privacy issue is a far-reaching issue that banks and clients have to deal with constantly. The point of data privacy has been the focus of a few studies such as (Oyedemi, 2015); (Akpojivi & Bevan-Dye, 2015). To understand the concerns about this issue, the authors have interviewed thousands of students from different universities in South Africa. They state that while companies have made mobile advertising a strategic business plan in today's global competitive marketing world, security and data privacy is a significant concern for students of generation Y in South Africa. (Zhou, 2012) integrate both perspectives of trust and flow experience to examine the factors affecting mobile banking user adoption. They conclude that mobile service providers need to address both trust and flow experience to facilitate user adoption and usage of mobile banking services.

This paper tries to contribute to the existing literature in three different ways. First, this study addresses the perception of users regarding the mobile banking approach. There are many studies, as presented in the Introduction part of this paper, that have addressed different aspects of this technology as a whole (L'Hostis & Wannemacher, 2015); (Muñoz-Leiva et al., 2017); (Aboelmaged & Gebba, 2013); (Arvidsson, 2014); (Ilollari et al., 2020) and issues that needed to be resolved related to the mobile banking technology because of the specifics of particular countries (Zhou, 2012) ; (A & Nassar, 2012); (Oyedemi, 2015), (Akpojivi & Bevan-Dye, 2015), to name a few.

Second, this study uses the experimental design of ideas, Mind Genomics (Milutinovic & Salom, 2016); (Moskowitz et al., 2006) to understand people's minds concerning specific messages. Mind Genomics is a collection of well-accepted yet novel approaches to understanding the mind of participants in an interview. These methods begin with permuted experimental design, move on to dummy variable regression, and clustering, and then create strategies to assign a new person to one of the clusters or mindsets uncovered. Third, the overarching goal of this paper is to present to financial institutions some valuable findings and insights that deserve consideration when thinking about the need to improve mobile banking at the practical level.

The rest of the paper is presented as follows: Section Methodology shows the data used for the analyses and the scientific approach, section Results and Discussions presents a list of the results obtained by this study, and the last section, Conclusions and Recommendations, shows findings of this study.

2. Methodology

This study uses the new science of Mind Genomics (Moskowitz et al., 2006) to analyze the collected data. Initially, the researcher should study the problem to be solved and identify four pillars (silos) that will serve as the basis for the study (Todri et al., 2020). These pillars are referred to as questions by the system. Four potential answers are to be defined for each pillar, representing the most probable answers to the question. Answers from each silo are combined according to an Experimental Design model to create vignettes that are presented for evaluation to participants using a 1-to-9-point Likert scale. Each participant evaluates 25 vignettes. Regression models (Zdaniuk, 2014), data mining, and clustering techniques (Mucherino et al., 2009) are used to analyze the data to find the statistical relevance of each of the answers/elements presented to the participant via the vignettes (Milutinovic & Salom, 2016); Moskowitz et al., 2006).

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Mind Genomics is a research procedure that can be used to address problems from different domains, be it political science, business, or marketing. It has been used to solve several such issues, and many publications have enriched the scientific literature.

Initially, Mind Genomics was used primarily to explain marketing problems by the famous duo Gofman and Moskowitz. Their work appeared in many individual and joint publications (Gofman, 2012), (Gofman & Moskowitz, 2010), (Moskowitz et al., 2006).

The theoretical work of Moskowitz and Gofman was the basis for establishing Mind Genomics as a new and respectable branch of social and psychological science, paving the way for often-breakthrough research in different areas of human activities (Moskowitz et al., 2020). Over time, scientists and business folks began to recognize the value of Mind Genomics as a valuable tool to solve decision-making problems at the granular level of particularity, the level where meaningful living occurs.

The majority of the studies using the Mind Genomics science were focused on the Food Industry. Thus, (Zemel et al., 2018) used Mind Genomics to uncover consumer thoughts regarding raw beverages. (Saulo et al., 2019) undertook a study to depict linking food endorsement labels and messaging to perceive price and emotions. (Gere et al., 2018) studied issues related to consumer requirements regarding natural food stores.(Gere et al., 2018) analyzed the minds of consumers regarding the use of milk. A study combining Artificial Intelligence, Mind Genomics, and Predictive Viewpoint Typing was conducted by (Zemel et al., 2019). It is the first time that Mind Genomics was paired with Artificial Intelligence to determine how consumers perceive dairy products.

Sending customers the right message has always been a critical objective of companies offering products and services. Reaching these goals demands understanding what customers think about specific ideas and messages. In providing products and services, it is relevant to determine whether there are different Mind-Sets for the same topic. If there are, it is necessary assigning people to the right Mind-Set. (Ilollari et al., 2019) used Mind Genomics as a simple tool to understand the specifics of what features of a service or product appeals to individuals, and then a method for assigning any new person to the most appropriate Mind-Set. A simple set of questions, integrated into the PVI (Personal Viewpoint Identifier), assigns the new person to the Mind-Set, doing so in 'real-time.' Finding a couple of groups of people thinking alike allows for sending them personalized messages achieving better sales performance of the offer.

During the pandemic times of COVID-19, higher education institutions around the world had to adopt a new teaching paradigm referred to as Distance Learning (DL).

Thus, it was necessary to understand what students and professors think about this approach they were using for the first time as the primary teaching tool. It is relevant to feel the kinds of problems that are to be solved so that the traditional teaching process's efficiency and interactivity are not negatively impacted (Todri et al., 2020).

This study aims to understand how people feel about mobile banking in Albania. This study established as main pillars (silos) the following aspects:

1. Question A: What is the Culture of Mobile Banking in Albania?
2. Question B: How do Albanian clients evaluate mobile banking services?
3. Question C: What is the use of mobile banking in Albania?
4. Question D: What are the pros and the cons of mobile banking in Albania?

For each question or referred to as a silo as well, four potential answers or elements are provided. The array of "questions" and their associated answers appears in Table 1.

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Table 1. Silos and the corresponding answers and their total evaluation.

	Additive Constant	47
	Question A: What is the Culture of Mobile Banking in Albania?	
A1	Clients are well familiar with functions of mobile banking	5
A2	Clients have good knowledge of banking services	4
A3	Clients are not familiar with banking services	2
A4	Clients are attentive to mobile banking advertisements	2
	Question B: How do Albanian clients evaluate mobile banking services?	
B1	Mobile banking services are difficult to use	-1
B2	Mobile banking has improved the quality of services to clients	2
B3	Not all banks in Albania offer friendly mobile banking	-2
B4	Mobile banking is used only by the young generation	-3
	Question C: What is the use of mobile banking in Albania?	
C1	I am not confident to make online transactions	-7
C2	I use mobile banking only for paying my bills	-8
C3	Cyber security issues make me uncomfortable using mobile banking	-1
C4	Mobile banking has reduced the time I spend in bank offices	-8
	Question D: What are the pros and the cons of mobile banking in Albania?	
D1	Mobile banking is the banking of the future	-4
D2	Mobile banking exposes personal data to hackers	0
D3	Mobile banking reduces bank administrative costs	1
D4	In general, people do not largely use mobile banking services	0

An online survey was designed and created 1656 different combinations presented to participants for evaluation. Participants provided some personal data such as gender, and age and indicated one of three reasons or qualification criteria, the kind of banking services participants would like:

1. Looking for: Fast and secure banking
2. Looking for: Going to the bank to directly talk to the clerk
3. Looking for: Avoiding problems with hackers

Mind Genomics uses a class of programs called cluster programs (or clustering) to identify groups of respondents with similar patterns of coefficients or impact (Mucherino et al., 2009). For the Mind Genomics studies, one particularly favorite method computes the Pearson correlation between each pair of respondents (Pearson R) and then computes the number (1-R). The Pearson R varies from a high of +1 when two patterns follow identical paths, so increases in one pattern correspond to precise, predictable increases in the other

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pattern. In such a case, the Pearson R of +1 becomes a 'distance' of 0 (1-1) = 0. A perfect inverse relation generates a Pearson R of -1 or a distance of 2 (1- -1 = 2).

With these 'distances' between pairs of respondents, the clustering program creates solutions, such as a 2-cluster solution where each respondent is a member of exactly one of two segments (groups) or a 3-cluster solution where each respondent is a member of exactly one of three segments (groups), and so forth.

The best segmentation, i.e., the 2-cluster, 3-cluster, 4-cluster solution is selected based on two simple criteria, parsimony and interpretability, respectively. Parsimony means as few segments or clusters as possible. Ideally, no clusters would be best; everyone would be like everyone else. Typically, this is not the case, but some situations come close, such as responding to an interview where people share a common opinion. Usually, the system creates two clusters or three clusters, occasionally with four clusters. The created clusters are referred to as mindsets.

Interpretability means that the segmentation should tell a story. That is, the mindsets should reveal to us a meaningful, unique pattern for each cluster. Interpretability is a subjective notion, left best to one's ability to see a bigger 'picture' within the data.

3. Results and Discussions

Table 1 shows the regression results for our study. The additive constant = 47 (Intercept by statisticians) shows that 47% of participants appreciate mobile banking in the absence of elements. It means almost one in two respondents favor mobile banking (MB) without looking at the elements. Element A1: Clients who are well familiar with the functions of mobile banking has the highest coefficient = 5. The interpretation of this value is: the presence of A1 in a vignette will likely increase by 5% the respondents voting in favor of MB. A single vignette with A1 included will generate 47+5=52% of respondents voting in favor of MB.

Obtained results show that 68% of respondents have selected Looking for: Fast and secure banking. For this group of respondents, the additive constant is 46. They have evaluated silo A positively: What is the Culture of Mobile Banking in Albania but have a less favorable evaluation for silo B and a negative assessment for silos C and D.

20% of participants have selected Looking for: Going to the bank to directly talk to the clerk as the reason for mobile banking. Almost all the silos (A, B, C, and D) are evaluated negatively by this group, especially silo C: What is the use of mobile banking in Albania? (C1 evaluated with -16, C2 with -12, C3 with -10, and C4 with -26).

12% of participants have selected Looking for: Avoiding problems with hackers as the reason for mobile banking services, and the additive constant of this group is 31. Participants that would like to avoid hackers and hacking problems are the most pessimistic ones. This group of participants has evaluated by 14 the answer C1: I am not confident in making online transactions and by 8 answer C3: Cybersecurity issues make me uncomfortable using mobile banking. This group of respondents is also pessimistic about MB being the banking of the future as they have evaluated D1: Mobile banking is the banking of the future with -2.

The elements with the smallest overall coefficient are C4=-8, C2=-8, C1=-7 related to the use of MB in Albania. The presence of C4 or C2 in a vignette will decrease by 8% the number of respondents voting positively for MB. Elements C1, C2 and C4 are part of the silo: *The Use of Mobile Banking in Albania*. It shows that people are not comfortable with MB because of security issues.

58% of participants are female and 42% male. Results show that regarding the issues of silo A, females are more favorable than males. The answer of familiarity with mobile banking females have evaluated with 9

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while males with 0. Females think that Clients are not familiar with banking services and have evaluated with 6 while males with -1.

Regarding the answers of silo B: How Albanian clients evaluate mobile banking services, males and females do not have sharp divisions in their evaluations; both have a negative assessment with females with a total of -5 and males with a total of -4.

Even the evaluation of silo C: What is the use of mobile banking in Albania females and males are in the same negative direction with females with a total of -20 and males with a total of -30. Only the evaluation of the future of mobile banking, silo D: What are the pros and the cons of mobile banking in Albania females have a slight difference from males. Females have a total of -7 and males a total of 1. Females see with skepticism the future of mobile banking.

Group ages 18-24 and 45-54 have values of additive constant of 65 and 56, positively inclined towards MB in the absence of any other information offered by other answers. The same groupages that form 40% of respondents have a total evaluation of silo A of 43 and 36.

Regarding the set of answers of silo B groupages, 25- 34 and 55-64 are more positive with a respective total of 4 and 27. When evaluating silo C, only groupages 35-44 have a positive evaluation of 41; all other groupages have a negative assessment. Only groupage 18-24 sees mobile banking as the banking of the future. The same groupage is concerned with the issue of exposing personal data to hackers and the fact that mobile banking has reduced banking administrative costs.

In the end of the study, Mind Genomics creates two mindsets that include people that think alike. Table 2 shows the elements of the table that form the two mindsets.

Table 2. Selecting the mindsets for the study.

	Base Size	696	960
	Additive Constant	51	47
		MindSet1	MindSet2
	Question A: What is the Culture of Mobile Banking in Albania?		
A1	Clients are well familiar with the functions of mobile banking	-2	8
A2	Clients have good knowledge of banking services	-1	8
A3	Clients are not familiar with banking services	-3	6
A4	Clients are attentive to mobile banking advertisements	-4	4
	Question B: How do Albanian clients evaluate mobile banking services?		
B1	Mobile banking services are difficult to use	-11	3
B2	Mobile banking has improved the quality of services to clients	-2	4
B3	Not all banks in Albania offer friendly mobile banking	-10	5
B4	Mobile banking is used only by the young generation	-6	-2
	Question C: What is the use of mobile banking in Albania?		
C1	I am not confident to make online transactions	10	-19
C2	I use mobile banking only for paying my bills	4	-17
C3	Cyber security issues make me uncomfortable to use mobile banking	12	-10

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C4	Mobile banking has reduced the time I spend in bank's offices	4	-17
	Question D: What are the pros and the cons of mobile banking in Albania?		
D1	Mobile banking is the banking of the future	-12	0
D2	Mobile banking exposes personal data to hackers	-7	4
D3	Mobile banking reduces bank's administrative costs	-14	12
D4	In general, people do not largely use mobile banking services	-6	3

As shown in Table 2, the members of the mindset1 are the ones that are positive about the use of mobile banking in Albania; we could refer to these people as the "mobile-banking users." In the same way, we could refer to people included in mindset2 as "mobile-banking believers." Depicting the mindsets is important for advertisement purposes; in the event, that an advertisement should be sent to a person belonging to mindset1, then messages reflecting answers to silo C should be used. In the event an advertisement is sent to a person belonging to mindset2, then messages on silos A, B, and D should be included.

Mind Genomics has a well-appreciated feature referred to as the Personal Viewpoint Identifier (PVI) that, based on the obtained results, can classify new participants that have not participated in the interview into mindsets already depicted by the system. The mindsets and the PVI tool help create a database where clients and their mindset classifications are stored. The database allows for personalized marketing.

4. Conclusions and Recommendations

Banks are now being prepared to take advantage of another profit opportunity, another product usable by all of us, the "Mobile phone." The interest in "Mobile Banking" products is becoming increasingly intense. Applications and new technologies are spreading through European banks mobilized to embrace this profitable product. Mind Genomics has a well-appreciated feature referred to as the Personal Viewpoint Identifier (PVI) that, based on the obtained results, can classify new participants that have not participated in the interview into mindsets already depicted by the system. The mindsets and the PVI tool help create a database where clients and their mindset classifications are stored. The database allows for personalized marketing.

As smartphones become more commonly used and their capabilities expand, they may increasingly be the means consumers use to access financial services and manage their finances.

In fact, our study has identified two meaningful mindsets:

1. Optimistic Mindset - The believers in mobile banking
2. Careful Mindset - The careful users of mobile banking

What is noticed in the first mindset is that most of the positive responses were that customers are well familiar with mobile banking functions and have good knowledge of banking services. What is characteristic of the second mindset is that one of the factors that restrict some customers from using mobile banking is that they still have uncertainties regarding the security of the technology. Most respondents do not trust to conduct their transactions through Mobile Banking, so banks need to increase the security of their customers for them to trust in the use of Mobile Banking. There is a lot of work to be done by the banks to spread confidence that mobile transactions are secure. Based on the answers given, mobile banking is not a familiar tool used by all ages of customers. The generations that use online banking are 24-34 years as they are also the ages that much easier accept technology and be updated in all sectors. Usage of mobile banking on a

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large scale decreases the administrative costs of the banks. According to this study, men use mobile banking more than women, and maybe even banks should think that for this category to send promotions for their products, e.g. (leasing to buying a car). Banks have to develop tools to promote the use of mobile banking for women as well. An education/information process is necessary for women to appreciate the comfort of mobile banking. The group age of 55+ is not comfortable using mobile banking and rightly very suspicious of hackers and the data privacy issue. But based on the variety of their products, according to the classification of their age, gender, and financial knowledge, banks can promote their products in a personalized way by sending these groups various promotions about banking products. 47% of participants are optimistic about mobile banking, and this means that there is still a lot of work to do by banks to inform and educate their customers to be in the same range of use in both the region and EU. We think that banks will find their stride in cost reduction over the following years due to mobile banking requiring them to be more cutting-edge thinkers and nimbler in implementing necessary changes in the services offered and security required.

5. References

[1] Aboelmaged, M., & Gebba, T. R. (2013). Mobile Banking Adoption: An Examination of Technology Acceptance Model and Theory of Planned Behavior. *International Journal of Business Research and Development*, *2*(1). https://doi.org/10.24102/ijbrd.v2i1.263

[2] Akpojivi, U., & Bevan-Dye, A. (2015). Mobile advertisements and information privacy perception amongst South African Generation Y students. *Telematics and Informatics*, *32*(1), 1–10.

[3] Arvidsson, N. (2014). Consumer attitudes on mobile payment services – results from a proof of concept test. *International Journal of Bank Marketing*, *32*(2), 150–170. https://doi.org/10.1108/IJBM-05-2013-0048

[4] Boar, B. H. (2002). The art of strategic planning for information technology. John Wiley & Sons.

[5] Butler, P., & Peppard, J. (1998). Consumer purchasing on the Internet: Processes and prospects. *European Management Journal*, *16*(5), 600–610.

[6] Chuang, C. C. (2019). Adopt m-banking as a successful business strategy. *International Research Journal of Applied Finance*, *10*(4), 160–169.

[7] Gere, A., Zemel, R., Papajorgji, P., & Moskowitz, H. (2018). Weak Signals and Mind-Sets of Consumers: The Case of Milk. *Journal of Food Science and Engineering*, *8*, 125–136. https://doi.org/10.17265/2159-5828/2018.03.004

[8] Gjino., G., & Ilollari (Findiku)., O. (2014). Mobile banking: near future of banking. *Review of Applied Socio-Economic Research*, *7*(1), 43–51.

[9] Gofman, A. (2012). Origins of RDE and the Role of Experimentation in Consumer- Driven Innovation. In H. R. Gofman, A., Moskowitz (Ed.), *Rule Developing Experimentation: A Systematic Approach to Understand & Engineer the Consumer Mind* (pp. 3–33). Bentham ebooks. https://doi.org/10.2174/97816080528441120101

[10] Gofman, A., & Moskowitz, H. R. (2010). ISOMORPHIC PERMUTED EXPERIMENTAL DESIGNS AND THEIR APPLICATION IN CONJOINT ANALYSIS. *Journal of Sensory Studies*, *25*(1), 127–145. https://doi.org/https://doi.org/10.1111/j.1745-459X.2009.00258.x

[11] Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption and Transformation in Financial Services. *Journal of Management Information Systems*, *35*(1), 220–265.

[12] Illollari, O., & Gjino, G. (2013). Which forces drive the banks to new investments? Innovation mechanisms banks use to succeed challenges. *Review of Applied Socio-Economic Research*, *6*(2), 121–130.

ISSN: 2247-6172, ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 28-39
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[13] Ilollari, O., Papajorgji, P., & Civici, A. (2020). Understanding client's feelings about mobile banking in Albania. *UNICART2, International Conference, Academic Research & Tourism*.

[14] Ilollari, O., Papajorgji, P., Gere, A., Zemel, R., & Moscowitz, H. R. (2019). *Using Mind Genomics to Understand the Specifics of a Customers Mind*.

[15] Jehan, S. N., & Ansari, Z. A. (2018). Internet Banking Adoption in Saudi Arabia: An Empirical Study. *International Journal of Marketing Studies*, *10*(57).

[16] L'Hostis, A., & Wannemacher, P. (2015). The State Of Mobile Banking. Landscape: The Mobile Banking Strategy Playbook. *Forrester Research*.

[17] Milutinovic, V., & Salom, J. (2016). *A Guide to Data-Driven Marketing Strategy* (1st ed. Ed). SpringerBriefs in Business.

[18] Mortimer, G., Neale, L., Hasan, S. F. E., & Dunphy, B. (2015). Investigating the factors influencing the adoption of m-banking: a cross cultural study. *International Journal of Bank Marketing*, *33*(4), 545–570. https://doi.org/10.1108/IJBM-07-2014-0100

[19] Moskowitz, H. R., Beckley, J., & Ashman, H. (2006). Founding A New Science: Mind Genomics. *Journal of Sensory Studies*. https://doi.org/https://doi.org/10.1111/j.1745-459X.2004.00066.x

[20] Moskowitz, H. R., Wren, J., & Papajorgji, P. (2020). *Mind Genomics and the Law* (1st editio). Lambert Publishing.

[21] Mucherino, A., Papajorgji, P., & Pardalos, P. M. (2009). A survey of data mining techniques applied to agriculture. *Operational Research*, *9*(2). https://doi.org/10.1007/s12351-009-0054-6.

[22] Mucherino, A., Papajorgji, P., & Pardalos, P. (2009). Introduction to Data Mining. In *Data Mining in Agriculture* (pp. 1–20).

[23] Muñoz-Leiva, F., Climent-Climent, S., & Liébana-Cabanillas, F. (2017). Determinants of intention to use the mobile banking apps: An extension of the classic TAM model. *Spanish Journal of Marketing - ESIC*, *21*(1), 25–38. https://doi.org/10.1016/j.sjme.2016.12.001

[24] Nagaraj, S., & Singh, S. (2017). Adoption of Internet Banking Services in India: An Empirical Study. *Global Journal of Management and Business*, *17*(2-E).

[25] Oyedemi, T. (2015). Participation, citizenship and internet use among South African youth. *Telematics and Informatics*, *32*(1), 11-22.

[26] Ribaj, A., & Ilollari, O. (2019). Asymmetric information versus banks' costumer trust, Albania case linked with SEE countries. *Albania Case Linked with SEE Countries*, *24*.

[27] Ribaj, Artur, Ilollari, O., & Scalera, F. (2020). The Unethical Banking Costs Distrust of Bank Customers (Albania Case as a Model for SEE Countries). *WSEAS Transactions on Business and Economics*, *16*(65), 582–592.

[28] Sanader, D. (2014). Mobile banking: New trend in the contemporary banking sector. *Bankarstvo*, *45*(3), 86–109.

[29] Saulo, A., Moskowitz, V., Gere, A., Papajorgji, P., & Ettinger Lieberman, L. Feuerwerker, D. (2019). Linking Food Endorsement Labels & Messaging to Perceived Price and Emotions. A Mind Genomics ® Exploration. *Advances in Nutrition and Food Science*, *2019*(5).

[30] Shaikh, A. A., & Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and Informatics*, *32*(1), 129–142. https://doi.org/10.1016/j.tele.2014.05.003

[31] Tan, G. W. H., Chong, C. K., Ooi, K. B., & Chong, A. Y. L. (2010). The Adoption of Online Banking in Malaysia: An Empirical Analysis. *The International Journal of Business and Management*, *3*(2), 169-193.

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Review of Applied Socio- Economic Research
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URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[32] Todri, A., Papajorgji, P., Moskowitz, H. R., & Scalera, F. (2020). Perceptions regarding Distance Learning in Higher Education, Smoothing the Transition. *Contemporary Educational Technology*, *12*(1). https://doi.org/10.30935/cedtech/9274

[33] Xiao, Y., Sukumar, A. P. C., Tipi, L., & David, E. (2017). Factors influencing people's intention to adopt e-banking: an empirical study of consumers in Shandong Province, China. *Asian Journal of Computer and Information Systems*, *5*(3), 26–43.

[34] Yee-Loong Chong, A., Ooi, K., Lin, B., & Tan, B. (2010). Online banking adoption: an empirical analysis. *International Journal of Bank Marketing*, *28*(4), 267–287. https://doi.org/10.1108/02652321011054963

[35] Yu, C. (2012). Factors Affecting Individuals to Adopt Mobile Banking: Empirical Evidence from the Utaut Model. *Journal of Electronic Commerce Research*, *13*(2).

[36] Zdaniuk, B. (2014). Ordinary Least-Squares (OLS) Model. In *Encyclopedia of Quality of Life and Well-Being Research* (2014. Edit). https://doi.org/https://doi.org/10.1007/978-94- 007-0753-5_2008

[37] Zemel, R., Gan Choudhuri, S., Gere, A., Upreti, H., Deitel, Y., Papajorgji, P., & Moskowitz, H. (2019). Consumers, and Dairy: Applying Artificial Intelligence, Mind Genomics, and Predictive Viewpoint Typing. In *Handbook of Modern Dairy Science and Technology*. IntechOpen. https://doi.org/10.5772/intecopen.85532

[38] Zemel, R., Gere, A., Papajorgji, P., Zemel, G., & Moskowitz, H. (2018). Uncovering Consumer Mindsets Regarding Raw Beverages. *Food and Nutrition Sciences*, *9*(3), 259–267. https://doi.org/10.4236/fns.2018.93020

[39] Zhou, T. (2012). Examining mobile banking user adoption from the perspectives of trust and flow experience. *Information Technology and Management*, *13*(1), 27–37. https://doi.org/10.1007/s10799-011-0111-8

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When Business English Went Virtual

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Abstract. *English for Specific Purposes, differently from other academic subjects, has always been compatible with the affordances of technology. The specialised literature has acknowledged well-established branches of language education, such as Computer-Assisted Language Learning (CALL), or Mobile-Assisted Language Learning (MALL), long before the online teaching has been forced upon the systems of education throughout the world following the pandemic. The compatibility between foreign language teaching and computers is not surprising since the former has always searched for authentic immersive experiences that can simulate real-life situations, of which the latter has plenty.*

The present article concentrates on a particular type of English for Specific Purposes—Business English, which is currently taught at the University of Bucharest to students enrolled in Economics degrees. Beginning with the second semester of the academic year 2019-2020, all classes have been moved online due to the threat posed by the Corona virus. The seminar rooms and lecture rooms have been basically overnight replaced by a multitude of platforms and meeting spaces unknown before to a great many: Zoom, Google Classroom, Moodle, Microsoft teams, to mention just a few. Google Classroom, part of Google Apps for Education, has been one of the most frequently chosen platforms due to its friendly interface and the possibility of holding both a-synchronous and synchronous classes (following the integration of Google Meet). The article discusses the way Google Classroom has been used by language instructors for both the teaching and the final assessment of students' progress.

Keywords: Business English, Computer-Assisted Language Learning, English for Specific Purposes, Google Classroom, Task-Based Approach.

JEL Codes:_____

1. Introduction

In recent years, the teaching of foreign languages has been on a continuous search for immersive experiences meant to place the learners in life-like situations which would require them to act and react spontaneously, using all the competences acquired during the learning process. As a consequence, all kinds of approaches have emerged, most of them under the umbrella of the communicative methods. They have been readily embraced because previous traditional pedagogical approaches seemed to favour grammatical competence over all the other competences and, thus, appeared detached from the learner's real needs. One of the most successful methods has been the task-based approach, first described by Long (1985) and Prabhu (1987). The focus on linguistic accuracy has been replaced by the completion of functional tasks aimed at preparing learners to use language in the real world: at work, for travelling or for their studies. The new method has targeted the development of language competencies tailored for the students' future professional and personal life. English for Specific Purposes (ESP)—the academic English class taught in non-philological faculties—has greatly benefited from the task-based approach to language teaching.

Once these new methods have been in place—although, one must say, there has been a certain "resistance" from the old school who has mistakenly rushed to proclaim "the demise" of grammar studies—, another important element has completely transformed the face of language education: the incorporation of the affordances offered by the advent of technology, the computers and the Internet in particular. What they have managed to bring in the picture has been the most needed touch of authenticity. Once again, pedagogy has tried to provide theoretical frameworks to integrate the new technologies, hence the emergence of

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Computer Assisted Language Learning (CALL)—budding as early as the 1960s (Warschauer & Healey, 1998)—and, in more recent years, Mobile-Assisted Language Learning (MALL), beginning with 1994 (Callan, 1994), when studies started to acknowledge the use of various types of handheld devices in foreign language classes.

In 2020, the pandemic sent students all over the world in the safety of the virtual space to continue learning. Many e-learning solutions have already been on offer, replacing the physical classrooms, each with its own benefits and shortcomings: Zoom, Google Classroom, Moodle, Microsoft teams, to mention just a few. The language instructors have faced the difficult problem of trying to effectively replace the in-person interaction with a platform that could best facilitate communication and, at the same time, aid in the transmission of knowledge. Although ESP had previously integrated technology in the class design, it was for the first time when it completely exchanged the physical space for the virtual. Moreover, the institutional learning environment was swapped for a personal learning environment, making things even more difficult.

The present paper will focus solely on Google Classroom (GC)—the most used platform for the teaching of Business English class. Although initially Zoom was preferred, once Google Meet was integrated allowing for video classes, GC has become the platform of choice. The article discusses in depth the way GC has been used by language instructors for both the teaching and the final assessment of students' progress.

2. The Specifics of the Business English Class

2.1. English for Specific Purposes

ESP established itself as a fully fledged domain in the second half of the 20th century, in the 1960s more precisely, once English became the international language of commerce and technology. In fact, ESP has a foot in two domains: on the one hand, it is part of Language for Specific Purposes—an approach to language learning focused on the needs of people working or studying in a certain domain—, and on the other hand, it remains heavily indebted to the general objectives of English learning, in particular improving the learner's communication skills, via the acquisition of grammar structures and vocabulary, and enhancement of reading, speaking and listening skills. A comprehensive definition of ESP is given by Räisänen and Fortanet-Gómez (2008): "ESP teaching uses the methodologies and activities of the various disciplines it is designed to serve, and it focuses on the language, lexis, grammar, discourses and genres, of those disciplines rather than using the general grammar, learners' dictionaries and general public genres and discourses." (p. 12).

As the demand for ESP grew, it was further divided into EST (English for Science and Technology), EBE (English for Business and Economics) and ESS (English for the Social Sciences) (Hutchinson & Waters, 1987). Business English is today one of the best established branches of ESP and is taught throughout all Romanian universities which offer a degree in Economics.

2.2. Computer-mediation in the foreign languages class

The 1960s saw a revolution in language education with the advent of CALL. At its first stages indebted to structuralism and dwelling on grammar-translation and audiolingual methods with a view to increasing the learners' accuracy, in the last two decades of the millennium, CALL grew into a communicative approach which used multimedia simulation software to develop learners' fluency. In the 21st century, CALL has become integrative bringing to the ESP class computer-mediated communication and social media. This approach focuses on learners' agency — "the satisfying power to take meaningful action and see the results of our decisions and choices" (Yim & Warschauer, 2016, p.593)

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The author of this article has considered the potential benefits of using the Internet in the ESP classes for several years, long before the pandemic outbreak, in a series of published papers. As early as 2015, the author discussed the findings of a project whose purpose was to create a virtual ecosystem where students enrolled to study one of the several digitalized courses the project put forth (Epure et al, 2015). Among these courses, Strategies of Communication in English proposed a pedagogical method considered innovative at the time. The paper touted the benefits of the flipped classroom which combined "pedagogy and learning technologies in ways that extend to large numbers of student's opportunities for deep learning through application and consolidation." (Sankey & Hunt, 2013, p. 786). Students were able to learn interactively, using authentic materials and engaging activities. It was observed that students' retention rate increased and the overwhelming majority of participants assessed the experience as more enjoyable, engaging and interactive than the traditional in-person classes. Another article started from the observation that the main weakness of the students majoring in Economics was their productive skills, i.e. the capacity to produce a grammatically accurate and persuasive written or spoken discourse in English (Dimitriu & Mihăeş, 2018). The explanation was that the students had not been enough exposed to authentic situations to which to respond properly and correctly. The gradual integration of technology in the ESP class, culminating with the prevalent use of mobile phones, has seen a boost in students' level of competence in English. The limitless potential of mobile technology was further enlarged upon in an article entirely dedicated to MALL (Mihăeş & Dimitriu, 2019). It concluded with the observation that, while MALL enhanced student's receptive skills due to the devices' efficiency and ease of use, the noticeable improvement was, again, in productive skills. Last but not least, a chapter published in 2021, when the whole educational paradigm had already changed, looked at the transition of the ESP class from the traditional medium of instruction to the virtual environment (Mihăeş, 2021). What was new in picture was the implementation, albeit forced, of e-assessment. If previously looked down upon and only tentatively approached by CALL, e-assessment has proven its validity and reliability.

2.3. Business English meets Google Classroom

Business English (BE) is now one of the most common ESP courses taught throughout Romanian universities. This comes as no surprise since the language of commerce is English and many universities prepare students to work in this domain. The BE class taught at the Faculty of Business Administration, University of Bucharest, is a four-semester compulsory subject and is taught for a certain undergraduate studies. The course also continues to some Master's degrees, adding to a total of six semesters. If the primary purpose of BE at the undergraduate level is to teach English for work purposes by bringing linguistic performance in touch with actual business activities, at graduate studies, the emphasis shifts to teaching business discourse.

The students' initial level is generally B1—Treshhold Level (Council of Europe, 2001)—, which means that they are able to carry on a conversation in a range of contexts and deal with everyday life situations. There are also less competent students who are usually grouped in a pre-intermediate group and teaching is tailored for their level. Most of them manage to catch up, so beginning with the third semester, they are able to join the more advanced groups. The students enrolled in English-medium degrees usually have a C1 competency level, which requires that more difficult tasks should be designed for them. Regardless of their entrance level, however, very few of them have a good grasp of the vocabulary pertaining to business.

Another particularity of the BE class is that it further branches out to fit into the various study programmes within the faculty: Business Administration, Public Administration, Marketing

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and Cybernetics. The BE class is designed for each sub-domain, preserving a common core of general BE (especially during the first two semesters). In the traditional in-presence class, the teacher worked with a corpora of authentic materials taken from high-profile economic magazines and newspapers, such as *The Economist*, *The Guardian*, *The Times*, *Forbes*, etc. Likewise, many textbooks were used, in particular the *Market Leader* series. Following the guidelines of the task-based approach, the class concentrated on students' performance of authentic tasks, with a view to practicing and enhancing both receptive and productive skills. Sometimes audio pods were used so that students might practice the listening skills. At the Master's degree level, the BE classes become more specialised, focusing on business discourse rather than on small individual tasks meant to enhance vocabulary or grammar.

When the computer was integrated in the BE class, learning entered a new era. It seemed that the teacher could make the best of both worlds: the activities supposed physical attendance yet, more often than not, the internet connection was used for various tasks. The sudden shift to remote language teaching, i.e. "the practice of teaching a language interactively via videoconferencing" (Stanley, 2019, p. 8), was, in itself, a small revolution. It is more than what the researchers have documented and described in CALL and MALL, because the language instructor had, this time, both to teach the lesson and command the technology (for instance, to manage the screen for presentations, images, videos, etc., to manage the students and sometimes even to have to overcome technical problems, such as unstable internet connection or camera issues).

In March 2020, almost overnight, the classes were moved in the online environment. It was not a carefully planned move and there was no transition period, no time for preparations or training of any kind. Everybody was taken aback, so, after a short period of trial and error to see which technical solution worked out better, the BE classes began to be held synchronously on Zoom and Google Classroom.

GC was launched in 2014, initially to assist teachers and students with file sharing. It has grown rapidly so that by 2021, it has already been used by 150 million people (Lazare, 2021). The success of the platform has been enhanced by the switch to online classes due to the pandemic. What makes it so popular is both the fact that it is a free source and that it integrates a series of other useful applications (Google Docs, Google Sheets, Google Slides, Gmail, and Google Calendar). Google Classroom offers a series of facilities to both teachers and enrolled students. Teachers can create and manage classes, upload materials and videos, create, distribute, receive and score assignments. Students, in turn, can upload assignments, they can receive feedback and have their assignments scored.

The integration of Google Meet in Google Suite offered the possibility to videoconferencing, so Zoom began to be used less and less. Google Meet can foster up to 100 students (more than enough as groups are usually made up of no more than 30 students) and allows the recording of classes. Participation in these online meetings was not made compulsory as not all students had an available internet connection at all times. Instead, the weekly assignments had to be solved by everybody. The answers were stored in GC and students received private feedback from the professor.

3. The Digital Teacher: Teaching and Assessment in the Virtual Space

Moved from the physical seminar rooms to the infinity and anonymity of the virtual space, the first thing the teachers had to do was to set up an online classroom. This can be done either by personally inviting students or by distributing the course code while students enrol themselves. One of the first difficulties that had to be surmounted was the incompatibility of certain e-mail addresses (like yahoo) with GC, therefore new Gmail addresses had to be created. In fact, the heavy reliance on Google apps and services was

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considered the major flaw of GC (Pappas, 2015). When both students and teachers began to use the institutional addresses, the problem was solved.

The second step has involved the creation and distribution of course materials. Besides the regular sources used in face-to-face teaching, too, the instructors have found it easier now to update their materials and use the latest issues of various business magazines and newspapers, together with the podcasts they offer. It has been observed that students are more receptive to materials that discuss the latest developments and trends in the field of economics and, as a consequence, their retention rate is higher. The course materials have been designed so as to enhance both receptive skills (listening and reading) and productive skills (speaking and writing), yet in a more holistic manner than before. If in the physical classroom it was more difficult to teach all skills during the same seminar, the online medium has allowed for the accomplishment of a greater variety of tasks. The task-based teaching method has remained the approach which has shaped the course design. The philosophy behind this approach—learning by doing (Gonzalez-Lloret, 2016, p. 1)—is very consonant with technology. Tasks have been chosen to best fit the student's profile. Moreover, GC permits both a traditional teacher-led class and collaborative learning, students being able to step forward as the teacher lets them take the lead.

The reading activities have been centred on business texts and required students to read for the gist and for details, to understand the author's opinion and then express their own. Listening activities have gained more ground, sometimes accompanied by video materials, which has made the task even more challenging. For both reading and listening activities, there is a multitude of possibilities for the teacher to design tasks in order to check comprehension. GC allows the teacher to create questions, quizzes or share resources. The tasks may be made visible instantaneously or they can be scheduled as assignments with set deadlines. Once submitted, students may go over their answers if the teacher considers it necessary. This means that students can improve their weak points, allowing the teacher to keep track of the students who lag behind and to intervene spot-on whenever necessary with supplementary explanations or extra resources.

For speaking practice, hot issues have been usually chosen to keep students' interest alive. For example, a topic which is always engaging is crypto currency. Students can work in small groups to debate the topic, trying to construct their argumentation in a logical manner, using a wide range of BE vocabulary and linking expressions acquired through the writing tasks. Students can also make the debate more interesting by using whatever online resources they may consider helpful to illustrate their point. Speaking activities can be part of assignments, encouraging collaboration beyond the class.

GC has helped restoring the writing activities to the important place they once held in the more traditional approaches to language education. Writing is usually done as a follow-up, post-task activity, part of the assignment, so that the teacher may have time to check the papers. In face-to-face classes, only some pieces of writing got to be checked by the teacher. As a Learning Management System, GC enables teachers to track learning. Students' progress and their grades are visible on their personal pages. Perfecting writing skills (which includes, among other things, the usage of the formal register and an adequate business vocabulary) is very important in particular because some students decide to apply for English-medium graduate and post-graduate degrees (Master's Degrees, PhDs and even MBAs) where excellent wring skills are mandatory. Moreover, many students will work in multinational companies where English is used on a daily basis.

Computer-based assessment has always been regarded with scepticism by researchers. Douglas (2000), for example, underlined that language testing should not be driven by technology, but rather technology should be put in the service of language testing (p. 275). Prior to March 2020, all assessments were classroom-based, either as oral examinations or paper-based end-of-semester exams. GC has eased the

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teacher's job to evaluate students because a clear measurement of their progress throughout the semester sets the ground for a more accurate and valid assessment. The reliability of scores is extremely important and the European Union has urged language educators to improve the relevance and comparability of testing and assessment (European Commission, n.d.).

Presentations and electronic portfolios (also called e-portfolios, e-folios, digital portfolios or web folios) have been the most used methods of assessment. An e-portfolio is "a digitized collection of artifacts including demonstrations, resources, and accomplishments that represent an individual, group or institutions." (Lorenzo & Ittelson, 2015). Differently from traditional portfolios, electronic porfolios may include video, graphics, short clips, etc. This form of assessment mainly checks the productive skills (speaking and writing) while the receptive skills (listening and reading) have been more subject to continuous evaluation throughout the semester.

The same task-based approach has been used for the e-portfolios. First-year students had to choose a successful business enterprise in their home town and describe it in economic terms (they had to use the business vocabulary acquired during the semester). Some students even took pictures of the company they discussed (and some even of their town) and included them in their presentation which added a flavour of authenticity to the whole endeavour. Second-year students had to compile a portfolio on how businesses have managed to survive during the pandemic. The task was to pick up a particular industry and, using various type of data – including tables, graphics, etc.—to dwell on its state during the last two years (a "before and after" comparison). The students had to briefly present their papers using Power Points slides. The Master-degree students worked in pairs to create their own business plan—the task was to set up their own company and describe the major problems they may encounter and how they could overcome them. Again, visual aids were used when presenting.

Several conclusions have been drawn: there has been a clear improvement in students' writing skills from the first-year students to those enrolled in the Master's degree; e-portfolios have favoured reflective learning (students become more aware of the language they use and more critical about the ideas they promote and the sources they use); there has been an increased interaction among students and the teacher; a faster and spot-on feedback from the teacher's part has been provided.

4. Conclusions

Google Classroom continues to develop, with new features and facilities being added. Among them, tracking students' engagement, improving the access to GC from a mobile device (including the possibility to grade students' papers from a mobile phone) and the possibility to detect potential plagiarism will ease even further the teacher' job. Although once the pandemic is over and the classes will more likely return to the traditional face-to-face format, technology will still be around as it has proven its benefits: personalised learning environments, interactivity, special features, accessibility from any device, anytime, anywhere. As the author of this article has noted elsewhere, there is, however, the feeling that teachers might become redundant one day, their place taken by the very computers that prove to be so helpful nowadays (Mihăeş, 2021). A more optimistic (and realistic) scenario is that various forms of blended learning will replace the traditional learning once the pandemic is over.

Just like with CALL and MALL, technology is an enabler but without a skilful hand that manoeuvres it, it remains just a tool. Therefore, to quote the conclusion reached by Education Endowment Foundation (EEF) Digital Technology report on educational technology (2016) "introducing technology on its own is

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unlikely to have an impact; it must be accompanied by a change in pedagogy to improve learning." Pedagogy will have to post-factum provide more solid theoretical frameworks for remote language teaching, but one thing is by now sure: the computer is here to stay.

5. References

[1] Callan, S. (1994). Can the use of hand-held personal computers assist transition students to produce written work of excellent quality? Wentworth County Board of Education, Ontario, Canada.

[2] Council of Europe. (2001). *Common European framework of reference for languages: Learning, teaching, assessment.* Cambridge, United Kingdom: Cambridge University Press.

[3] Dimitriu, A., & Mihăeș, L. C. (2018). Business English in the Age of Technology-a Reappraisal of the Traditional Framework. In *The International Scientific Conference eLearning and Software for Education* (Vol. 2, pp. 447-452). "Carol I" National Defence University.

[4] Douglas, D. (2000). *Assessing language for specific purposes*. Cambridge, United Kingdom: Cambridge University Press.

[5] EEF (Education Endowment Foundation) (2016) Digital Technology Report, Education Endowment Foundation. Available at: https:// educationendowmentfoundation.org.uk/resources/ early-years-toolkit/digital-technology

[6] Epure, M., Vasilescu, R., & Mihaes, L. (2015). Adapt2jobs-a new learning ecosystem. In *The International Scientific Conference eLearning and Software for Education* (Vol. 1, p. 53). "Carol I" National Defence University.

[7] European Commission. (n.d.). Languages in education - Education and training. Retrieved from http://ec.europa.eu/education/policy/multilingualism/languages-in-education_en

[8] Gonzalez-Lloret, M. (2016). A practical guide to integrating technology into task-based language teaching. Washington, DC: Georgetown University Press.

[9] Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach.* Cambridge, United Kingdom: Cambridge University Press.

[10] Lazare, M. (2021). A Peek at what's next for Google Classroom. Retrieved from Google Classroom Roadmap (blog.google)

[11] Long, M. H. (1985). A role for instruction in second language acquisition: task-based language teaching. In Hyltenstam, K., & Pienemann, M. (eds.), *Modeling and assessing second language development* (pp. 77-99). Clevedon, Avon: Multilingual Matters.

[12] Lorenzo, G., & Ittelson, J. (2005). An overview of e-portfolios. *Educause Learning Initiative, 1(1),* 1-27.

[13] Mihăeș, L. C., & Dimitriu, A. (2019). Communication Matters: Upgrading the Communicative Approach to ESP Through Smartphones. In P. Feraria (Ed.), *English Language Teaching in a Post-Method Paradigm* (pp. 207-226). IGI Global. http://doi:10.4018/978-1-5225-9228-0.ch009

[14] Mihăeș, L. C. (2021). English for Specific Purposes in the Digital Age: The University of Bucharest in the Context of the European Union**.** In Kelch, K. B., Byun, P., Safavi, S., & Cervantes, S. (Eds.), *CALL Theory Applications for Online TESOL Education* (pp. 322-341). IGI Global. http://doi:10.4018/978-1-7998-6609-1.ch014

[15] Pappas, C. (2015). "Google Classroom Review: Pros And Cons Of Using Google Classroom In eLearning". *eLearning Industry*.

[16] Prabhu, N.S. (1987). Second language pedagogy. Oxford: Oxford University Press.

ISSN: 2247-6172, ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume23, Issue 1 / 2022), pp. 40-xxx
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[17] Räisänen, C. A., & Fortanet-Gómez, I. (2008). The State of ESP Teaching and Learning in Western European Higher Education After Bologna. In I. Fortanet-Gómez & C. A. Räisänen (Eds.), *ESP in European Higher Education: Integrating Language and Content* (pp. 11–52). The Netherlands: John Benjamins.

[18] Sankey, M.D., & Hunt L. (2013). Using technology to enable flipped classroom whilst sustaining sound pedagogy. In *Electric Dreams*, 630th ascilite Conference. Macquarie University, Sydney.

[19] Stanley G. (2019). Introduction to Remote Language Teaching. In G. Stanley (Ed.) *Innovations in education. Remote teaching* . British Council: UK.

[20] Warschauer, M., & Healey, D. (1998). Computers and language learning: An overview. *Language Teaching, 31*, 57–71. doi: 10.1017/S0261444800012970

[21] Yim, S. & Warschauer, M. (2016). CALL and electronic media. In K. Hyland & P. Shaw (Eds.), *The Routledge Handbook of English for Academic Purposes* (pp. 592-607). New York: Routledge.

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Bank Competition and Stability: Evidence from Rural Banks in Bali

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Abstract. *The relationship between competition and stability is widely understood by researchers with two different perspectives, namely competition-fragility and competition-stability. A lot of research has been conducted regarding the relationship between competition and stability in the banking sector but has not specifically examined the stability of the classic model of rural banks. The purpose of this study was to empirically examine the effects of rural banks' competition and stability based on the aspects of capital, earning asset quality, profitability and liquidity. The indicators used in this study are adjusted to the characteristics of rural banks and existing regulations. The results of the study indicate that the competition variable has a significant positive effect on the stability of rural banks, and supports the view of competition stability.*

Keywords: Banking Stability, Competition, Financial Crisis, Rural Banks

JEL Codes: G01, G21

1. Introduction

A Bank crisis is a phenomenon that can occur at any time. Demirguc-Kunt and Detragiache (1998) defined a bank crisis as a condition in which one of the following conditions is met: (1) non-performing assets account for 10% of the total assets of the banking system; (2) the cost of saving the banking system is up to 2% of Gross Domestic Product (GDP); (3) there was a transfer of ownership of banks on a large scale to the government; and (4) there has been a widespread bank-run or there have been emergency measures taken by the government in the form of freezing public savings, closing bank offices for a sufficiently long period of time, or implementing comprehensive deposit insurance. Reinhart and Rogoff (2008) reported that there were as many as 121 banking crises in the world from the period 1800-1970 (Deltuvaitė, 2011). Furthermore, in the period 1970-2007, 124 banking crises were indicated worldwide (Laeven & Valencia, 2008).

The facts showed that there is always a chance for a financial crisis to occur. Banks can survive a financial crisis if they have sufficient capital during a crisis. In America, there are five capital adequacy ratios that must be met by banks to protect themselves from the risk of loss during a crisis, namely: capital ratio, tier 1 ratio, common equity tier 1 (CET1) ratio, leverage ratio, and supplemental leverage ratio (García & Steele, 2020). Schuermann (2014) states that the standard approach of relying on capital ratios is unable to provide good information about how much capital is needed to face a financial crisis so stress testing is an indispensable tool.

Financial authorities and banks do need to carry out disaster simulations through stress tests in order to better prepare themselves for the various possibilities that may occur in the future. Besides conducting stress

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tests to prepare for various possibilities that arise in the future, another important thing is to maintain financial stability so that financial crises can be avoided. Financial stability is defined as a condition in which the financial system consisting of financial institutions, financial markets, and financial infrastructure can accept shocks and harmonize with existing conditions to reduce the possibility of disruptions in the financial intermediation process, thereby significantly changing the allocation of savings. be a profitable investment opportunity (Gadanecz & Jayaram, 2009).

The financial structure in Indonesia is not dominated by the capital market, but rather by banking institutions (Zulverdi et al., 2005). With the dominance of the financial structure by banking institutions, banking stability is very important to be considered. If we investigate further the causes of instability in the banking industry originating from the internal banking sector, then of course attention will be focused on the competition in that sector. With increasingly fierce competition, various new banking activities emerged. This is in accordance with what Vives (2019) stated, which states that competition is a source of instability in the banking sector.

The relationship between competition and stability is widely understood by researchers from two different points of view, namely competition-fragility and competition-stability (İskenderoğlu & Tomak, 2013). Competition stability states that higher competition will result in the banking sector becoming more stable, while competition-fragility states the opposite, namely that higher competition will result in instability in the banking sector.

Given these different views, it is necessary to conduct empirical research related to the relationship between rural banks' competition and stability because there was very little literature on the competition and stability of rural banks. In addition, rural banks play an important role in the economy of all provinces in Indonesia, especially in Bali because Bali is ranked in the top three in terms of assets or loans disbursed.

2. Research Elaboration

The history of banking shows that the emergence of banking activities outside existing regulations such as Real Estate Investment Trusts (REIT), mutual funds (mutual funds), and securitization (conversion of financial assets such as credit cards, bank loans, and mortgages or physical assets into financial instruments tradable), has become a source of instability and even panic that resulted in the banking crisis. Bikker and Haaf (2000) emphasized that deregulation and advances in information technology contributed to changes in competition and concentration marked by merger activities in the banking sector in Europe.

The various banking activities that have just emerged are a reflection of the intense competition that occurs in the banking world. The main contributor to financial institutions in taking risks is competition (Naaman et al., 2021). Vives (2019) states that competition is related to all failures (instability) in the financial and banking system, such as excessive risk-taking, excessive credit expansion, unreasonable growth, and bad bank behavior. However, it should also be understood that competition is also a source of efficiency in various fields.

Rakestraw (2015) emphasized that the higher the competition, the lower the economic benefits that can be obtained, which in turn will reduce the value of the company. With tighter competition, there is a chance for incumbent firms to leave the industry (exit the market). If a bank experiences problems and spread to others or it has a systemic impact on the banking system, then this situation can certainly result in a slowdown in the real sector accompanied by high social costs and moral-hazard problems (Vives, 2019). Due to the large impact on the economy, competition conditions need to be monitored continuously in order to maintain banking stability.

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The difference in views and research findings on competition and stability variables is related to the charter value hypothesis which is first introduced by Keeley (1990). In principle, the charter value states that if the competition is lower, then banks will be more careful in channeling loans because banks are worried about losing the current value of cash flows that will be received at a later date (charter value). A different view is introduced by Boyd and Nicola (2005) regarding the risk shifting view which states that the higher the competition, the banks cannot provide higher interest (lower risk) so that the chances of default for customers are lower or in other words the banking system becomes more stable. Hartmann and Carletti (2002) stated that theoretically, there is no agreement about the direction of the relationship between competition and stability. Claessens and Laeven (2004) stated that the relationship between competition and stability becomes more complex as financial products diversify.

The empirical evidence of the relationship between competition and stability has been studied by Schaeck and Cihak (2012) who stated that competition has a positive effect on banking stability. The main contributor to financial institutions taking risks is competition (Naaman et al., 2021). On the other hand, Vives (2019) stated that competition is a source of instability in the banking sector. Freixas and Ma (2014) also stated that the effect of competition on financial stability can have different results in the banking sector model which is classified as originate-to-hold (classic) and originate-to-distribute. Jun and Yeo (2018) conducted research on Peer-to-Peer (P2P) Lending Platforms and Banking System Stability by emphasizing portfolio risk, insolvency risk, liquidity risk, and systemic risk. The effect of the competition is analyzed separately for each of these risks. The business competition analyzed is not only related to the banking sector but also involves P2P Lending. The results of his research indicate that bank stability has decreased as measured by insolvency risk, illiquidity risk, and systemic risk in the presence of bank competition with P2P Lending.

2.1. Banking Stability Indicators

Research on financial stability, especially in the banking sector, is not an easy job. The definition of financial stability itself is not easy, especially how to measure it. Gadanecz and Jayaram (2009) defined financial stability as a condition in which the financial system consisting of financial institutions, financial markets and financial infrastructure can accept shocks and adapt to existing conditions to reduce the possibility of disruptions in the financial intermediation process. thus significantly changing the allocation of savings into profitable investment opportunities (Kočišová, 2015). Tsomocos (2003) defined financial instability as a condition in which a number of bank customers experience default and a number of banks experience liquidity difficulties without having to go bankrupt, resulting in a significant decrease in the profitability of the banking sector.

Dumicic (2016) conducted a study to determine indicators of financial stability using the principal component analysis method which is then summarized in the Systemic Risk Accumulation Index (SRMI). Freixas and Ma (2014) measured stability based on the risks faced by banks. Bank risk is classified into four risks, namely asset/portfolio risk, insolvency risk, illiquidity risk, and systemic risk. These risks are measured using several indicators such as Non-Performing Loans (NPL), z-score, distance to default, and other accounting data. The International Monetary Fund (IMF) has also developed Financial Soundness Indicators (FSIs) to measure financial stability using 40 indicators consisting of 12 core indicators (Core Financial Soundness Indicators) and 28 supporting indicators.

In various countries, many studies have attempted to identify conditions that can ensure the maintenance of a stable financial system. Research that has been conducted in various countries related to financial stability states that the main indicator that is widely used to measure financial stability is related to CAMELS

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(C - Capital Adequacy, A - Asset Quality, M - Management, E - Earning, L - Liquidity, S - Sensitivity to Market Risk).

Table 1: Financial Stability Indicators

Researcher	Year	Indicators
Gersl and Hermanek	2007	Capital adequacy (CAR)
		Asset quality (NPL/TL)
		Profitability (ROA, ROE)
		Liquidity (LA/TA, LA/TD)
		Interest rate risk (Net position/TA)
		Foreign exchange risk (FX1, FX2)
Central Bank of the Republic of Turkey	2008	Asset quality (NPL/TL, NPL/E, FA/TA)
		Liquidity (LA/TA)
		Exchange rate risk (FX1, FX2)
		Profitability (ROA, ROE)
		Capital adequacy (CAR, FC/TA)
		Interest rate risk (Net position/E)
Albulescu	2010	Financial development index
		Financial vulnerability index
		Financial soundness index
		World economic climate index
Bank of Albania	2010	Asset quality (NPL/TL, NPL/E, FA/TA)
		Liquidity (LA/TA, STA/STL)
		Exchange rate risk (FX1, FX2)
		Profitability (ROA, ROE)
		Capital adequacy (CAR, FC/TA)
		Interest rate risk (Net position/E)
Maudos	2012	Profitability (ROA)
		Solvency (CAR)
		Efficiency (CI)
		Asset quality (NPL/TL)
Ginevičius and Podviezko	2013	Capital adequacy (CAR)
		Asset quality (NII, TL/TA, DELINQ, LD)
		Management (NIE/GI)
		Earnings (PPP/RWA, NI/RWA)
		Liquidity (TD/TL, LIQ)
Laznia	2013	Profitability (ROA)
		Liquidity (TD/TL)
		Capital adequacy (CAR)
		Asset quality (NPL/TL)
Trovska and Mihajlovska	2013	Insolvency (CAR)
		Credit risk (NPL/TL, GNPL)
		Profitability (ROE, NIE/GI)
		Liquidity (LA/TA, LA/TD)
		Currency risk (Net FX/OF)

* CAR-Capital adequacy ratio, CI-Cost to income ratio, DELINQ-Delinquent loans/Total assets, FA/TA-Fixed assets/TAs, FC/TA-Free capital/TA, FX1-Absolute value of open total position in foreign exchange/Tier 1 capital, FX2-Absolute value of open balance sheet position in foreign exchange/Tier 1 capital, GNPL-Annual growth rate of

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non-performing loans, LA/TA-Liquid assets/TA, LA/TD-Liquid assets/Total deposits, LD-Loan value decrease/TA, LIQ-Regulatory liquid ratio, NI/RWA-Net income/Risk weighted assets, NII-Net interest income/Risk weighted assets, Net FX/OF-Net open position in foreign exchange/Own funds, Net position/E-Cumulative net balance sheet position to 1 month/Equity, Net position/TA-Cumulative net balance sheet position to 3 month/TA, NIE/GI-Non-interest expenses/Gross income, NPL/E-Non-performing loans/Shareholders´ Equity, NPL/TL-Non-performing loans/Total loans, PPP/RWA-Pre-provision profit/Risk weighted assets, ROA-Return on assets, ROE-Return on equity, STA/STL- Assets with a maturity up to 3 months/Liabilities with a maturity up to 3 months, TA- Total assets , TD/TL-total deposits to total loans, TL/TA-Total loans/TA

Source: Kočišová (2015)

Besides being used to explain the condition of banking stability, the CAMEL method is often used to determine the soundness level of an individual bank. In Indonesia, the procedure for determining the soundness level of a bank has been regulated since the issuance of the Decree of the Board of Directors of Bank Indonesia Number 30/12 / KEP / DIR / 1997. In this regulation, the assessment of bank soundness is determined based on five factors, namely capital, earning asset quality, management, profitability, and liquidity.

Based on the existence of rules regarding the assessment of bank soundness as a determinant of banking stability as a whole, the indicators used in this study is measuring the latent variable of rural banks stability are also adjusted to existing regulations. In addition to providing regulations regarding procedures for determining the soundness level of a bank, the government also requires rural banks to submit financial reports in accordance with the regulation SE OJK No. 39/SEOJK.03/2017 concerning Annual Reports and Published Financial Reports of Rural Banks in Indonesia.

Taking into consideration the provisions and data availability, this study describes rural banks stability into four components with the following seven indicators.

1) Capital

   Assessment of capital is based on the Capital Adequacy Ratio (in Indonesia known as Kewajiban Penyediaan Modal Minimum or KPMM) which is calculated based on the Total Capital to Risk Weighted Assets (RWA). According to the regulation POJK No. 5/POJK. 03/2015, Total Capital is a combination of core capital (tier-1) and supplementary capital (tier-2), while ATMR is the amount of assets on the balance sheet of a rural bank that is weighted according to the level of risk attached to each asset.

2) Earning Asset Quality

   The components of earning asset quality are based on two ratios, namely:

   a. Ratio of Classified Earning Asset to Earning Assets (in Indonesia known as Kualitas Aktiva Produktif or KAP).

   b. Ratio of Provision for Loan Losses established by the bank to Provision for Loan Losses that must be established by the bank (in Indonesia known as Penyisihan Penghapusan Aktiva Produktif or PPAP).

3) Profitability

   The profitability component is based on two ratios, namely:

   a. Ratio of Profit Before Tax in the last 12 months to the average Operating Volume in the same period.

   b. Ratio of Operating Expenses in the last 12 months to Operating Income in the same period.

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4) Liquidity

Liquidity component is based on two ratios, namely:

a. Ratio of Liquid Assets to Current Debt.

b. Ratio of Credit to Funds Received by the bank.

Table 2: Rural Banks Stability Indicators

Component/Factor	Indicators
Capital	KPMM
Earning Asset Quality	KAP
	PPAP
Profitability	ROA
	BOPO
Liquidity	LDR
	Cash Ratio

* KPMM-Kewajiban Penyediaan Modal Minimum (CAR-Capital Adequacy Ratio), KAP-Kualitas Aktiva Produktif (NPL/TL- Non-performing loans/Total loans), PPAP-Penyisihan Penghapusan Aktiva Produktif (provision for loan losses), ROA-Return on Assets, BOPO-Beban Operasional Pendapatan Operasional (operating expense to operating revenue), LDR-Loan to Deposit Ratio

2.2. Competition Measurement

Basically, there are two approaches used to measure competition, namely structural and non-structural approaches (Astuti & Saputra, 2019). Bikker and Haaf (2002) stated that the structural approach measures competition based on the level of concentration, while the non-structural approach measures competition not based on the level of concentration. The simplest method of measuring competition is to measure the level of concentration (control of most of the existing market by several banks) using the Concentration Ratio (Wibowo, 2017). The concentration ratio (CR) is a measure of competition that can be calculated from the proportion or percentage of income, profits, or third party funds in the banking sector which is dominated by several large banks.

Calculations based on a few existing banks or ignoring the market share distribution of other banks have a high chance of producing inappropriate conclusions regarding the level of competition that exists (Wibowo, 2017). Therefore, many researchers use another measure, namely the Herfindahl-Hirschman Index (Naaman et al., 2021). The Herfindahl-Hirschman Index (HHI) measures the level of competition using the same way as the Concentration Ratio, however it involves all existing banks. Mathematically it can be expressed in the following formula:

$$HHI \equiv \sum_{i}^{N} s^2(i) \quad (1)$$

Annotation

s(i) : market share of bank i

N: the total number of existing banks

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The value of the HHI is between 0 and 10000. The value of the HHI close to 0 means that it leads to perfect market competition, while the value of the HHI close to 10000 means that it leads to a monopoly market. This means that the higher the HHI value indicates a lower level of competition.

Table 3: Market Classification

Market Type	Treshold HHI
Unconcentrated	< 1500
Moderately Concentrated	1500 < HHI < 2500
Highly Concentrated	> 2500

Source: US Department of Justice (2015)

2.3. Hypotheses

Based on the identification of phenomena, and literature review regarding the relationship between competition and stability, the research hypothesis can be formulated as follows.

H.1. Competition has a positive effect on rural banks' stability in the aspect of capital.

H.2. Competition has a positive effect on rural banks' stability in the aspect of asset quality.

H.3. Competition has a positive effect on rural banks' stability in the aspect of profitability.

H.4. Competition has a positive effect on rural banks' stability in the aspect of liquidity.

H.5. Competition has a positive effect on rural banks' stability.

2.4. Research Methodology

In this study, the competition variable was measured using the Herfindahl-Hirschman Index (HHI) and the latent variable of rural banks' stability was measured using four components, namely capital, earning asset quality, profitability and liquidity. These four components are latent variables with seven reflective indicators, namely Kewajiban Penyediaan Modal Minimum shortened to KPMM (CAR-Capital Adequacy Ratio), Kualitas Aktiva Produktif shortened to KAP (NPL/TL- Non-performing Loans/Total loans), Penyisihan Penghapusan Aktiva Produktif shortened to PPAP (provision for loan losses), ROA (Return on Assets), Beban Operasional Pendapatan Operasional shortened to BOPO (operating expense to operating revenue), and LDR (Loan to Deposit Ratio).

Before the analysis is carried out, the indicators on the variable of competition and stability are adjusted. Adjustments are made only to indicators that have a negative impact on the latent variable. The adjusted value is the reciprocal value of the indicator value which has a negative impact on banking stability.

Table 4: Indicator Adjustments

Latent Variable	Indicators	Impact	Adjustment
Competition	HHI	-	Reciprocal (HHI)
Capital	KPMM	+	KPMM
Asset Quality	KAP	-	Reciprocal (KAP)
	PPAP	+	PPAP
Earning	ROA	+	ROA
	BOPO	-	Reciprocal (BOPO)
Liquidity	LDR	-	Reciprocal (LDR)
	Cash Ratio	+	Cash Ratio

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Furthermore, to explain the characteristics of the variables and answer the research hypothesis used descriptive and inferential statistics. The analytical tool used to test the hypothesis in this study is the analysis of Structural Equation Modeling (SEM). SEM is used in this study because this study examines the relationship between latent variables that cannot be measured directly but are measured through the indicators of each latent variable. SEM in this study uses the Partial Least Square (PLS) approach. PLS is used because it has the following advantages (Pirouz, 2006).

1) PLS can do modeling using many independent variables and dependent variables.
2) PLS can handle collinearity problems.
3) PLS produces robust estimates even if there is noise or missing data.
4) PLS is able to produce accurate predictions.
5) PLS is able to handle measurement models in a reflective and formative way.
6) PLS can be used on small amounts of data samples.
7) PLS is not tied to any form of data distribution.
8) PLS can be used for various types of data: nominal, ordinal, interval or ratio.

3. Results and Discussions

In SEM analysis, the first step is to build a model that fits the research problem. The SEM model consists of a measurement model (outer model) and a structural model (inner model). Nachtigall et al. (2003) stated that the measurement model is a model that contains the relationship between the latent and observed variables, while the structural model contains the relationship between the latent variables.

In a measurement model, a latent or construct variable can be formed in a reflective and formative manner. In this study, the variable of rural bank stability is a construct that is formed reflectively. This means that BPR stability does not have to be stated as a combination of all its components, but can be reviewed separately based on aspects of capital, asset quality, profitability, or liquidity. To test the effect of the research variables, three stages were carried out as follows.

1) Measurement Model Assessment

Measurement model assessment is used to test whether indicators can explain latent variables. One way that can be used is to perform convergent validity analysis by looking at the outer loading value of each indicator in the research variable. The absolute value of outer loading $\geqslant$ 0.7 is said to be valid (Henseler et al., 2016).

Table 5: Indicator Adjustments

Laten Variable	Indicators	Outer Loading	Decision
Competition	R HHI	1.000	Valid
Capital	KPMM	1.000	Valid
Asset Quality	R KAP	0.940	Valid
	PPAP	0.980	Valid
Earning	ROA	0.992	Valid
	R BOPO	0.991	Valid
Liquidity	R LDR	0.892	Valid
	Cash Ratio	0.843	Valid

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* R HHI-Reciprocal HHI, R KAP-Reciprocal KAP, R BOPO-Reciprocal BOPO, R LDR-Reciprocal LDR

Then to ensure that the latent variables are valid and reliable, the Construct Reliability and Validity test are required. A construct is said to be valid and reliable if it meets the following criteria: rhoA $\geqslant$ 0.7 or Average Variance Extracted (AVE) $\geqslant$ 0.5 (Henseler et al., 2016).

Table 6: Indicator Adjustments

Latent Variable	rhoA	AVE	Decision
Competition	1.000	1.000	Valid & Reliable
Capital	1.000	-	Valid & Reliable
Asset Quality	0.857	0.855	Valid & Reliable
Earning	0.983	0.983	Valid & Reliable
Liquidity	0.688	0.753	Valid & Reliable

2) Structural Model Assessment

Structural model assessment is used to determine the quality of the model. The quality of the model can be confirmed by looking at the coefficient of determination (R2) which states how big the role of exogenous variables is in explaining endogenous variables. R2 values are between 0 and 1. The higher R2, the more accurate the model is. As a rule of thumb, R2 values of 0.75, 0.50, and 0.25 are categorized as substantial, moderate, and weak respectively.

Table 7: Coefficient Determination

Latent Variable	R^2	R^2 Adjusted	Rule of thumb
Capital	0.370	0.349	Weak
Asset Quality	0.871	0.866	Substantial
Earning	0.955	0.954	Substantial
Liquidity	0.923	0.920	Substantial
Stability	0.717	0.708	Substantial

3) Bootstrapping

Bootstrapping is used to test the significance of the relationship between variables so that it can be determined whether the research hypothesis can be accepted or rejected.

Table 8: Hypotheses Testing

Variables	Estimate	t-value	Sig	Decision
Stability => Capital	-0.608	7.002	***	Accepted
Stability => Asset Quality	0.933	38.629	***	Accepted
Stability => Earning	0.977	109.441	***	Accepted

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Stability => Liquidity	0.961	45.209	***	Accepted
Competition => Capital	-0.515	7.006	***	Accepted
Competition => Asset Quality	0.790	13.647	***	Accepted
Competition => Earning	0.828	14.514	***	Accepted
Competition => Liquidity	0.813	12.966	***	Accepted
Competition => Stability	0.847	15.662	***	Accepted

Based on the results of the data output through the bootstrapping process, it can be concluded that the research results are as follows.

Table 8: Hypotheses Conclusion

Hypothesis	Statement	Total Effect	Decision
H1	Competition has a positive effect on rural banks' stability from the aspect of capital	-0.515	Not Accepted
H2	Competition has a positive effect on rural banks' stability from the aspect of asset quality	0.790	Accepted
H3	Competition has a positive effect on rural banks' stability from the aspect of profitability	0.828	Accepted
H4	Competition has a positive effect on rural banks' stability from the aspect of liquidity	0.813	Accepted
H5	Competition has a positive effect on rural banks' stability	0.847	Accepted

4. Conclusion and Recommendations

4.1. Conclusion

The results showed that the model used in this study and its indicators can explain the relationship between latent variables (constructs) competition and stability. Competition turns out to have a negative effect on stability from the aspect of capital. This means that the higher the competition, the lower the stability of the rural banks in terms of capital. In addition, competition has a positive effect on stability in terms of the quality of earning assets, profitability, and liquidity. Overall, it can be concluded that competition has a positive effect on rural banks' stability. This means that the higher the competition, the better the stability of the rural banks. Thus, this study supports the competition-stability view.

4.2. Recommendations

During the research period, the rural banks never experienced instability. Future research may use data more widely, including data reflecting the conditions of banking instability. If data on bank instability are

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included, there is a possibility that competition will have a positive effect on stability, but under certain conditions, the opposite occurs. In other words, there is a chance that the relationship between competition and stability will have an inverted U-shape.

5. References

[1] Astuti, U. H. W., & Saputra, P. M. A. (2019). Efficiency and Competition in Banking Industry: Case for ASEAN-5 Countries. Scientific Annals of Economics and Business, 66(2), 141–152. https://doi.org/10.47743/saeb-2019-0011

[2] Bikker, J. A., & Haaf, K. (2002). Competition, concentration and their relationship: An empirical analysis of the banking industry. Journal of Banking & Finance, 26(11), 2191–2214. https://doi.org/10.1016/S0378-4266(02)00205-4

[3] Bikker, J., & Haaf, K. (2000). Measures of Competition and Concentration in the Banking Industry: A Review of the Literature. Economic and Financial Modelling, 9.

[4] Boyd, J., & Nicola, G. (2005). The Theory of Bank Risk Taking and Competition Revisited. Journal of Finance, 60, 1329–1343. https://doi.org/10.1111/j.1540-6261.2005.00763.x

[5] Claessens, S., & Laeven, L. (2004). What Drives Bank Competition? Some International Evidence. Journal of Money, Credit and Banking, 36, 563–583. https://doi.org/10.1353/mcb.2004.0044

[6] Deltuvaitė, V. (2011). Measuring The Costs Of Banking Crises: Theoretical And Practical Aspects. Journal of Economics and Management.

[7] Demirguc-Kunt, A., & Detragiache, E. (1998). Financial Liberalization and Financial Fragility. The World Bank, Policy Research Working Paper Series, 98. https://doi.org/10.5089/9781451850512.001

[8] Dumicic, M. (2016). Financial Stability Indicators – The Case of Croatia. Journal of Central Banking Theory and Practice, 5. https://doi.org/10.1515/jcbtp-2016-0006

[9] Freixas, X., & Ma, K. (2014). Banking Competition and Stability: The Role of Leverage. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2488426

[10] Gadanecz, B., & Jayaram, K. (2009). Measures of financial stability—A review. IFC Bulletin, 31.

[11] García, R. E., & Steele, S. (2020). Stress testing and bank business patterns: A regression discontinuity study. Journal of Banking & Finance, 105964. https://doi.org/10.1016/j.jbankfin.2020.105964

[12] Hartmann, P., & Carletti, E. (2002). Competition and stability: What's special about banking? Monetary History, Exchange Rates and Financial Markets: Essays in Honour of Charles Goodhart, 2. https://doi.org/10.4337/9781781950784.00021

[13] Henseler, J., Hubona, G., & Ray, P. (2016). Using PLS Path Modeling in New Technology Research: Updated Guidelines. Industrial Management & Data Systems, 116, 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

[14] İskenderoğlu, Ö., & Tomak, S. (2013). Competition and Stability: An Analysis of the Turkish Banking System. International Journal of Economics and Financial Issues, 3, 752–762.

[15] Jun, J., & Yeo, E. (2018). Peer-to-Peer Lending Platforms and the Stability of the Banking System (SSRN Scholarly Paper ID 3221966). Social Science Research Network. https://doi.org/10.2139/ssrn.3221966

[16] Keeley, M. C. (1990). Deposit Insurance, Risk, and Market Power in Banking. American Economic Review, 80(5), 1183–1200.

[17] Kočišová, K. (2015, October 14). Banking Stability Index: A Cross-Country Study.

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Review of Applied Socio- Economic Research
(Volume 23, Issue 1/2022), pp. 48-xxx
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[18] Laeven, L., & Valencia, F. (2008). Systemic Banking Crises: A New Database. International Monetary Fund, IMF Working Papers, 08. https://doi.org/10.5089/9781451870824.001

[19] Naaman, C., Magnan, M., Hammami, A., & Yao, L. (2021). Credit unions vs. Commercial banks, who takes more risk? Research in International Business and Finance, 55, 101340. https://doi.org/10.1016/j.ribaf.2020.101340

[20] Nachtigall, C., Kroehne, U., Funke, F., Steyer, R., & Schiller, F. (2003). (Why) Should We Use SEM? Pros and Cons of Structural Equation Modeling. Methods of Psychological Research Online, 8(2), 1–22.

[21] POJK No. 5/POJK. 03/2015 tentang Kewajiban Penyediaan Modal Minimum dan Pemenuhan Modal Inti Minimum Bank Perkreditan Rakyat, (2015).

[22] SE OJK No. 39/SEOJK.03/2017 tentang Laporan Tahunan Dan Laporan Keuangan Publikasi Bank Perkreditan Rakyat, (2017).

[23] Pirouz, D. M. (2006). An Overview of Partial Least Squares (SSRN Scholarly Paper ID 1631359). Social Science Research Network. https://doi.org/10.2139/ssrn.1631359

[24] Rakestraw, J. R. (2015). International Evidence on Product Market Competition and Firm Value. https://vtechworks.lib.vt.edu/handle/10919/73029

[25] Reinhart, C., & Rogoff, K. (2008). Is The 2007 U.S. Subprime Crisis So Different? An, International Historical Comparison. https://doi.org/10.3386/w13761

[26] Schaeck, K., & Cihak, M. (2012). Competition, Efficiency, and Stability in Banking. Financial Management, 43. https://doi.org/10.1111/fima.12010

[27] Tsomocos, D. P. (2003). Equilibrium analysis, banking and financial instability. Journal of Mathematical Economics, 39(5), 619–655. https://doi.org/10.1016/S0304-4068(03)00045-4

[28] US Department of Justice. (2015, June 25). Horizontal Merger Guidelines (08/19/2010). https://www.justice.gov/atr/horizontal-merger-guidelines-08192010

[29] Vives, X. (2019). Competition and stability in modern banking: A post-crisis perspective. International Journal of Industrial Organization, 64, 55–69. https://doi.org/10.1016/j.ijindorg.2018.08.011

[30] Wibowo, B. (2017). Banking Competition Measurement and Banking Sector Performance: Analysis of 4 ASEAN Countries. SIGNIFIKAN: Jurnal Ilmu Ekonomi, 6. https://doi.org/10.15408/sjie.v6i1.4547

[31] Zulverdi, D., Syarifuddin, F., & Prastowo, N. J. (2005). Pengaruh Kinerja Dan Struktur Sistem Keuangan Terhadap Pertumbuhan Ekonomi Di Indonesia (Working Papers No. 5). Bank Indonesia.

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Revisit intentions: Novel social responsibility of mall for strengthening mall reputation and perceived trust during fear-arousal of Covid-19 pandemic in India

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Abstract. *The study aims to access the philanthropic influence of malls in creating trust among the shoppers to revisit them during the Covid-19 Unlock Period. Smart PLS-SEM was used to evaluate the responses of 607 customers who voluntarily participated in the survey carried out in Delhi – NCR, India. The study encompasses the hypotheses that the social responsibility of malls generates mall reputation, which in turn strengthens perceived trust, and ultimately the revisit intention. The results established the social responsibility of the mall as a key factor in building mall reputation and fostering trust among the shoppers, ensuring their revisits. The findings also supported shoppers' revisit intention under the varying influence of fear-arousal. The moderating effect of fear arousal on the relationships of mall reputation – revisit intention, and perceived trust – revisit intention in the organized retail industry has been adjudged as a novelty of the present study. The study recommends its application in framing strategies to strengthen the social commitments by retailers and malls, and also to ameliorate fear-arousal among shoppers during such pandemics. The study proposes avenues for further research in context to the social responsibilities of hospitality-related set-ups during a pandemic with varied variables.*

Keywords: Novel CSR, Covid-19, Mall Reputation, Trust, Fear Arousal, Revisit intention

JEL Codes: M14, M10, M30, L81, L82, L83, I18

1. Introduction

1.1 Malls, Covid-19 and Unlock

Malls have always been a place of attraction. People love to visit malls not only for shopping but also to hang out. In India malls are treated as the best and most holistic solution under one roof for all the activities, like shopping, exploring, awareness, entertainment, enjoyment, recreational activities and to avoid routine workloads and pressure to enjoy some of the precious moments with family and friends or alone (Ahmed et al., 2007; Sadachar & Fiore, 2018). A study examined whether an Indian shopper fulfills its utilitarian needs, hedonistic needs, and materialistic needs at a mall (Mehta et al., 2014; D. P. Singh, 2018). But, due to the Covid-19 pandemic which closed all the economic activities for almost a year, for almost all the sectors, the malls were also vacant (i.e., without visitors) between 2020 – 2021 (Kaul, 2020). Involuntarily or voluntarily the visitors restricted themselves to visit the mall. The organized retail industry noted a downfall in growth by -5.7% at the end of 2020 (Coronavirus: Impact on the Retail Industry Worldwide - Statistics & Facts | Statista, 2021). During the lockdown, the people were forced to remain glued at home. Post lockdown, when the market opened in a stage-wise process, visitors voluntarily preferred to remain confined and away from crowded or public places, public transport, educational

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institutes, shopping malls, etc. The sectors were opened in a systematic and stage-wise manner. Access was given to the public to visit malls too. Certain specific protocols were laid down by authorities to visit public places including malls. There were emotions to roam again free to enjoy a normal life. People were also deprived of mall visits during the lockdown. The unlocking of the market and public places instigated the very normal desire of humans to roam freely on the streets, and markets, attend their workplaces, meet friends, etc. The very normal nature of humans to access freedom resulted again in crowded markets and traffic on the streets (AFP, 2021; DHNS, 2021; PTI, 2021). This may instigate the spread of infections again with speed. Thus, the mall visitors had a mixed feelings to visit the mall soon after the unlock announcements (Khan, 2021; Mehra & Jain, 2021; Ramane Amey et al., 2020), which may be a result of 'coronaphobia' (Arora et al., 2020). To visit or not to visit malls has been previously studied by many in normal conditions and environments (H. J. Chang et al., 2015; Deb, 2014; Majumdar, 2005). Also, the studies on selection to visit a mall, mall revisit, and patronage, particularly in a developing country like India have been administered earlier (Kushwaha et al., 2019; Nair, 2018; Sadachar & Fiore, 2018). The pandemic due to the novel coronavirus in the current scenario has become a global threat to humanity and the global economy starting in 2019. The fear of infections of Covid-19 might have restricted shoppers to visit malls (Goolsbee & Syverson, 2021; Mehra & Jain, 2021; Sharma, 2021). Thus, a reputation and trust could have triggered the revisit intentions towards a mall, which is an unexplored area in India to date, to our knowledge. Moreover, corporate social responsibilities (CSR) remained unexplored concerning a mall. It may be believed that CSR policies of malls might have strengthened their reputation and built trust that could play a vital role in developing intentions to visit and revisit a mall.

1.2 Corporate Social Responsibility (CSR), Malls and Covid-19

CSR is a concept that encourages corporations to consider social and environmental issues while making decisions (Fatemi & Dube, 2021). CSR assumes a living relationship of corporations with the principles of sustainable development, i.e. a balance between a) economy, b) society and c) the natural environment (Elkington, 1998). CSR refers to a trait of morals that can distinguish between, right and wrong, good and bad, and continue doing the righteous and ethical thing. It is about planning activities that go beyond legal compliance and still making a profit. However, CSR policy is stimulated by the existing legal framework, which may be inspired by statutes and values (Panagiotopoulos, 2021). Companies implement strategic CSR or tactical CSR in a general course of action. Strategic CSR is the inclusion of a holistic approach toward CSR in strategic planning and core business activities so that organizations can comply with different levels of stakeholders to optimize economic and social values during the long term (del Mar Alonso-Almeida et al., 2015; Galan, 2006; Galbreath, 2010; Wanderley et al., 2008), whereas tactical CSR refers to CSR programs with limited resources and minimum impact on the core activities of a company (Chen, 1992; Connelly et al., 2010). Due to the outbreak of the Covid-19 pandemic in just a few months, the CSR activities by firms and malls have increased to a greater extent (Antwi et al., 2021). Such a new set of CSR activities is considered to be urgent CSR activities. In this research it is manifested that these urgent CSR activities of malls are neither tactical nor strategical hence in the current research it is described as a novel CSR policy. The study implicates the integration of framework about novel CRS in mall practices, mall reputation, and trust to build a significant revisit intention among the shoppers. The knowledge of the study could also be significant in understanding the shopping behavior of customers in malls during the Covid-19 pandemic. The paper provides managerial implications for understanding and arresting fear-arousal among the shoppers of malls. Invasion of Novel Corona Virus has a significant impact on different sectors of the economies hence the researcher perceived a significant research gap that resulted to support the current research to access perceived trust and perceived fear among the shoppers to visit a mall again. The current research is the reflection of the practices undertaken by the malls concerning CSR during the Covid-19 pandemic. It also emphasized factors affecting behavior intention among the shoppers in malls during the Covid-19 pandemic as the researcher found the gap in context to novel pandemic during 2020 and onwards.

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2. Review of Literature

The theory of stakeholders as a managing mechanism addresses that a firm should protect the interest of all concerned parties, which may impact the firm's operations to achieve organizational goals and social motives (Freeman, 1984; Nelson. A, 2007; Mai. N. K, 2021). Stakeholder theory illustrates the principles of the relationship between shopping centers or businesses and their employees, community, customers, and social welfare in general (Donaldson and Preston, 1995). It has emerged as a leading paradigm in the literature on CSR education (Francis et al., 2019) and its extension to novel CSR and its practices.

2.1 Novel Social Responsibility of Mall (NSRM)

CSR is defined as a set of activities in context to an organization's perceived social obligations to look beyond profit-making and applicable laws (Brown & Dacin, 1997) to support its sustainable financial growth**,** to work equally with staff, community and public to enhance the quality of their life (Najam, 1999) and ensure the safety of the shoppers. Social spaces are the areas, capable of modifying as per arising social needs and demands of shoppers. These are developed in a variety of domains to expertise the social interests and needs (Hagberg & Styhre, 2013). According to Styhre (2019) mall is observed as a cultural and civic center in a city. In the service sector and malls, the most substantial matter is the reflection of physical evidence of service-scape, which is capable of creating a brand by acknowledging shoppers with add-on benefits (Maulana et al., 2012). A study suggested that shoppers visualize and establish shopping experiences in a combination of factors which include their safety and security (H. Singh & Sahay, 2012). Malls and retailers claim that CSR policies have numerous benefits to the economy, environment, and society which in turn integrate sustainability into their core business (Jones et al., 2007). COVID-19 has restricted the shoppers' ability to freely engage themselves in social interactions**.** Hence, it is necessary to configure the steadfastness of theories for conceptual models in the malls (Rosenbaum & Russell-Bennett, 2020) and nomenclate the new CSR practices as 'Novel Social Responsibility of Malls - NSRM' in the present scenario. According to Antwi et al. (2021), generally, CSR during epidemics or pandemics is based on four functions: a) to diagnose the masses, b) to protect the unaffected, c) to treat the affected, and d) to rehabilitate the sufferers. Thus, it was observed that during the Covid-19 pandemic the focus on social messages to the general public was primarily on getting tested for positivity (diagnosis) to segregate the infected and uninfected ones, protect self and others from the infections, and trust vaccination drives to deal with the pandemic issue.

2.2 Mall Reputation (MR)

The reputation of the mall is represented through excellence in quality as well as an ethical attitude toward its stakeholders (Braun et al., 2018). Reputation can be seen as a hologram of multifaced theories incorporating reverence, trust, reliance on consistent developments, and effective communication (Walsh et al., 2009). Shoppers perceive malls as more fun-oriented, satisfying, and rewarding as compared to other modes of shopping, as the hedonic components of mall shopping will be more popular in the future (Roy Dholakia et al., 1995). Merrilees & Miller (2019) mentioned that malls enhance and build the emotional brand experience. The study also extends toward shopping companions that help co-create the shopping brand experience. MR or store image can be interpreted as goodwill that plays an important role in customer satisfaction, trust-building (H. J. Chang et al., 2015), and revisit intention. To build a reputation during such an era, malls make extraordinary in-store experiences for visitors. Malls provide shoppers a reason to visit, complying with security measures to health risks to overcome the inertia of fear**,** adopted during the lockdown (Denise Lee Yohn, 2020). Shopping malls in Saudi Arabia comply right to entry for those shoppers whose mobile is verified by the Tawakkalna app which is designed by the Saudi Data and Artificial Intelligence Authority to prevent the spread of pandemics (Centre, 2021).

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2.3 Perceived Trust (PT)

Sahi et al. (2016) in their study on online retailers concluded that trusting beliefs are positively influenced by an organization's image and reputation which motivate shoppers' intentions to purchase. According to H. H. Chang & Chen (2008), website brand and reputation affect visitors' trust resulting to purchase intention. The ethical approach of retailers affects shoppers' trust towards revisit (Limbu et al., 2012). A study conducted in Taiwan mentioned – trust as an important factor in building and maintaining relationships between service providers and consumers (Cheng et al., 2017). Perceived Trust is an important factor for building long-term and long-lasting relationships between retailers and shoppers (M.-J. Kim et al., 2011).

2.4 Fear Arousal (FA)

Consumers' hygiene consciousness is defined as an individual's "preference for maintaining cleanliness standards" (Talwar et al., 2020, p. 5). A study mentioned hygiene-conscious individuals have a greater tendency to follow social distancing. However, hygiene practices conscious retailers and malls are posing prominent challenges in sales during the covid-19 pandemic (Fernandes, 2020). In the current covid-19 based scenario very little is known to researchers about the purchase and consumption behaviors of consumers, particularly when they come from diverse age groups (R A Rather & Hollebeek, 2021)**,** hence identification of fear arousal in a mall and organized retail stores are perceived as a gap which is supported in the current study. A study conducted in the US during Covid-19 indicated that customers' health locus of control is indirectly affected by the way they purchase their groceries products in 2020. The study also mentioned shoppers drive higher hygiene consciousness and greater social distancing precautionary behavior. Hence it was observed that consumers' online shopping behavior increased during the Covid-19 pandemic, with the corresponding intention to continue this in near future. The study also explored the impact of social distancing on their current pattern of grocery shopping in malls with future intentions to be more contingent on shoppers' age, with a stronger impact observed among older consumers (Itani & Hollebeek, 2021). A similar study further put an insight into pandemic-based grocery shopping behavior, the researchers observed consumers' social distancing behavior drives them to switch their buying intention from visiting the mall to online shopping (Hao et al., 2020; Hollebeek et al., 2021). Shopping channels at the time of the Covid-19 pandemic intend to maintain in near future (Batat, 2021; Pantano et al., 2020; Roggeveen & Sethuraman, 2020). The finding of the study, in turn, yielded an important implication for the researchers to understand the fear arousal behavior among the shoppers. Fear arousal can also be observed when shoppers avoid touching surfaces that included retail shopping carts, KIOSK, or payment terminals. Hence, customers were more inclined to purchase online during the Covid-19 pandemic (Hazée & Van Vaerenbergh, 2021; Jayaweera et al., 2020). The study is linked with the fear arousal among the shoppers of different age groups with the intention level to revisit the shopping center.

2.5 Mall Revisit Intention (MRVI)

Gyte & Phelps (1989) proposed the concept of revisit intention when they observed the British tourist having the intention to revisit Spain. Hence, revisit intention could be defined as a willingness to visit the destination again and to avail of its services and products (Kozak, 2002). A study mentioned that technology orientation and customers' emotions have a direct impact on revisit intention and developing mall patronage (Farrid & Gisip, 2021; Kabadayı & Alan, 2012). Previous studies also advocated perceived value, customers' satisfaction and trust develop revisit intention (D. A. Baker & Crompton, 2000; Han & Hyun, 2015; Jo et al., 2014; H. Kim et al., 2015). A study conducted on restaurants mentioned that justified price generates trust that positively influences revisit intention among the customers (Cakici et al., 2019). The study conducted by Singla & Rai (2016) suggested that depth and variety in stores, and merchandise characteristics (price, promotion, CSR activities, merchandise accessibility) influence shoppers' choice to revisit intention (Johnson & Grayson, 2005). CSR's impact on shopper's loyalty which varies across along with cultures mediates

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positive or negative emotions. The study also mentioned that shoppers' association to environmentalism moderates the direct impact of a mall's CSR on buyers' attitudes towards the mall's reputation (Godefroit-Winkel et al., 2021). From the above review, the researcher perceives that revisit intention is reflected in consumers' overall perceptions about CSR. This research proposes to construct the novel CSR as a multidimensional construct. Hence, CSR domains in the current research are the more specific investigation of the impacts of CSR domains on consumers' trust and revisit intention.

3. Development of Conceptual Framework

Considering the above discussions it could be assumed that there could be the following possible relationships:

3.1 NSRM and its relationship with MR

Previous studies established a positive significant relation between CSR, business ethics, green marketing, and business loyalty (Amoako et al., 2021). A CSR complied brand is more likely to be preferred by customers as compared to non-CSR complied brands (Srinaruewan et al., 2015). CSR initiatives play a vital role in perceived service quality resulting in the establishment of high reputed brand value among shoppers (Poolthong & Mandhachitara, 2009; Tingchi Liu et al., 2014). Business transparency has a direct significant impact on mall revisit that develops sustainable business (Foscht et al., 2018). Ijabadeniyi & Govender (2019) in a study stated that consumers' intention and perceived value are mediated by the compliance with legal framework of CSR, whereas ethical and economic CSR serve as moderators in establishing the relationship and importance of CSR in decision-making processes (Gupta & Hodges, 2012; Sahelices-Pinto et al., 2018). (Su et al., 2015) investigated CSR activities in a Chinese hospitality consumption contributed to its reputation, customer satisfaction, and future intention to visit. Based on the previous research, the following hypotheses are formulated and proposed to support the current research in the context to the Covid-19 pandemic. The hypothesis (H1) is the reflection of novel CSR practices and their probable impact on mall reputation to build perceived trust and develop revisit intention.

H1: The novel social responsibility of a mall (NSRM) will strengthen the mall's reputation (MR)

3.2 Relationships between MR, PT, and MRVI

The reputation of a mall plays a considerable role in increasing the purchase intention of a product placed by even a weak producer (Chu et al., 2005). The impact of malls' services and quality is mediated via customers' satisfaction with their behavioral intentions to recommend and revisit the stores. The studies indicated that retail service quality has a significant influence on shoppers' perceptions of mall reputation. The relation between mall image and behavioral intentions is mediated by satisfaction (Y. Kim, 2005; Yu & Ramanathan, 2012). Studies conducted in various cities mentioned that customers are interested in food safety and quality, additionally, consumers purchase from the organized retail or mall because the safety and quality have been ensured by the seller (Paul & Rana, 2012; Tandon et al., 2016; Wertheim-Heck et al., 2015), which may be a measure of reputation, trust and ensured patronage. A similar study conducted in the context of reputation stated the establishment of the positive and significant impact of trust and satisfaction on the commitment. It illustrated positive and significant impacts of perceived reputation on consumer trust (Casalo et al., 2007). Customers share their negative experiences with their mates to avoid patronizing them (Grégoire & Fisher, 2008). Based on the existing research, 'Attribution Theory' illustrated that shoppers may intend to use the reputation of the mall to predict its future visit (Rhee & Haunschild, 2006), which is inculcated by the essence of trust. A good reputation decreases buyers' price unfairness perceptions (Xia et al., 2004). Based upon the above literature review it is proposed that mall reputation affects visitors' perceived trust. Previous research also suggested that mall reputation has a significant impact on buying

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intention. Hence, it is perceived that there could be an impact of mall reputation on both perceived trust and revisit intention. Research has also indicated that different dimensions of trust could have varied consequences on the buying intention or mall revisit. During Covid-19 perceived trust about being safe from infection while shopping may contribute towards revisiting intentions. Hence, a multifaced conceptual knowledge of trust is required to explore its applicability (Gefen et al., 2008). Thus, in the background of the above discussion it is justified to propose the following hypotheses as well in context to Covid-19 pandemic:

H2: Mall reputation (MR) has a positive influence on visitor's perceived trust (PT)
H3: Mall reputation (MR) has a positive influence on mall revisit intention (MRVI)
H4: Visitor's perceived trust (PT) positively influences mall revisit intention (MRVI)

3.3 The moderating role of Fear Arousal

CSR messages are generally accompanied by visual components, to the shoppers as it has the persuasive power to involve shoppers' attention and empower the cause to become more evident (Garcia & Greenwood, 2015; S.-B. Kim et al., 2014). A study observed the superiority of visuals, that elicit emotions (like sympathy, fear, and anger), over text in influencing buying intentions (Powell et al., 2015). Newhagen (1998) mentioned that images that induce fear and anger are likely to impact more on latency-to-response and can affect memory and buying patterns. The study conducted by Truong et al. (2017) in Vietnam mentioned that perceived cleanliness was observed as a 'factor' corresponding to 'consumers' satisfaction, trust and revisit intention'. Hence, hygiene or cleanliness may create an overall customers experience during COVID-19. A study by Ruiter et al. (2003) based on 'threat information and coping with it', may also be associated with fear arousal as a result of widespread messages on social media during Covid-19. Thus, fear arousal may be sparked by the causing information or thought-provoking processes about the cause (infection – Covid positivity rate) and effect (isolation – hospitalization – death) and may be ceased with the soothing information (reduction in infection rate) and apparent ameliorative actions (Covid Appropriate Behaviour, handy treatment, vaccination drive, curing disease, and other precautions). Fear arousal during Covid-19 has motivated people to buy online with live streaming and socializing simultaneously on the same platform (Addo et al., 2020). It may moderate the relationships between 'reputation - revisit intention, and trust - revisit intention', thereby influencing willingness to isolate themselves (Heffner et al., 2021).

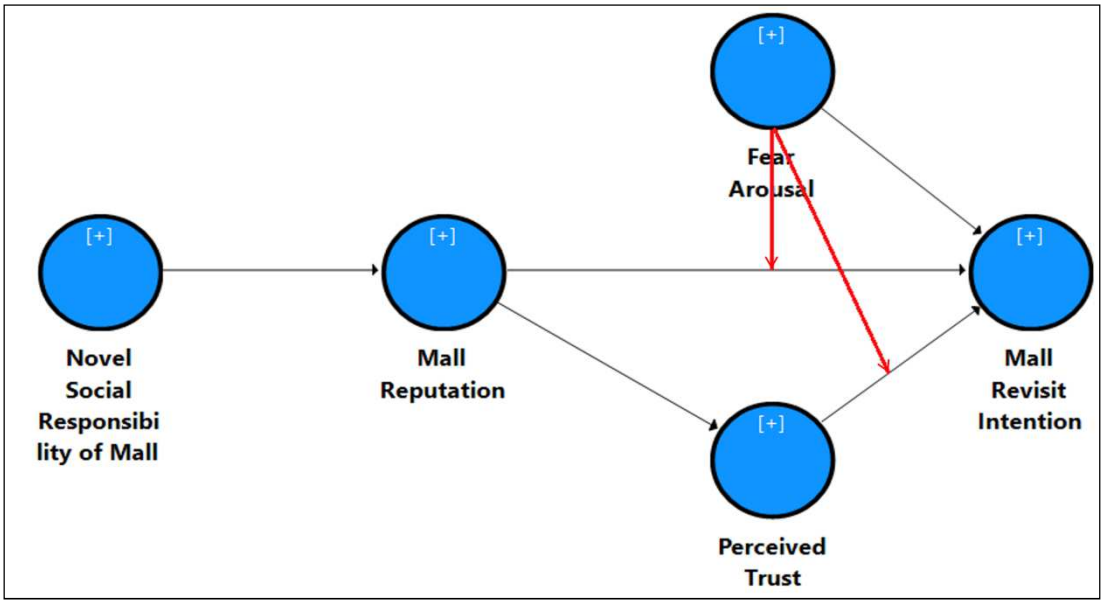

Fig. 1: Conceptual framework based on hypotheses (Source: Author's Hypotheses)

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A moderation effect of fear arousal was observed between tourists' trust, tourism destination's reputation, and revisit intention (Hassan & Soliman, 2021), which may be similar for mall shoppers too during Unlock-Phase. Given the above context following hypotheses are proposed to assess mall revisit intention under the influence of fear arousal during the covid-19 pandemic:

H5: Fear arousal (FA) moderates the impact of the mall reputation (MR) on mall revisit intention (MRVI)

H6: Fear arousal (FA) moderates the impact of the perceived trust (PT) on mall revisit intention (MRVI)

Based on the above six hypotheses (H1, H2, H3, H4, H5, and H6), the conceptual framework could be poised (Refer Figure 1):

4. Research Methodology

4.1 Instrument

The questionnaire was divided into three survey sections.

The first page constituted the objectives of the study, confidentiality, and time required to participate in the survey. Moreover, the responder's demographic information consisting of gender, age, marital status, education, employment profile, and income were also captured on this page under survey section 1. Information regarding the responder's favorite shopping mall in Delhi – NCR was captured in survey section 2. In this section information related to NRSM, MR and PT was gathered. Scale related to NRSM was based on the previous studies (Hassan & Soliman, 2021; Jones et al., 2007; Su et al., 2015; Su & Swanson, 2017) with some modifications as per the need of the present study and more specifically the current pandemic environment addressing alarming needs for diagnosis, protection, treatment, and rehabilitation (Antwi et al., 2021). Scale related to MR was adapted from Artigas et al. (2015), H. J. Chang et al. (2015) and Weiss et al. (1999) and that of PT from H. H. Chang & Chen (2008), Cheng et al. (2017), and M.-J. Kim et al. (2011). The last survey section, 3, was related to gathering information about customers' fear arousal and revisiting intention levels during the Covid-19 scenario. The scale related to FA of Covid – 19 was adapted from Hassan & Soliman (2021), Ahorsu et al. (2020), and Ruiter et al. (2003) and that of mall revisit intention was adapted from D. A. Baker & Crompton (2000), J. Baker et al. (2002), and Grewal et al. (Grewal et al., 2003). All the indicators in section 2 were measured on a seven-point Likert-type scale, where 1 is "strongly disagree" and 7 is "strongly agree". All the indicators in section 3 were measured on the same scale, where 1 being "Not at All" and 7 being "Very High". The tested time to attend & complete the survey through this questionnaire was not more than15 minutes. As the majority of the residents in Delhi – NCR can read and understand the English language very well, so Questionnaire was designed in the English language (Refer to Appendix A).

4.2 Sampling

This study was quantitative in nature and data were gathered from Indian mall shoppers, after the second wave of Covid-19. To obtain primary data, a non-probability sampling method was adopted and a mall-intercept survey approach with a structured close-ended questionnaire was employed (Brown et al., 2013), where shoppers were randomly asked about their willingness to participate in the survey process upon qualifying the norms. This sampling process was followed at various malls in Delhi – NCR, India during the period June 15, 2021, to Aug. 15, 2021, with the help of volunteer scholars. All 650 shoppers were intercepted and requested their time to participate in this survey. Incomplete forms (43) were repudiated. Thus, a total of 607 valid forms constituted the sample size and were used for data analysis.

4.3 Sample profile

The Respondent's demographic data is shown in Table 1.

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Table 1: Summary of the sample profile

Variable		N= 607	%
Gender	Male	423	69.69
	Female	184	30.31
Age	18-24 years	220	36.24
	>24-34 years	167	27.51
	>34-44 years	154	25.37
	>44-54 years	54	8.90
	>55 years	12	1.98
Marital status	Single	229	37.73
	Married	378	62.27
Education	School-level	12	1.98
	Bachelor's degree (college/technical/diploma)	436	71.83
	Post-graduate degree (Masters/Ph.D.)	159	26.19
Employment profile	Student	167	27.51
	Business	189	31.14
	Govt. Job	23	3.79
	Private Job	132	21.75
	Homemaker	78	12.85
	Other	18	2.97
Household income	Rs. 30,000 or less	179	29.49
	Rs. 30,001 to 60,000	194	31.96
	Rs. 60,001 to 1,00,000	178	29.32
	Above 100,000 and above	56	9.23

(Source: Author's analysis)

5. Analysis

For analysis of data based on study objectives, particularly for the hospitality sector like malls and allied services, and to verify the hypothesis, partial least square-structural equation modeling has been in use for data analysis. Accordingly, 607 samples were bootstrapped using SmartPLS 3.0 software for the estimation of parameters and verification of the hypothesis (Ali et al., 2018; F. Hair Jr et al., 2014; Hair et al., 2019).

5.1 Measurement model analysis

Before testing the relationship between the constructs, it was verified that the measurement model fulfills the conditions of reliability, convergent validity, and discriminant validity (refer Table 2). The indicators used for the validation of the reliability were Cronbach α coefficient ≥0.7 (Cronbach, 1951), the composite reliability index CR ≥0.7 (Ali et al., 2018; Hair Jr. et al., 2017), and the Average Variance

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Extracted - AVE ≥0.5 (Fornell & Larcker, 1981). All five constructs meet the required criteria as the loading values are above 0.7 (Carmines & Zeller, 1979; Hair et al., 2012).

Table 2: Reliability and validity of the instrument

Construct	Item	Outer FL	Outer VIF	Inner VIF	α	rho_A	CR	AVE
Novel Social Responsibility of a Mall (NSRM)	NSRM1	0.901	3.765	1.466	0.957	0.957	0.965	0.822
	NSRM2	0.907	3.984					
	NSRM3	0.892	3.701					
	NSRM4	0.920	4.823					
	NSRM5	0.915	4.378					
	NSRM6	0.905	4.187					
Mall Reputation (MR)	MR1	0.862	2.720	2.495	0.908	0.914	0.932	0.732
	MR2	0.892	3.950					
	MR3	0.861	3.884					
	MR4	0.851	3.068					
	MR5	0.809	3.098					
Perceived Trust (PT)	PT1	0.902	3.750	2.785	0.947	0.949	0.959	0.825
	PT2	0.914	3.877					
	PT3	0.907	3.611					
	PT4	0.899	3.391					
	PT5	0.919	4.353					
Fear Arousal (FA)	FA1	0.908	2.878	1.034	0.907	0.942	0.934	0.779
	FA2	0.873	2.685					
	FA3	0.860	2.739					
	FA4	0.890	2.468					
Mall Revisit Intention (MRVI)	MRVI1	0.879	2.099	1.478	0.860	0.860	0.914	0.781
	MRVI2	0.896	2.347					
	MRVI3	0.876	2.115					

Note: FL = Factor Loadings; VIF = Variance Inflation Factor; α = Cronbach's alpha;
CR = Composite Reliability; AVE = Average Variance Extracted

(Source: Author's analysis)

To examine the discriminant validity, Fornell & Larcker's (1981) criterion was used and found established because the square roots of AVE of the constructs were higher than the correlation values between all the constructs (Refer Table 3). Discriminant validity was also established with a new robust method HTMT suggested by Henseler et al. (2016) where the threshold value for conceptually different construct is <0.85 (Refer Table 4).

Table 3: Discriminant validity assessment (Fornell-Larcker Criterion)

	AVE	FA	MR	MRVI	NSRM	PT
FA	0.779	**0.883**				
MR	0.732	-0.136	**0.855**			
MRVI	0.781	-0.101	0.531	**0.884**		

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NSRM	0.822	-0.149	0.468	0.237	**0.907**	
PT	0.825	-0.167	0.755	0.521	0.557	**0.908**

Values in Italics diagonally are √AVE (Source: Author's analysis)

Table 4: Discriminant validity assessment (HTMT Ratio)

	FA	MR	MRVI	NSRM	PT
FA					
MR	0.145				
MRVI	0.109	0.603			
NSRM	0.155	0.494	0.261		
PT	0.173	0.803	0.576	0.587	

(Source: Author's analysis)

5.2 Structural model analysis

Partial least square-structural equation modeling was used for structural model analysis with the help of SmartPLS 3.0, using 500 alterations for running the PLS algorithm. The criteria to identify the issues with collinearity is the Variance Inflation Factor (VIF), which should be below the threshold value of 5 (Hair et al., 2019). All the VIF values (Outer and Inner) for the model were below 5, suggesting no collinearity issues (Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, 2017). Also, a full collinearity test - Common Bias Method (CBM) was conducted with a randomly created variable. Its assessment indicated all values less than 3.3 (refer to Table 1), confirming related to CBM (Kock, 2015). SEM performed with SmartPLS can also be estimated for its fitness. The most common and accepted parameter is to assess it based on standard root square residual (SRMS) values which are a result of bootstrapping. A value not exceeding the 0.08 limit is accepted to confirm a model as fit and to reject any inconsistencies with pragmatic relationships (Henseler et al., 2016; Hu & Bentler, 1999). In present analysis SRMR = 0.049 < 0.08 hence, model is found as fit. As the model was tested with SmartPLS, R^2 and Q^2 are the two customary statical criteria for calculating the magnitude of variance on the dependent variable by each independent variable. In the present study, $R^2 \geq 0.20$ and $Q^2 \geq 0.00$ values for all the constructs (MR, PT & MRVI) in the study were > 0.25, which provide evidence of the predictive accuracy of the PLS path model (Ali et al., 2018; Hair et al., 2014, 2019). From the SmartPLS 3.0 output (refer to Table 5) this is evident, which is a good measure of predictive accuracy.

Table 5: R2 and Q2 values

	R Square	Q Square
MR	0.219	0.148
PT	0.570	0.437
MRVI	0.316	0.233

(Source: Author's analysis)

5.3 PLS-SEM Model analysis

5.3.1 Direct Impact

After assessing the measurement model and structural model, for all the variables we need to proceed toward testing our hypotheses. For this, 10,000 subsamples were created for the stability of results (Ali et al., 2018) for bootstrapping to estimate the PLS path model. Results revealed significant positive influence of independent variables on the dependents, for H1 (NSRM on MR: $\beta = 0.468$, $t = 9.724^{***}$), for H2 (MR on PT: $\beta = 0.755$, $t = 32.042^{***}$), for H3 (MR and MRVI: $\beta = 0.302$, $t = 5.108^{***}$), and for H4 (PT on MRVI: $\beta = 0.296$, $t = 4.903^{***}$). While measuring the effect size, f^2 (where 0.02 = low effects; 0.15 = medium effects; and 0.35 = large effects, Cohen (1988)), the analysis revealed a high level of effect

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when NSRM impacts MR, and MR influences PT. However, weak effects were recorded for MR influence on MRVI, and PT influence on MRVI. Hence, all the hypotheses were accepted and results are supporting them (Refer Table 6 & Figure 2).

Table 6: Hypothesis testing results – Direct Impact

Hypothesis No	Path	β	STDEV	T Statistics	p Values	BI		f^2	Result
						2.50 %	97.50%		
H1	NSRM → MR	0.468	0.048	9.724 ***	0.000	0.369	0.558	0.281	Supported
H2	MR → PT	0.755	0.023	32.042 ***	0.000	0.706	0.796	1.324	Supported
H3	MR → MRVI	0.302	0.059	5.108 ***	0.000	0.183	0.414	0.057	Supported
H4	PT → MRVI	0.296	0.060	4.903 ***	0.000	0.178	0.413	0.053	Supported

(*p<0.05, **p<0.01, ***p<0.001) (Source: Author's analysis)

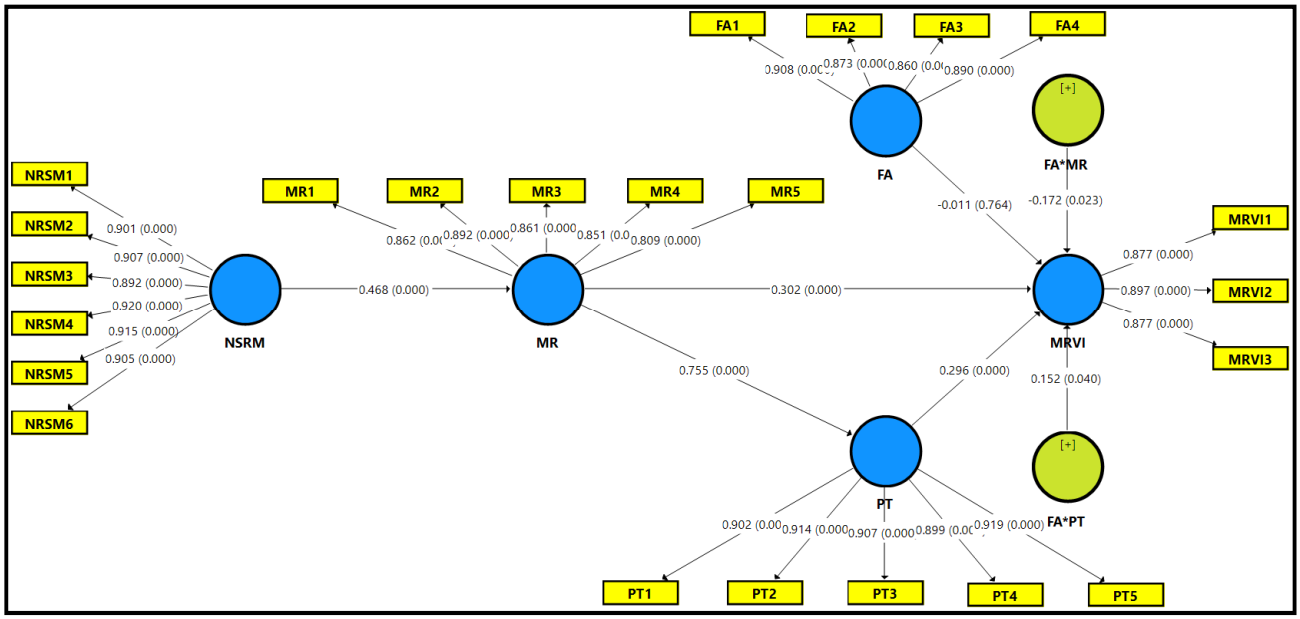

Fig. 2: SmartPLS 3 SEM - Bootstrapping output with β and significance level (Source: Author's analysis)

5.3.2 Moderating Effect

Analysis was also performed to evaluate the moderating role of FA due to Covid – 19. As seen in Table 7, an intangible effect (Cohen, 1988) was observed for the relationship between MR and MRVI in presence of FA (H5: β = -0.172, t = 2.269*, f^2 = 0.012). It is evident that FA had a negative, but significant role in this relationship, implying that high FA may amend MR's positive influence on MRVI. Similar weak effect was recorded for the relationship between PT and MRVI in presence of FA (H6: β = 0.152, t = 2.057*, f^2 = 0.012).

Table 7: Hypothesis testing results – Moderation Impact

Hypothesis no.	Path	B	ST DEV	T Statistics	P Values	f^2	Result
H5	FA on MR → MRVI	-0.172	0.076	2.269*	0.023	0.012	Supported
H6	FA on PT → MRVI	0.152	0.074	2.057*	0.040	0.012	Supported

(*p<0.05, **p<0.01, ***p<0.001) (Source: Author's analysis)

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The above moderation impact can also be verified with Dawson's (2014) approach by plotting two-way interaction effects. From Figure 3 it is concluded that when FA of Covid-19 is low, MR has a stronger influence on MRVI in comparison to when FA of Covid-19 is high. Whereas, when FA is high, PT has a stronger influence on MRVI than when FA is low (Refer Figure 4).

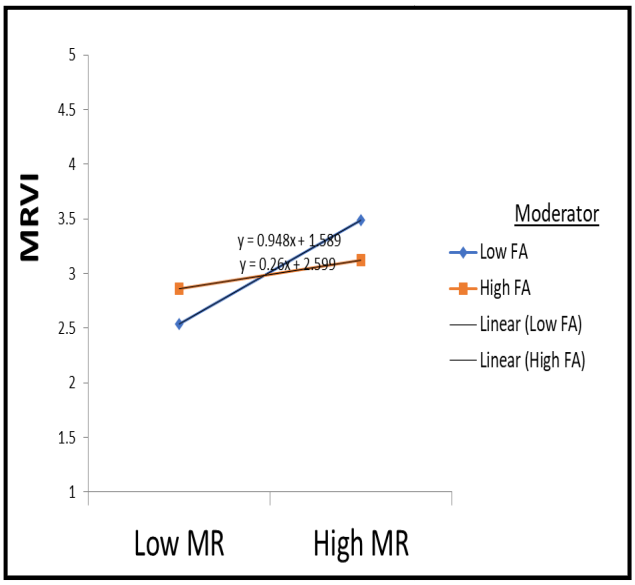

Fig. 3: Two-way interaction FA(MR-MRVI)

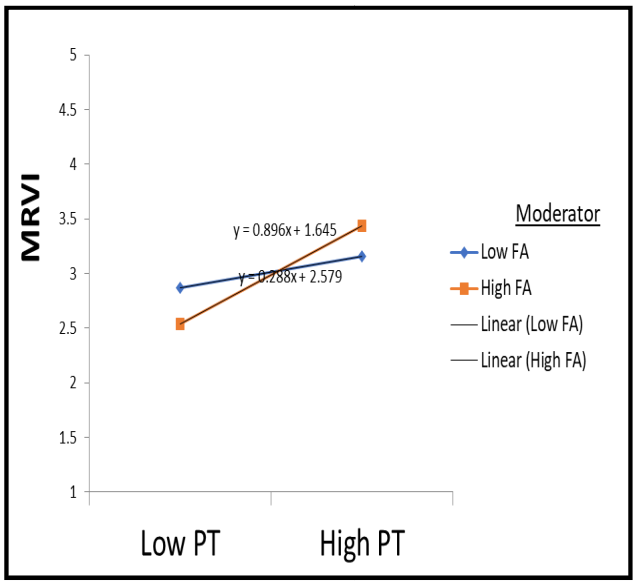

Fig. 4: Two-way interaction FA(PT-MRVI)

(Source: Author's analysis)

6. Results and discussion

The study was carried out with the objectives (a) to assess the impact of NRSM on 'MR, PT, and MRVI', and (b) to examine the moderation role of FA on relationships between MR → MRVI, and PT → MRVI of mall shoppers in Delhi NCR, India. The results of the study supported the proposed conceptual model, its predictive relevance, and predictive accuracy. Observed R^2 values indicated that NSRM weakly accounts for the variation in MR (Chin, 1998; Kock, 2014). Whereas MR moderately explains the variation in PT and weakly for MRVI. Also, PT moderately explains the variation in MRVI (Hair et al., 2014). The Q^2 values are suggestive of weak prediction of MR by NSRM, of PT by MR, and also of MRVI by MR & PT (Hair et al., 2014, 2019) when shopping malls and markets were opened after the mass lockdown due to the Covid-19 pandemic in India. The results have already proved significant relationships between NSRM → MR, MR → PT, MR → MRVI, and PT → MRVI, which culminated in the acceptance of hypotheses H1, H2, H3, and H4 as follows:

H1 accepted as – The novel social responsibility of a mall (NSRM) strengthens the mall's reputation (MR)
H2 accepted as – Mall reputation (MR) has positively influenced visitor's perceived trust (PT)
H3 accepted as – Mall reputation (MR) has positively influenced mall's revisit intention (MRVI)
H4 accepted as – Visitor's perceived trust (PT) has positively influenced mall to revisit intention (MRVI)

This provides us with the clue that the mall reputation is enhanced by the novel social responsibility steps taken by the mall management during the Covid-19 pandemic. These steps may include the mall's voluntary behavior towards supporting the society with integrity and reliable operations following Covid-19

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hygiene protocols. Previous studies also opined that the success of a mall depends upon its image or reputation (H. Singh & Dash, 2012) and CSR activities have a positive impact on maintaining the brand image and reputation enhancement (Arief & Pangestu, 2021). Present results (i.e. NSRM strengthens MR, and MR influences PT), corroborate with previous studies (Ozdora Aksak et al., 2016). During the Covid-19 pandemic, organizations that have adopted survival as a social responsibility had improved their reputation and thus incorporated trust in their stakeholders (Hu et al., 2021). Present results also confirm support of MR in developing PT, which is following many previous studies on shopping malls and stores (Broutsou & Fitsilis, 2012; Desai & Phadtare, 2017; Keh & Xie, 2009; M.-S. Kim & Ahn, 2007; Prasad & Aryasri, 2009). Results also demonstrated a positive impact of PT on MRVI which is in line with many workers (Abubakar et al., 2017; Mosavi & Ghaedi, 2012; Raouf Ahmad Rather, 2021; Su et al., 2021). Investigations from the present study revealed that there is a strong impact of social responsibility and similar initiatives on the reputation by boosting the positive image and fostering trust amongst the visitors and consumers, thereby making shoppers loyal to revisit destinations, repeat consumption as well as complementing prior studies (Latif et al., 2020; Su & Huang, 2019; Tong & Wong, 2014). The present study hypothesized that FA would moderate the direct relationships between MR and PT and MRVI. The results of the analysis favorably helped in accepting the hypotheses, H5 & H6 as below:

H5 accepted as – Fear arousal (FA) moderated the impact of mall reputation (MR) on mall revisit intention (MRVI) such that increased FA weakens the positive relationship between MR and MRVI
H6 accepted as – Fear arousal (FA) moderated the impact of perceived trust (PT) on mall revisit intention (MRVI) such that increased FA strengthens the positive relationship between PT and MRVI

As a moderator, FA had a weak, negative and significant role in MR → MRVI relationship. If FA continues to increase, the direct positive link between MR and MRVI will tend to have lower values to the extent that this relationship might turn negative. Present findings substantiate the fact that the ongoing panicky states of isolation, quarantine, migration, joblessness, thriftiness, and high morbidity and mortality due to the Covid-19 pandemic exhibit untoward behavior like reluctance/ fear of outings in many shoppers. The results of the present study on the moderation effect of FA on the relationship of MR → MRVI during Covid-19 corroborate with Hassan & Soliman (2021) who conducted their studies in the tourism sector in Egypt. FA also acted as a moderator on the relationship between PT → MRVI, on the other hand, implies that high degrees of FA could enhance the shoppers' perceived trust to a level, where it will positively impact their intention to revisit the mall. The results of the present study on the moderation effect of FA on the relationship of PT → MRVI during Covid-19 differed of Hassan & Soliman (2021). Rittichainuwat & Chakraborty (2009) in their study on Thailand's hospitality industry observed that a high perceived risk of terrorism (i.e. FA) had a moderating role on traveling of visitors and declined to travel in risk-prone areas. In a study on tourists in China Zheng et al. (2021) observed that trust in Government (i.e. PT) can decrease travel fear but also it restricts travel intentions in the post-pandemic era. Untaru & Han (2021) suggested that the adoption of Covid-19 protocols (i.e. NSRM) by retailers had a significant and positive influence on shoppers' behavior to revisit the retail enterprise which may be due to fostered trust in Covid-19 appropriate behavior adopted by retailers. Based on 201 participants in the US Luo et al. (2021) reported the result of retailers to drive – 'informing the shoppers about enforcing the Covid-19 protocols for visiting the malls/ stores in a mandatory and voluntary fashion, followed by appreciation and apology' towards increasing MRVI. Above previous research reinforces the usefulness of measures adopted by retails similar to shopping malls of Delhi – NCR, India in crafting novel social responsibility factors in the light of the present pandemic. To the best of our knowledge, similar studies are scanty elsewhere, including India on malls and organized retailers where Covid-19 protocols are incorporated to assess the effect of social responsibility of mall concerning mall reputation, perceived trust and mall revisit intention.

7. Implications

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Malls and shopping complexes are inevitable in human life to fulfill their utilitarian, hedonic and social needs and act as habitats (Bloch et al., 1994). Due to rapid development in civic infrastructure people kept malls at the first position for hangouts**,** utilitarian needs, and consumption. Before the Covid-19 pandemic, the intention to revisit a particular mall was based upon certain factors, as assessed by several workers. Tauber (1972) stressed designing new attractive cues for shoppers to influence their visit to the mall, and infusing escapist behavior in shoppers for longevity (stay) and revisit. Visitors' engagement in various in-house activity options like a movie screen, dining courts, fun, and gaming zones, where visitors relax with companions, fantasize, and feel freedom from daily routine work (Bloch & Richins, 1983; Khare, 2011; H. Singh & Sahay, 2012), automate them visiting their favorite mall. Mall attractive dimensions – mall environment, convenience, staff, hygiene, entertainment, and security were identified by Kumar et al. (2021). In India, it is clear that shoppers also pay attention to safety needs. During the Covid-19 pandemic, total hygiene including hand hygiene, physical distancing, application of masks, and sanitizers were addressed by everyone including state administration. Covid-19 appropriate behavior and protocols were followed by individuals and implemented by organizations like small to medium enterprises, offices, manufacturing units, educational institutions, government offices, as well as small to big organized and unorganized retailers including malls. The deadly and highly infectious Covid-19 pandemic united the nation for social upliftment. Many volunteer individuals and corporates/organizations donated in cash or kind and offered services for the cause. A strong feeling of social responsibility was observed where everyone tried to support the needy in his/ her manner. This was observed at shopping malls too. While the opening of markets, malls too responded to implement Covid-19 appropriate behavior and protocols for the safety of shoppers in-line with state policies. The present study verifies and proved that such social responsibility behavior of malls reinforced their image, reputation, and brand in such a way that it further fostered trust amongst their previous visitors and fulfilled their desire for utilitarian, hedonic, and social needs during revisiting. Shoppers were positive towards visiting their mall for environmental concerns in its operations, care of stakeholder's social needs, adoption of health and safety measures during acute distress due to the Covid-19 crisis period. Mall management's policies**,** for being ethical and in line with state-administered Covid-19 guidelines**,** were found appreciable. Shoppers relied upon the integrity of the mall's management and its staff in coping-up with the pandemic crisis and also in keeping good intentions towards the safety and health of all stakeholders. Mall management in other cities may adopt similar steps to align visitors' trust with their existing reputation during an event of a crisis. With low fear-arousal malls, reputation will have a high level of revisit intentions than with the high level of fear. This is**,** therefore**,** necessary for mall management to infuse a high level of trust among visitors. Because at a high level of fear arousal high level of trust is inevitably required to gain revisit intentions than with a low level of fear. Managers at the malls or similar hospitality sectors may incorporate flexible and novel social responsibility ideas and measures to build a positive image, reputation, and trust to reinvite their guests voluntarily by reducing fear during such pandemics. Also, they may provide good competition to online retailers and services.

8. Limitations and future scope for research

The present study was conducted during the Unlock Period of the Covid-19 pandemic and thus lacked responses from other cities due to restrictions on inter-city travel. Shoppers were also hesitant in direct physical interactions and were difficult to convince for their responses. Therefore, the instrument was made comparatively shorter. Future studies are likely to be intensified to access 'fear-arousal' as an important factor in the background of the current pandemic as a foundation. The present study further proposes avenues for future research in the context of the social responsibilities of hospitality-related set-ups during a pandemic suitable direct, mediating, and moderating relationships.

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e-mail: editors@reaser.eu

References:

Abubakar, A. M., Ilkan, M., Al-Tal, R. M., & Eluwole, K. K. (2017). eWOM, revisit intention, destination trust and gender. Journal of Hospitality and Tourism Management, 31, 220–227.

Addo, P. C., Jiaming, F., Kulbo, N. B., & Liangqiang, L. (2020). COVID-19: fear appeal favoring purchase behavior towards personal protective equipment. The Service Industries Journal, 40(7–8), 471–490. https://doi.org/10.1080/02642069.2020.1751823

AFP. (2021). Crowd at Safdarjung market, New Delhi. The Times of India. https://timesofindia.indiatimes.com/web-stories/india/a-glimpse-of-the-snarling-crowd-as-markets-reopen/photostory/83614716.cms

Ahmed, Z. U., Ghingold, M., & Dahari, Z. (2007). Malaysian shopping mall behavior: An exploratory study. Asia Pacific Journal of Marketing and Logistics, 19(4), 331–348. https://doi.org/10.1108/13555850710827841

Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The Fear of COVID-19 Scale: Development and Initial Validation. International Journal of Mental Health and Addiction. https://doi.org/10.1007/s11469-020-00270-8

Ali, F., Rasoolimanesh, S. M., Sarstedt, M., Ringle, C. M., & Ryu, K. (2018). An assessment of the use of partial least squares structural equation modeling (PLS-SEM) in hospitality research. International Journal of Contemporary Hospitality Management, 30(1), 514–538. https://doi.org/10.1108/IJCHM-10-2016-0568

Amoako, G. K., Doe, J. K., & Dzogbenuku, R. K. (2021). Perceived firm ethicality and brand loyalty: the mediating role of corporate social responsibility and perceived green marketing. Society and Business Review, 16(3), 398–419. https://doi.org/10.1108/SBR-05-2020-0076

Antwi, H. A., Zhou, L., Xu, X., & Mustafa, T. (2021). Beyond COVID-19 pandemic: An integrative review of global health crisis influencing the evolution and practice of corporate social responsibility. In Healthcare (Switzerland) (Vol. 9, Issue 4). https://doi.org/10.3390/healthcare9040453

Arief, N. N., & Pangestu, A. B. (2021). Perception and Sentiment Analysis on Empathic Brand Initiative During the COVID-19 Pandemic: Indonesia Perspective. Journal of Creative Communications, 09732586211031164. https://doi.org/10.1177/09732586211031164

Arora, A., Jha, A. K., Alat, P., & Das, S. S. (2020). Understanding coronaphobia. Asian Journal of Psychiatry, 54, 102384. https://doi.org/10.1016/j.ajp.2020.102384

Artigas, E. M., Vilches-Montero, S., & Yrigoyen, C. C. (2015). Antecedents of tourism destination reputation: The mediating role of familiarity. Journal of Retailing and Consumer Services, 26, 147–152.

Baker, D. A., & Crompton, J. L. (2000). Quality, satisfaction and behavioral intentions. Annals of Tourism Research, 27(3), 785–804. https://doi.org/https://doi.org/10.1016/S0160-7383(99)00108-5

Baker, J., Parasuraman, A., Grewal, D., & Voss, G. B. (2002). The Influence of Multiple Store Environment Cues on Perceived Merchandise Value and Patronage Intentions. Journal of Marketing, 66(2), 120–141. https://doi.org/10.1509/jmkg.66.2.120.18470

Batat, W. (2021). How Michelin-starred chefs are being transformed into social bricoleurs? An online qualitative study of luxury foodservice during the pandemic crisis. Journal of Service Management, 32(1), 87–99. https://doi.org/10.1108/JOSM-05-2020-0142

Bloch, P. H., & Richins, M. L. (1983). A Theoretical Model for the Study of Product Importance Perceptions. Journal of Marketing, 47(3), 69–81. https://doi.org/10.1177/002224298304700308

Bloch, P. H., Ridgway, N. M., & Dawson, S. A. (1994). The shopping mall as consumer habitat. Journal of Retailing, 70(1), 23–42. https://doi.org/https://doi.org/10.1016/0022-4359(94)90026-4

Braun, E., Eshuis, J., Klijn, E.-H., & Zenker, S. (2018). Improving place reputation: Do an open place brand process and an identity-image match pay off? Cities, 80, 22–28. https://doi.org/10.1016/j.cities.2017.06.010

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 60-
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Broutsou, A., & Fitsilis, P. (2012). Online trust: the influence of perceived company's reputation on consumers' trust and the effects of trust on intention for online transactions. Journal of Service Science and Management, 5(04), 365.

Brown, T. J., & Dacin, P. A. (1997). The Company and the Product: Corporate Associations and Consumer Product Responses. Journal of Marketing, 61(1), 68–84. https://doi.org/10.1177/002224299706100106

Brown, T. J., Suter, T. A., & Churchill, G. A. (2013). Basic marketing research. Cengage learning.

Cakici, A. C., Akgunduz, Y., & Yildirim, O. (2019). The impact of perceived price justice and satisfaction on loyalty: the mediating effect of revisit intention. Tourism Review, 74(3), 443–462. https://doi.org/10.1108/TR-02-2018-0025

Carmines, E. G., & Zeller, R. A. (1979). Assessing reliability. Assessing Reliability: Reliability and Validity Assessment, 17, 37–49.

Casalo, L. V, Flavián, C., & Guinalíu, M. (2007). The Influence of Satisfaction, Perceived Reputation and Trust on a Consumer's Commitment to a Website. Journal of Marketing Communications, 13(1), 1–17. https://doi.org/10.1080/13527260600951633

Centre, N. I. (2021). Tawakkalna (Covid-19 KSA) on the App Store. In KSA. https://apps.apple.com/sa/app/tawakkalna-covid-19-ksa/id1506236754

Chang, H. H., & Chen, S. W. (2008). The impact of online store environment cues on purchase intention: Trust and perceived risk as a mediator. Online Information Review.

Chang, H. J., Cho, H. J., Turner, T., Gupta, M., & Watchravesringkan, K. (2015). Effects of store attributes on retail patronage behaviors. Journal of Fashion Marketing and Management, 19(2), 136–153. https://doi.org/10.1108/JFMM-03-2014-0019

Chen, C.-H. (1992). Modernization in Mainland China: American Journal of Economics and Sociology, 51(1), 57–68. https://doi.org/https://doi.org/10.1111/j.1536-7150.1992.tb02507.x

Cheng, J.-C., Chen, C.-Y., Yen, C.-H., & Teng, H.-Y. (2017). Building customer satisfaction with tour leaders: the roles of customer trust, justice perception, and cooperation in group package tours. Asia Pacific Journal of Tourism Research, 22(4), 395–407. https://doi.org/10.1080/10941665.2016.1271816

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In Modern methods for business research (Vol. 295, Issue 2). London.

Chu, W., Choi, B., & Song, M. R. (2005). The Role of On-line Retailer Brand and Infomediary Reputation in Increasing Consumer Purchase Intention. International Journal of Electronic Commerce, 9(3), 115–127. https://doi.org/10.1080/10864415.2005.11044336

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences. In Statistical Power Analysis for the Behavioral Sciences. Routledge. https://doi.org/10.4324/9780203771587

Connelly, B. L., Hoskisson, R. E., Tihanyi, L., & Certo, S. T. (2010). Ownership as a Form of Corporate Governance. Journal of Management Studies, 47(8), 1561–1589. https://doi.org/https://doi.org/10.1111/j.1467-6486.2010.00929.x

Coronavirus: impact on the retail industry worldwide - Statistics & Facts | Statista. (2021). Statista.Com. https://www.statista.com/topics/6239/coronavirus-impact-on-the-retail-industry-worldwide/

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16(3), 297–334.

Dawson, J. F. (2014). Moderation in Management Research: What, Why, When, and How. Journal of Business and Psychology, 29(1), 1–19. https://doi.org/10.1007/s10869-013-9308-7

Deb, M. (2014). A study on the factors governing retailer–customer long-term relationship. International Journal of Commerce and Management, 24(3), 257–272. https://doi.org/10.1108/IJCoMA-06-2012-0038

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 60-82
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

del Mar Alonso-Almeida, M., Perramon, J., & Bagur, L. (2015). Women managers and corporate social responsibility (CSR) in Spain: Perceptions and drivers. Women's Studies International Forum, 50, 47–56. https://doi.org/https://doi.org/10.1016/j.wsif.2015.02.007

Denise Lee Yohn. (2020). The Pandemic Is Rewriting the Rules of Retail. Harvard Business Review, 2–6. https://hbr.org/2020/07/the-pandemic-is-rewriting-the-rules-of-retail

Desai, D., & Phadtare, M. (2017). Attributes Influencing Retail Store Choice Decision of Shoppers: A Case of Pune City. Vision, 21(4), 436–448. https://doi.org/10.1177/0972262917733194

DHNS. (2021). Crowds are back in malls, restaurants after two months of Covid-19 lockdown | Deccan Herald. Deccan Herald. https://www.deccanherald.com/city/crowds-are-back-in-malls-restaurants-after-two-months-of-covid-19-lockdown-1005387.html

Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. Environmental Quality Management, 8(1), 37–51. https://doi.org/https://doi.org/10.1002/tqem.3310080106

F. Hair Jr, J., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM). European Business Review, 26(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128

Farrid, F. F. A., & Gisip, I. A. (2021). The Effects of Experiential Values to Mall Repatronage Intention in Kota Kinabalu Context. In Eurasian Business and Economics Perspectives (pp. 143–158). Springer.

Fatemi, H., & Dube, L. (2021). The impact of corporate social responsibility (CSR) priming on consumers' consumption and lifestyle choices with intertemporal tradeoffs. European Journal of Marketing, ahead-of-p(ahead-of-print). https://doi.org/10.1108/EJM-04-2020-0250

Fernandes, N. (2020). Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy. SSRN Electronic Journal, 0–32. https://doi.org/10.2139/ssrn.3557504

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39–50. https://doi.org/10.2307/3151312

Foscht, T., Lin, Y., & Eisingerich, A. B. (2018). Blinds up or down? European Journal of Marketing, 52(3/4), 476–498. https://doi.org/10.1108/EJM-10-2016-0576

Galan, J. I. (2006). Corporate Social Responsibility and Strategic Management. Journal of Management Studies, 43(7), 1629–1641. https://doi.org/https://doi.org/10.1111/j.1467-6486.2006.00655.x

Galbreath, J. (2010). The impact of strategic orientation on corporate social responsibility. International Journal of Organizational Analysis, 18(1), 23–40. https://doi.org/10.1108/19348831011033195

Garcia, M. M., & Greenwood, K. (2015). Visualizing CSR: A visual framing analysis of US multinational companies. Journal of Marketing Communications, 21(3), 167–184. https://doi.org/10.1080/13527266.2012.740064

Gefen, D., Benbasat, I., & Pavlou, P. (2008). A research agenda for trust in online environments. Journal of Management Information Systems, 24(4), 275–286.

Godefroit-Winkel, D., Schill, M., & Diop-Sall, F. (2021). Does environmental corporate social responsibility increase consumer loyalty? International Journal of Retail & Distribution Management, ahead-of-p(ahead-of-print). https://doi.org/10.1108/IJRDM-08-2020-0292

Goolsbee, A., & Syverson, C. (2021). Fear, lockdown, and diversion: Comparing drivers of pandemic economic decline 2020. Journal of Public Economics, 193. https://doi.org/10.1016/j.jpubeco.2020.104311

Grégoire, Y., & Fisher, R. J. (2008). Customer betrayal and retaliation: when your best customers become your worst enemies. Journal of the Academy of Marketing Science, 36(2), 247–261. https://doi.org/10.1007/s11747-007-0054-0

Grewal, D., Baker, J., Levy, M., & Voss, G. B. (2003). The effects of wait expectations and store atmosphere evaluations on patronage intentions in service-intensive retail stores. 79, 259–268.

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 60-
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

https://doi.org/10.1016/j.jretai.2003.09.006

Gupta, M., & Hodges, N. (2012). Corporate social responsibility in the apparel industry. Journal of Fashion Marketing and Management: An International Journal, 16(2), 216–233. https://doi.org/10.1108/13612021211222833

Gyte, D. M., & Phelps, A. (1989). Patterns of Destination Repeat Business: British Tourists in Mallorca, Spain. Journal of Travel Research, 28(1), 24–28. https://doi.org/10.1177/004728758902800105

Hagberg, J., & Styhre, A. (2013). The production of social space: shopping malls as relational and transductive spaces. Journal of Engineering, Design and Technology, 11(3), 354–374. https://doi.org/10.1108/JEDT-04-2011-0019

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Thousand Oaks. In Sage.

Hair, J. F., Lukas, B., Roberts, K., & Lee-Lukas, S. (2014). Marketing Research. McGraw-Hill Education. https://books.google.co.in/books?id=UL7OngEACAAJ

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. European Business Review, 31(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). The use of partial least squares structural equation modeling in strategic management research: a review of past practices and recommendations for future applications. Long Range Planning, 45(5–6), 320–340.

Hair Jr., J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. International Journal of Multivariate Data Analysis, 1(2), 107. https://doi.org/10.1504/ijmda.2017.10008574

Han, H., & Hyun, S. S. (2015). Customer retention in the medical tourism industry: Impact of quality, satisfaction, trust, and price reasonableness. Tourism Management, 46, 20–29. https://doi.org/https://doi.org/10.1016/j.tourman.2014.06.003

Hao, N., Wang, H. H., & Zhou, Q. (2020). The impact of online grocery shopping on stockpile behavior in Covid-19. China Agricultural Economic Review, 12(3), 459–470. https://doi.org/10.1108/CAER-04-2020-0064

Hassan, S. B., & Soliman, M. (2021). COVID-19 and repeat visitation: Assessing the role of destination social responsibility, destination reputation, holidaymakers' trust and fear arousal. Journal of Destination Marketing & Management, 19, 100495. https://doi.org/https://doi.org/10.1016/j.jdmm.2020.100495

Hazée, S., & Van Vaerenbergh, Y. (2021). Customers' contamination concerns: an integrative framework and future prospects for service management. Journal of Service Management, 32(2), 161–175. https://doi.org/10.1108/JOSM-04-2020-0129

Heffner, J., Vives, M.-L., & FeldmanHall, O. (2021). Emotional responses to prosocial messages increase willingness to self-isolate during the COVID-19 pandemic. Personality and Individual Differences, 170, 110420. https://doi.org/https://doi.org/10.1016/j.paid.2020.110420

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. Industrial Management and Data Systems, 116(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

Hollebeek, L. D., Smith, D. L. G., Kasabov, E., Hammedi, W., Warlow, A., & Clark, M. K. (2021). Customer brand engagement during service lockdown. Journal of Services Marketing, 35(2), 201–209. https://doi.org/10.1108/JSM-05-2020-0199

Hu, X., Yan, H., Casey, T., & Wu, C.-H. (2021). Creating a safe haven during the crisis: How organizations can achieve deep compliance with COVID-19 safety measures in the hospitality industry. International Journal of Hospitality Management, 92, 102662. https://doi.org/https://doi.org/10.1016/j.ijhm.2020.102662

Ijabadeniyi, A., & Govender, J. P. (2019). Coerced CSR: lessons from consumer values and purchasing behavior. Corporate Communications: An International Journal, 24(3), 515–531. https://doi.org/10.1108/CCIJ-10-2018-

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 60-82
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

0110

Itani, O. S., & Hollebeek, L. D. (2021). Consumers' health-locus-of-control and social distancing in pandemic-based e-tailing services. Journal of Services Marketing, ahead-of-p(ahead-of-print). https://doi.org/10.1108/JSM-10-2020-0410

Jayaweera, M., Perera, H., Gunawardana, B., & Manatunge, J. (2020). Transmission of COVID-19 virus by droplets and aerosols: A critical review on the unresolved dichotomy. Environmental Research, 188, 109819. https://doi.org/https://doi.org/10.1016/j.envres.2020.109819

Jo, W., Lee, C.-K., & Reisinger, Y. (2014). Behavioral intentions of international visitors to the Korean hanok guest houses: Quality, value and satisfaction. Annals of Tourism Research, 47, 83–86. https://doi.org/https://doi.org/10.1016/j.annals.2014.05.003

Johnson, D., & Grayson, K. (2005). Cognitive and affective trust in service relationships. Journal of Business Research, 58(4), 500–507.

Jones, P., Comfort, D., & Hillier, D. (2007). Sustainable Development and the UK's Major Retailers. Geography, 92(1), 41–47. https://doi.org/10.1080/00167487.2007.12094179

Kabadayı, E. T., & Alan, A. K. (2012). Revisit Intention of Consumer Electronics Retailers: Effects of Customers' Emotion, Technology Orientation and WOM Influence. Procedia - Social and Behavioral Sciences, 41, 65–73. https://doi.org/https://doi.org/10.1016/j.sbspro.2012.04.009

Kaul, C. (2020, July 27). [Post COVID]:RETAIL OCCUPANCY IN MALLS IN INDIA. Www.Indianretailer.Com. https://www.indianretailer.com/article/whats-hot/trends/post-covid-retail-occupancy-in-malls-in-india.a6658/

Keh, H. T., & Xie, Y. (2009). Corporate reputation and customer behavioral intentions: The roles of trust, identification and commitment. Industrial Marketing Management, 38(7), 732–742. https://doi.org/https://doi.org/10.1016/j.indmarman.2008.02.005

Khan, S. (2021, May 31). Covid impact on malls: Malls take Rs 30,000 crore hit on Covid curbs - The Economic Times. Www.Economictimes.Com. https://economictimes.indiatimes.com/news/india/malls-take-rs-30000-crore-hit-on-covid-curbs/articleshow/83103850.cms

Khare, A. (2011). Mall shopping behaviour of Indian small town consumers. Journal of Retailing and Consumer Services, 18(1), 110–118. https://doi.org/https://doi.org/10.1016/j.jretconser.2010.10.005

Kim, H., Woo, E., & Uysal, M. (2015). Tourism experience and quality of life among elderly tourists. Tourism Management, 46, 465–476. https://doi.org/https://doi.org/10.1016/j.tourman.2014.08.002

Kim, M.-J., Chung, N., & Lee, C.-K. (2011). The effect of perceived trust on electronic commerce: Shopping online for tourism products and services in South Korea. Tourism Management, 32(2), 256–265.

Kim, M.-S., & Ahn, J.-H. (2007). Management of Trust in the E-Marketplace: The Role of the Buyer's Experience in Building Trust. Journal of Information Technology, 22(2), 119–132. https://doi.org/10.1057/palgrave.jit.2000095

Kim, S.-B., Kim, D.-Y., & Wise, K. (2014). The effect of searching and surfing on recognition of destination images on Facebook pages. Computers in Human Behavior, 30, 813–823.

Kim, Y. (2005). The Effects of Buyer and Product Traits with Seller Reputation on Price Premiums in E-Auction. Journal of Computer Information Systems, 46(1), 79–91. https://doi.org/10.1080/08874417.2005.11645871

Kock, N. (2014). WarpPLS 4.0 user manual. In Laredo, TX: ScriptWarp Systems.

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. International Journal of E-Collaboration, 11, 1–10. https://doi.org/10.4018/ijec.2015100101

Kozak, M. (2002). Comparative analysis of tourist motivations by nationality and destinations. Tourism Management, 23(3), 221–232.

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 60-
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Kumar, A., Anil, K., & Shree, B. (2021). An exploratory analysis of mall attractive dimensions from the perspective of tier-II cities customers. International Journal of Business Innovation and Research, 25(1), 78–93. https://doi.org/10.1504/IJBIR.2021.115044

Kushwaha, T., Ubeja, S., & Chatterjee, A. S. (2019). Factors Influencing Selection of Shopping Malls : An Exploratory Study of Factors Influencing Selection of Shopping Malls : An Exploratory Study of Consumer Perception. Vision-The Journal of Business Perspective, March. https://doi.org/10.1177/0972262917716761

Latif, K. F., Pérez, A., & Sahibzada, U. F. (2020). Corporate social responsibility (CSR) and customer loyalty in the hotel industry: A cross-country study. International Journal of Hospitality Management, 89, 102565. https://doi.org/https://doi.org/10.1016/j.ijhm.2020.102565

Limbu, Y. B., Wolf, M., & Lunsford, D. (2012). Perceived ethics of online retailers and consumer behavioral intentions. Journal of Research in Interactive Marketing, 6(2), 133–154. https://doi.org/10.1108/17505931211265435

Luo, A., Ye, T., Xue, X., & Mattila, A. S. (2021). Appreciation vs. apology: When and why does face covering requirement increase revisit intention? Journal of Retailing and Consumer Services, 63, 102705. https://doi.org/https://doi.org/10.1016/j.jretconser.2021.102705

Majumdar, A. (2005). A Model for Customer Loyalty for Retail Stores inside Shopping Malls- An Indian Perspective A Model for Customer Loyalty for Retail Stores inside Shopping Malls-An Indian Perspective. Journal of Services Research, January 2005, 47–64. https://www.researchgate.net/publication/285749454

Maulana, A. E., Hikmah, L. Z., & Andriyanto, Y. (2012). Prayer rooms: an augmented or expected benefit? Senayan City Mall Jakarta. Emerald Emerging Markets Case Studies, 2(3), 1–10. https://doi.org/10.1108/20450621211237239

Mehra, S., & Jain, P. (2021). Unlock in Delhi: Crowds swell in markets, malls wear deserted look - Cities News. India Today. https://www.indiatoday.in/cities/delhi/story/unlock-delhi-crowds-markets-malls-covid-19-1817013-2021-06-19

Mehta, R., Sharma, N. K., & Swami, S. (2014). A typology of Indian hypermarket shoppers based on shopping motivation. International Journal of Retail and Distribution Management, 42(1), 40–55. https://doi.org/10.1108/IJRDM-06-2012-0056

Merrilees, B., & Miller, D. (2019). Companion shopping: the influence on mall brand experiences. Marketing Intelligence & Planning, 37(4), 465–478. https://doi.org/10.1108/MIP-08-2018-0340

Mosavi, S. A., & Ghaedi, M. (2012). Role of perceived value in explaining trust and repurchase intention in e-shopping. African Journal of Business Management, 6(14), 4910–4920.

Nair, S. R. (2018). Analyzing the relationship between store attributes, satisfaction, patronage-intention and lifestyle in food and grocery store choice behavior. International Journal of Retail and Distribution Management, 46(1), 70–89. https://doi.org/10.1108/IJRDM-06-2016-0102

Najam, A. (1999). World Business Council for Sustainable Development: The Greening of Business or a Greenwash? Yearbook of International Co-Operation on Environment and Development 1999/2000.

Newhagen, J. E. (1998). TV news images that induce anger, fear, and disgust: Effects on approach-avoidance and memory. Journal of Broadcasting & Electronic Media, 42(2), 265–276. https://doi.org/10.1080/08838159809364448

Ozdora Aksak, E., Ferguson, M. A., & Atakan Duman, S. (2016). Corporate social responsibility and CSR fit as predictors of corporate reputation: A global perspective. Public Relations Review, 42(1), 79–81. https://doi.org/https://doi.org/10.1016/j.pubrev.2015.11.004

Panagiotopoulos, I. (2021). Novel CSR & novel coronavirus: corporate social responsibility inside the frame of coronavirus pandemic in Greece. International Journal of Corporate Social Responsibility, 6(1), 10. https://doi.org/10.1186/s40991-021-00065-7

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 60-82
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Pantano, E., Pizzi, G., Scarpi, D., & Dennis, C. (2020). Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak. Journal of Business Research, 116, 209–213. https://doi.org/https://doi.org/10.1016/j.jbusres.2020.05.036

Paul, J., & Rana, J. (2012). Consumer behavior and purchase intention for organic food. Journal of Consumer Marketing, 29(6), 412–422. https://doi.org/10.1108/07363761211259223

Poolthong, Y., & Mandhachitara, R. (2009). Customer expectations of CSR, perceived service quality and brand effect in Thai retail banking. International Journal of Bank Marketing, 27(6), 408–427. https://doi.org/10.1108/02652320910988302

Powell, T. E., Boomgaarden, H. G., De Swert, K., & de Vreese, C. H. (2015). A Clearer Picture: The Contribution of Visuals and Text to Framing Effects. Journal of Communication, 65(6), 997–1017. https://doi.org/10.1111/jcom.12184

Prasad, C. J. S., & Aryasri, A. R. (2009). Determinants of Shopper Behaviour in E-tailing: An Empirical Analysis. Paradigm, 13(1), 73–83. https://doi.org/10.1177/0971890720090110

PTI. (2021). Unlock Day 1: India is reopening, here's pictures from Delhi, J&K, Himachal - Traffic jam in Shimla | The Economic Times. The Economic Times. https://economictimes.indiatimes.com/news/india/unlock-day-1-india-is-reopening-heres-pictures-from-delhi-jampk-himachal/traffic-jam-in-shimla/slideshow/83138381.cms

Ramane Amey, Bhanot Sandeep, & Shetty Shreya. (2020). A study on "The Indian Consumer Purchase Behavior During Lock-Down 1.0 Due To Covid-19." International Journal of Commerce and Management Studies, 5(2), 1–13. www.ijcams.com

Rather, R A, & Hollebeek, L. (2021). Customers' service-related engagement, experience, and behavioral intent: Moderating role of age. Journal of Retailing and Consumer Services, 60, 102453. https://doi.org/10.1016/j.jretconser.2021.102453

Rather, Raouf Ahmad. (2021). Demystifying the effects of perceived risk and fear on customer engagement, co-creation and revisit intention during COVID-19: A protection motivation theory approach. Journal of Destination Marketing & Management, 20, 100564. https://doi.org/https://doi.org/10.1016/j.jdmm.2021.100564

Rhee, M., & Haunschild, P. R. (2006). The Liability of Good Reputation: A Study of Product Recalls in the U.S. Automobile Industry. Organization Science, 17(1), 101–117. https://doi.org/10.1287/orsc.1050.0175

Rittichainuwat, B. N., & Chakraborty, G. (2009). Perceived travel risks regarding terrorism and disease: The case of Thailand. Tourism Management, 30(3), 410–418. https://doi.org/https://doi.org/10.1016/j.tourman.2008.08.001

Roggeveen, A. L., & Sethuraman, R. (2020). How the COVID-19 Pandemic May Change the World of Retailing. Journal of Retailing, 96(2), 169–171. https://doi.org/https://doi.org/10.1016/j.jretai.2020.04.002

Rosenbaum, M. S., & Russell-Bennett, R. (2020). Editorial: service research in the new (post-COVID) marketplace. Journal of Services Marketing, 34(5), I--V. https://doi.org/10.1108/JSM-06-2020-0220

Roy Dholakia, R., Pedersen, B., & Hikmet, N. (1995). Married males and shopping: are they sleeping partners. International Journal of Retail & Distribution Management, 23(3), 27–33. https://doi.org/10.1108/09590559510083975

Ruiter, R. A. C., Verplanken, B., Kok, G., & Werrij, M. Q. (2003). The role of coping appraisal in reactions to fear appeals: Do we need threat information? Journal of Health Psychology, 8(4), 465–474.

Sadachar, A., & Fiore, A. M. (2018). The path to mall patronage intentions is paved with 4E-based experiential value for Indian consumers. International Journal of Retail and Distribution Management, 46(5), 442–465. https://doi.org/10.1108/IJRDM-07-2017-0152

Sahelices-Pinto, C., Lanero-Carrizo, A., & Vázquez-Burguete, J. L. (2018). Social commitment or self-interest? Effect of responsible practices performance motivations of firms on the consumer decision-making process. Journal of Marketing Communications, 24(3), 304–319. https://doi.org/10.1080/13527266.2018.1425194

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
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URL: http://www.reaser.eu
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Sahi, G. K., Sekhon, H. S., & Quareshi, T. K. (2016). Role of trusting beliefs in predicting purchase intentions. International Journal of Retail & Distribution Management, 44(8), 860–880. https://doi.org/10.1108/IJRDM-10-2015-0157

Sharma, R. (2021). Unlock2.0: Markets reopen in NCR, footfall stays low | Delhi News - Times of India. Times of India. https://timesofindia.indiatimes.com/city/delhi/unlock2-0-markets-reopen-in-ncr-footfall-stays-low/articleshow/83364347.cms

Singh, D. P. (2018). Integration of materialism with shopping motivations: motivations based profile of Indian mall shoppers. Journal of Asia Business Studies, 12(4), 381–401. https://doi.org/10.1108/JABS-05-2016-0075

Singh, H., & Dash, P. C. (2012). Determinants of Mall Image in the Indian Context: Focus on Environment. Asia-Pacific Journal of Management Research and Innovation, 8(4), 407–415. https://doi.org/10.1177/2319510X13481897

Singh, H., & Sahay, V. (2012). Determinants of shopping experience. International Journal of Retail & Distribution Management, 40(3), 235–248. https://doi.org/10.1108/09590551211207184

Singla, V., & Rai, H. (2016). Investigating the effects of retail agglomeration choice behavior on store attractiveness. Journal of Marketing Analytics, 4(2), 108–124. https://doi.org/10.1057/s41270-016-0004-0

Srinaruewan, P., Binney, W., & Higgins, C. (2015). Consumer reactions to corporate social responsibility (CSR) in Thailand. Asia Pacific Journal of Marketing and Logistics, 27(4), 628–652. https://doi.org/10.1108/APJML-10-2014-0151

Styhre, A. (2019). The invention of the shopping mall. Journal of Engineering, Design and Technology, 17(2), 283–299. https://doi.org/10.1108/JEDT-08-2018-0139

Su, L., & Huang, Y. (2019). How does perceived destination social responsibility impact revisit intentions: The mediating roles of destination preference and relationship quality. Sustainability, 11(1), 133.

Su, L., & Swanson, S. R. (2017). The effect of destination social responsibility on tourist environmentally responsible behavior: Compared analysis of first-time and repeat tourists. Tourism Management, 60, 308–321.

Su, L., Swanson, S. R., & Chen, X. (2015). Social responsibility and reputation influences on the intentions of Chinese Huitang Village tourists. International Journal of Contemporary Hospitality Management, 27(8), 1750–1771. https://doi.org/10.1108/IJCHM-06-2014-0305

Su, L., Yang, Q., Swanson, S. R., & Chen, N. C. (2021). The impact of online reviews on destination trust and travel intention: The moderating role of online review trustworthiness. Journal of Vacation Marketing, 13567667211063208. https://doi.org/10.1177/13567667211063207

Tandon, A., Gupta, A., & Tripathi, V. (2016). Managing shopping experience through mall attractiveness dimensions. Asia Pacific Journal of Marketing and Logistics, 28(4), 634–649. https://doi.org/10.1108/APJML-08-2015-0127

Tauber, E. M. (1972). Marketing Notes and Communications: Why Do People Shop? Journal of Marketing, 36(4), 46–49. https://doi.org/10.1177/002224297203600409

Tingchi Liu, M., Anthony Wong, I., Rongwei, C., & Tseng, T.-H. (2014). Do perceived CSR initiatives enhance customer preference and loyalty in casinos? International Journal of Contemporary Hospitality Management, 26(7), 1024–1045. https://doi.org/10.1108/IJCHM-05-2013-0222

Tong, C., & Wong, A. (2014). The influences of corporate social responsibility to customer repurchases intentions, customer word-of-mouth intentions and customer perceived food quality of fast-food restaurants in Hong Kong and the mediating effects of corporate reputation. Journal of Economics, Management and Trade, 1655–1678.

Untaru, E. N., & Han, H. (2021). Protective measures against COVID-19 and the business strategies of the retail enterprises: Differences in gender, age, education, and income among shoppers. Journal of Retailing and Consumer Services, 60, 102446. https://doi.org/10.1016/j.jretconser.2021.102446

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 60-82
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Walsh, G., Mitchell, V., Jackson, P. R., & Beatty, S. E. (2009). Examining the Antecedents and Consequences of Corporate Reputation: A Customer Perspective. British Journal of Management, 20(2), 187–203. https://doi.org/10.1111/j.1467-8551.2007.00557.x

Wanderley, L. S. O., Lucian, R., Farache, F., & de Sousa Filho, J. M. (2008). CSR Information Disclosure on the Web: A Context-Based Approach Analysing the Influence of Country of Origin and Industry Sector. Journal of Business Ethics, 82(2), 369–378. https://doi.org/10.1007/s10551-008-9892-z

Weiss, A. M., Anderson, E., & Maclnnis, D. J. (1999). Reputation Management as a Motivation for Sales Structure Decisions. Journal of Marketing, 63(4), 74–89. https://doi.org/10.1177/002224299906300407

Wertheim-Heck, S. C. O., Vellema, S., & Spaargaren, G. (2015). Food safety and urban food markets in Vietnam: The need for flexible and customized retail modernization policies. Food Policy, 54, 95–106. https://doi.org/https://doi.org/10.1016/j.foodpol.2015.05.002

Xia, L., Monroe, K. B., & Cox, J. L. (2004). The Price is Unfair! A Conceptual Framework of Price Fairness Perceptions. Journal of Marketing, 68(4), 1–15. https://doi.org/10.1509/jmkg.68.4.1.42733

Yu, W., & Ramanathan, R. (2012). Retail service quality, corporate image and behavioural intentions: the mediating effects of customer satisfaction. The International Review of Retail, Distribution and Consumer Research, 22(5), 485–505. https://doi.org/10.1080/09593969.2012.711250

Zheng, D., Luo, Q., & Ritchie, B. W. (2021). The Role of Trust in Mitigating Perceived Threat, Fear, and Travel Avoidance after a Pandemic Outbreak: A Multigroup Analysis. Journal of Travel Research, 0047287521995562. https://doi.org/10.1177/0047287521995562

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The Impact of Public Bus Service Quality on the Users' Satisfaction: Evidence from a Developing Asian City

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Abstract. *In a country where there is a high level of car ownership, public buses are considered another mode of transport that is more sustainable. Despite that, there is a very low level of public bus ridership in Malaysia which questions the users' satisfaction with its service quality. This study investigates the role of public bus service quality (tangibility, reliability, assurance, empathy, and responsiveness) by utilizing the SERVQUAL model for users' satisfaction. A sample of 300 questionnaires was obtained from public bus users in Kota Samarahan, Sarawak, Malaysia as the case study area. Using Partial Least Square-Structural Equation Model, the results show that tangibility, reliability, and responsiveness are significant service quality factors that influence users' satisfaction with public buses in the case study area. Of the factors, tangibility is considered the most critical factor that influences users' satisfaction. This study provides imperative knowledge which will be advantageous for stakeholders specifically policy-makers, transport ministries, town planners, local authorities, and service operators in strategizing policies and plans that could encourage the public buses usage.*

Keywords: Public transport, customer satisfaction, service quality, partial-least squares-structural equation model

JEL Codes: R40

1. Introduction

The rising population along with rapid urbanization and economic development has spurred the need for society to travel. In most developed countries, people tend to depend upon public transport, while the travel patterns in many developing countries tend to rely heavily on private transport, either cars or motorcycles. Currently, Malaysia is among the Asian developing country with a high level of car ownership. Car ownership in Malaysia is 450 cars per 1000 inhabitants while in cities are 393 cars per 1,000 inhabitants for Kuala Lumpur and 292 cars per 1,000 inhabitants in Sarawak in 2018. This is lower than Brunei Darussalam (606 cars per 1,000 inhabitants) and relatively higher than Thailand (238 cars per 1,000 inhabitants) (ASEAN Stats, 2018). According to the Malaysia Automotive Institute (2018), the total number of cars registered in Malaysia has increased by 43% from 2010 to approximately 12 million cars in 2016. Automobile reliance imposes negative externalities on the society including air pollution, oil dependency,

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traffic congestion, and traffic accidents (Parry, Walls & Harrington, 2007). Malaysia transportation sector produces 50 million metric tons (Mt) of CO2 in 2015 with 85.2% accounted from road transportation sector. As a result of high ownership, automobiles accounted for 59% of the emissions (Ghadimzadeh et al., 2015). Hence, a shift to a more sustainable mode of transport could potentially reduce the emissions in the long run. Commuting via public buses is more sustainable than other transportation due to the spacious space and its effectiveness to accommodate more people using bus transport which leads to lesser fuel consumption and anthropogenic pollution compared to private cars (Fillone, Mantalbo & Tiglao, 2005). The aim is in line with the United Nation's Sustainable Development Goals (SDG 11) on sustainable cities (access to transport and expanded public transport).Currently, the usage of public buses is only 20% which is relatively low in comparison with the target aimed by Malaysia's National Transport Policy (NTP) 2019-2030 of 40% public transport by the end of 2030. The low ridership in public transport is associated with the convenience gained in private transport such as flexibility, comfort, privacy, and speed (Ibrahim et al., 2021). Thompson and Schofield (2007) mentioned that negative perception leads to unsatisfied users commuting using public buses. Public buses should provide high-quality services to meet specific passenger expectations and preferences (Oliver, 1980). Some research exploring the relationship between service quality and user satisfaction implies that the quality of the service has become a factor that affects user satisfaction. Based on Fellesson and Friman (2008), satisfaction is the degree of a person's perception formed by the combination of experience and perceptions toward the goods and services.As it is evident that there is very high ownership of personal cars, the motivation of this study is to encourage more people to use public transportation rather than driving their own cars more often. The output of the study would be useful to improve the service quality of the public transport sector in the context of Asian developing countries with high car ownership. Hence, the study is imperative to assist policy-makers in understanding factors that influence users' satisfaction with public transport. This study aims to identify factors that influence users' satisfaction with public transport service quality in Kota Samarahan, Malaysia. Moreover, factors driven by SERVQUAL model are utilized in constructing the conceptual framework used in the study. The paper is organized as follows. Section 2 discusses the literature review of the study. Section 3 presents the adopted methodology. Section 4 explains the findings of the study and section 5 presents the discussions of the findings. Finally, section 6 concludes the study along with the limitation and future suggestions.

2. Research Elaboration

Past literature has shown that many studies are being conducted to assessing the public transport service quality. However, it is noted that most studies have focuses merely on developed countries or developing countries in general. This study specifically concentrates on investigating the role of service quality in public transport in a developing Asian country with a high level of car ownership in the Borneo Island context. Borneo is the third-largest island in the world which is divided into three economic regions; Sarawak and Sabah which belongs to Malaysia, Kalimantan which belongs to Indonesia, and Brunei. Past literature on developing countries that have been conducted in Asian countries include studies by Zakaria et al. (2010) which in Lembah Bujang Area in Kedah state of Malaysia and Ueasangkomsate (2021) in 16 large provinces in six regions in Thailand. Zakaria et al. (2010) denoted that while public transit is updated and located in metropolitan areas, service quality is still low and poorly implemented which eventually affect the ridership. Ueasangkomsate (2021) further adds that output from measuring the public transport service quality based on SERVQUAL will lead to improvement in service quality in accordance with local public road passengers' specifications. The SERVQUAL paradigm is growing in prominence and has been widely developed as a model for explaining user experiences. This model was designed to assess customer satisfaction and to investigate the elements of service quality. Customers' or users' opinion of the performance of the services

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offered is heavily influenced by service quality. According to Parasuraman, Zeithaml and Berry (1988), the quality of services provided to customers is determined by their assessment of the product or service's advantages. The gap between user expectations and service perceptions was regarded as service quality in the study. The quality of service is also known as the "disconfirmation" paradigm, which is developed from the user satisfaction model and compares the expected output from the client to the actual performance. According to Grönroos (1996), service quality is split into three output dimensions: service quality, technical quality, and the mental structure of the picture. Measuring consumer satisfaction with public transportation services is a subject of much interest in the transport sector. Past literature has shown that there is a link between service quality and consumer happiness in public transportation (Bielen & Demoulin, 2007; Beirão & Sarsfield Cabral, 2007; Fellesson & Friman, 2008; Budiono, 2009).The actual buildings, equipment, and staff required for the service are referred to as tangible. Tangible refers to one's appearance, and physical amenities such as layout, decorating, presentation, and equipment, according to Parasuraman et al., (1988). The research proposed a physical facility for assessing public transportation service quality in which the physical appearances, including those of the state of the interior in public transportation, are one of the indicators of service quality (Zakaria et al., 2010). Customers infer the level of service depending on their comprehension of physical aspects, according to Saadat, Tahbet & Mannan (2018). Although the service is intangible, it requires consumers to participate in the process since the existence of tangible or physical aspects has a substantial impact on the impression of service quality (Bitner, 1992). According to Rushton and Carson (1989), there are two categories of tangibles: tangible surrogate characteristics and tangible benefits. The tangible equivalent refers to the environment in which the intangible service is provided, whereas tangible advantages are the actual benefits that the consumer receives as a result of the service. As a result, tangible is a crucial feature for ensuring that customers are satisfied with the services offered.

Consumers are more content with dependable and accessible transportation, which is one of the most important variables in customer satisfaction (Cavana, Corbett & Lo, 2007). Customers' expectations, wishes, and perceptions of their time are favorably impacted by the regularity and timeliness of public transportation, which comes on time as scheduled and satisfies customer expectations, and desires, and positively affects customers' perceptions of their time. Reliability, as per Parasuraman et al., (1988), relates to the capability to deliver services as promised and accurately. According to McKnight, Pagano & Paaaswell (1986), dependability is defined as the capacity to provide transportation services with consistency and timeliness. Dimensions of service quality such as arriving at a destination, travel length, communication, and route schedules are vital to examine. Furthermore, according to Bielen and Demoulin (2007), the arrival time of transportation to the station is a determinant of consumer satisfaction. Consumers will be delighted if public transportation is dependable and convenient. Long wait times, on the other hand, result in dissatisfied customers. In other words, unreliability in public transportation affects passenger perceptions of delays, limited access, and long wait times, causing existing and future consumers to abandon such services due to their worry and aggravation Bates et al. (2001). As a result of a loss of customer confidence and faith in public transportation, the number of existing passengers will decrease.

According to Leong, et al., (2015), responsiveness is a critical part of the SERVQUAL dimension that influences the speed with which consumers receive high-quality service. The readiness to assist clients and give prompt service without wasting their time is referred to as responsiveness. Responsiveness is defined as employees' willingness to deliver services in a timely way and workers' willingness to help. For instance, time management has an impact on customer satisfaction when it comes to waiting periods for the bus, whether they are short or lengthy. Shorter waiting time leads to satisfaction, nevertheless, when the waiting time is excessive, the consumer is left unsatisfied. Customers who are dissatisfied with the level of service offered, according to Grönroos (2007), may have a detrimental impact on service delivery. The

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responsiveness of excellent services in public transportation reflects the mindset of drivers and employees.The quantity of customer care and the firm's unique attention to the client is measured by empathy. Customer satisfaction has been more closely associated with empathy than other aspects, according to Sabir, et al., (2014). Empathy relates to a company's capacity to be reachable and its focus on consumers, making customers feel more appreciated and unique. Accessibility, improved communication, greater understanding, and special attention to the client are all part of the empathy element (Raspor, 2010). Empathy aspects are alert to communication circumstances, demonstrate nice conduct, and comprehend consumer needs and wants, according to Ennew, Waite & Waite (2013). Empathy's capacity to care for its clients is based on personalized attention, particularly while offering services. According to Parasuramam et al., (1985), understanding how consumers feel is superior to rivals since extra attention given to customers affects customer satisfaction. Empathy incorporates security, safety, approachability, and a desire to satisfy client demands (Kozerska, 2007). Buttle (1996) defines assurance as personnel's expertise and civility, as well as their capacity to give consumers trust and confidence. Similarly, Zainal et al., (2010), define assurance as pleasant and friendly people who are informed and eager to help, as well as access to all information and a well-organized management group. Also, according to Parasuraman, et al., (1988), assurance is the ability of personnel to instill trust and a firm belief in client pleasure via their knowledge. It indicates that the service quality assurance aspects demonstrate personnel efficiency, competence, and kindness, as well as the capacity to develop client confidence. If staff, for example, are unable to give superior service or fail to create trust and confidence, the firm will suffer. As a result, assurance increases client trust and confidence in the firm's capacity to provide service.

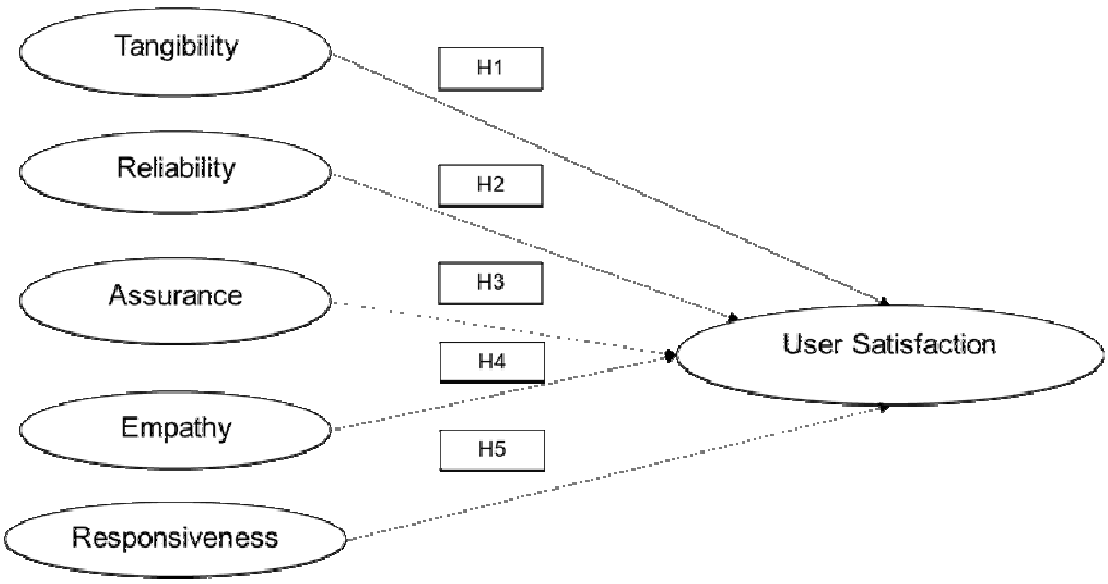

Figure 1: Conceptual Framework

Figure 1 presents the conceptual framework in accordance with the literature review. The dependent variable is user satisfaction and the independent variables dimension of service quality include tangible, reliability, assurance, empathy, and responsiveness. The following hypotheses are presented to answer the

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objective of this study, which is to examine the user satisfaction with the service quality of public buses in Kota Samarahan, Sarawak.

Hypothesis 1: There is a significant relationship between tangible and user satisfaction.

Hypothesis 2: There is a significant relationship between reliability and user satisfaction.

Hypothesis 3: There is a significant relationship between assurance and user satisfaction.

Hypothesis 4: There is a significant relationship between empathy and user satisfaction.

Hypothesis 5: There is a significant relationship between responsiveness and user satisfaction.

3. Research Methodology

3.1. Respondents and procedure

The questionnaire has been distributed to public transport users in Kota Samarahan. The respondents are users who have experienced commuting via public bus transport in Kota Samarahan. The distributed questionnaire has collected about 300 respondents within three weeks. The date of distribution was from the 15th of March 2020 to the 5th of April 2020.

3.2. Measurements

The study applies SERVQUAL to study user satisfaction toward service quality of public buses in Kota Samarahan. All constructs are measured using a five-point Likert scale ranging from 1-Strongly disagree to 5-Strongly agree. Table 1 shows the constructs and items being used for the study.

Table 1: Constructs and items included in the survey.

Constructs		Items
Tangible	T1	Driver's appearance is neat and smart.
	T2	Bus visually appealing materials with modern facilities.
	T3	Bus conditions are clean, hygienic, and comfortable.
	T4	Physical state of vehicles is well maintained and adequate.
Reliability	R1	Bus punctuality at each destination.
	R2	Availability of timetables and service information.
	R3	Information panels on terminals and bus stops.
	R4	Bus companies maintain error-free records.
Assurance	AS1	Feeling safe and secure throughout the journey.
	AS2	Drivers were always polite and friendly.
	AS3	Bus driver has sufficient driving skills.
	AS4	The staff has in-depth knowledge of their work.
Empathy	EM1	Bus companies understand the user's specific needs and requirements.
	EM2	Operating hours are convenient and efficient.
	EM3	Easy accessibility of bus network and services.
	EM4	The employees deal with users with care.
Responsiveness	RES1	Employees are very responsive and willing to help users.
	RES2	The courtesy and efficiency of employees.

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	RES3	The notice of the availability of services and price changes.
	RES4	Drivers communicate clearly and act professionally.
User Satisfaction	US1	I am overall satisfied with the service offered by bus transport in Kota Samarahan.
	US2	I am satisfied with the convenience of the bus transfer.
	US3	The current service of bus transport meets your overall expectation.
	US4	I feel satisfied with the bus fares in Kota Samarahan.
	US5	I am satisfied with the information on the bus service schedule and routes.
	US6	I am satisfied with the bus employee's attitude.

3.3. PLS-SEM

The study applies PLS-SEM to test the proposed model depicted in Figure 1. PLS-SEM is selected as the study involves a non-parametric model and the objectives are prediction-based. For that purpose, the SmartPLS 3.0 developed by Ringle et al. (2015) is utilized. PLS-SEM involves a two-step procedure which is the assessment of the measurement model and the assessment of the structural model. The fit indices for the assessment for indicator reliability, internal consistency, convergent validity, and discriminant validity. The assessment of the structural model involves hypothesis testing which is presented in Figure 1.

4. Results and Discussion

4.1. Descriptive Analysis

Of the total of 300 respondents, the majority of the respondents represent about 52 percent of females and the rest are male respondents merely about 48 percent in comparison with total. Besides that, the result shows that 75 percent of the respondents are between the age range of 21 – 30 years old, while 14.3 percent are 18 – 20 years old, 4.2 percent represent respondents in the age range of 31 – 40 years old, followed by 4.1 percent of respondents for the age range of 41 – 50 years old and the remaining 2.2 percent represent by respondents with age above 51 years old. Furthermore, ethnicity distribution shows that 63.7 percent of respondents are Malay, followed by Iban which is 15.7 percent, Chinese with 10 percent, 7.3 percent from other ethnic, and the remaining 3.3 percent of respondents are Indian. In marital status, most of the respondents are single 73.7 percent, and the remaining of 26.3 percent respondents are married. Next, the majority of the respondents possess a Bachelor's Degree with 53.7 percent as their highest education background. There is only 19.7 percent of the respondents are diploma holders, while STPM/A Level holders are 12.3 percent and it followed by SPM holders with 6.3 percent of respondents. The rest of the respondents are Master's Degree levels with 5.3 percent and Ph.D. levels with 2.7 percent. For the current profession, most of the respondents are students with 58.3 percent and is followed by 23.3 percent of employees. Meanwhile, 17.3 percent of respondents are from other professions that represent professions like housewives, unemployed, and business person. The remaining respondents are retirees with only 1 percent. As for the household average monthly income segment, the majority of the respondents 35.3 percent have an income between RM2001 to RM2000. Those with income below RM2000 are represented by 30 percent, followed by 27 percent are having an income of RM3001 to RM4000, 6.3 percent with income between RM4001 to RM5000 and 1.3 percent have a high income between RM5000 and above.

Table 2: Respondent's Profile

Demographic Variable	Categories	Frequency (N: 300)	Percentage (%)
Gender	Male	144	48.0

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	Female	156	52.0
Age	18 – 20 year old	43	14.3
	21 – 30 year old	225	75.0
	31 – 40 years old	13	4.2
	41 – 50 years old	12	4.1
	51 and above	7	2.2
Ethnicity	Malay	191	63.7
	Chinese	30	10.0
	Indian	10	3.3
	Iban	47	15.7
	Other	22	7.3
Marital Status	Single	221	73.7
	Married	79	26.3
Educational Level	SPM	19	6.3
	STPM	37	12.3
	Diploma	59	19.7
	Bachelor Degree	161	53.7
	Master's Degree	16	5.3
	PHD	8	2.7
Current Profession	Student	175	58.3
	Employee	70	23.3
	Retired	3	1.0
	Other	52	17.3
Household average monthly income (RM)	<RM2,000	90	30.0
	RM2,001 – RM3,000	106	35.3
	RM3,001 – RM4,000	81	27.0
	RM4,001 – RM5,000	19	6.3
	>RM5,001	4	1.3

4.2. Respondents General Travel Information

The respondents were asked about their willingness to ride public bus transportation on daily basis. Out of all 300 respondents, 81.7 percent of the respondents are those who are willing to ride public bus transport on daily basis, meanwhile 18.3 percent of the respondents would not willing. In terms of the use of public bus transportation in a week, 29 percent of respondents used bus transport by 2 times. In contrast, 28.7 percent of respondents indicated less than 2 times usage of public transport in a week. Also, 24 percent of respondents use public bus transport 3 – 4 times, 16 percent are within 5 – 7 times, and followed by 2 percent of respondents that use bus transport 8 – 10 times a week. The remainder with only 0.3 percent using the bus transport more than 10 times. About the distance from the city center, 87.1 percent of the respondents stated a distance between 0 – 10 km, 10 percent are 11 – 20 km, 1.6 percent are 21 – 30 km and the rest 0.9 percent of respondents indicated their distance is more than 40 km. As for the distance to the nearest public transit, the result shows that the majority of respondents 98 percent stated a distance between 0 – 10 km. This is followed by 1.3 percent between 11 – 20 km and only 0.6 percent of respondents with a distance between 21

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– 30 km. In addition, when the respondents were asked about the main reason for their journey using the bus, most of the respondents selected education (49.7 percent) as their main reason. Then, followed by work with 17.0 percent, personal businesses are 13.7 percent, and 10 percent of respondents selected shopping/entertainment as the main reason. While the remaining respondents selected leisure/recreation are 9.3 percent and other reasons with 0.3 percent. Last but not least, the respondents also being asked about the major problem with bus transportation and it indicated that bus schedule was the most chosen problem with 37 percent of respondents. This is followed by traffic jams with 25.7 percent, safety with 19.3 percent, and cost with 18 percent.

Table 3: Respondents' General Information

Descriptions	Categories	Frequency (N: 300)	Percentage (%)
Are you willing to ride a public bus on daily basis?	Yes	245	81.7
	No	55	18.3
How often do you use public bus transport in a week?	2 times	87	29.0
	3 - 4 times	72	24.0
	5 - 7 times	48	16.0
	8 – 10 times	6	2.0
	More than 10 times	1	0.3
	Less than 2 times	86	28.7
Distance from the city center. (KM)	0 – 10 km	262	87.1
	11 – 20 km	30	10.0
	21 – 30 km	5	1.6
	31 – 40 km	0	0
	41 and above	3	0.9
Distance to the nearest public transit. (KM)	0 – 10 km	294	98.0
	11 – 20 km	4	1.3
	21 – 30 km	2	0.6
	31 – 40 km	0	0
	41 and above	0	0
What is the main reason for your journey by using the bus?	Education	149	49.7
	Work	51	17.0
	Shopping/Entertainment	30	10.0
	Leisure/Recreation	28	9.3
	Personal Business	41	13.7
	Other	1	0.3
What is the major problem with bus transportation today?	Traffic Jam	77	25.7
	Bus Schedule	111	37.0
	Safety	58	19.3
	Cost	54	18.0
	Other	0	0

4.3. Assessment of Measurement Model

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Table 4 presents the measurement model outcome for the study. The initial items for the model are presented in table 1. Firstly, the indicator reliability was tested to identify the relationship between the reflective latent variables and their respective constructs. The outer loadings for each item with respect to each construct range between 0.713 to 0.947 which are acceptable. Some items were removed from table 1 to improve the adequacy of the model. The study includes Cronbach alpha and composite reliability to measure the internal consistency reliability. All constructs indicate a value greater than 0.7 which is satisfactory. Convergent validity measures the "*extent to which a construct converges in its indicators by explaining the items' variance*" (Sarstedt, et al., 2014) using Average Variance Extracted (AVE). Table 4 shows that all constructs are above the 0.50 threshold value indicating the condition of sufficient convergent validity whereby at least 50% of the variance of each item is explained by its constructs. Discriminant validity measures the extent different constructs differ from one another. Table 5 shows that the square root of AVE for a construct is greater than correlations between the construct and other constructs in the model.

Table 4: Measurement model

Construct	Items	Loadings	Cronbach Alpha	CR	AVE
Tangible	TA1	0.747	0.819	0.825	0.542
	TA2	0.737			
	TA3	0.746			
	TA4	0.713			
Reliability	RE1	0.840	0.794	0.763	0.618
	RE3	0.728			
Assurance	AS1	0.833	0.693	0.843	0.729
	AS2	0.873			
Empathy	EM3	0.807	0.729	0.865	0.763
	EM4	0.935			
Responsiveness	RES1	0.883	0.805	0.912	0.838
	RES2	0.947			
User satisfaction	US2	0.772	0.858	0.843	0.642
	US3	0.857			
	US4	0.772			

Table 5: Discriminant Validity

	Assurance	User Satisfaction	Empathy	Reliability	Responsiveness	Tangible
Assurance	0.854					
User Satisfaction	0.112	0.801				
Empathy	0.076	0.21	0.873			
Reliability	0.189	0.256	0.114	0.786		
Responsiveness	0.133	0.262	0.444	0.037	0.916	
Tangible	0.200	0.342	0.138	0.561	0.132	0.736

4.4. Assessment of Structural Model

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The results for the structural model are presented in Figure 2. The PLS algorithm was run using several 5,000 bootstrapping to examine the path coefficient significance. This is to establish the determinants of user satisfaction towards public bus service quality. The model has an R value of 0.178 which indicates that there is a moderate relationship between the dependent variables towards the dependent variable. Out of the five hypotheses, two of the hypotheses are not supported (assurance and empathy). Tangible shows the highest standardized coefficient ($\beta = 0.249$, $p < 0.10$). This is followed by responsiveness ($\beta = 0.189$, $p < 0.10$) and reliability ($\beta = 0.098$, $p < 0.10$).

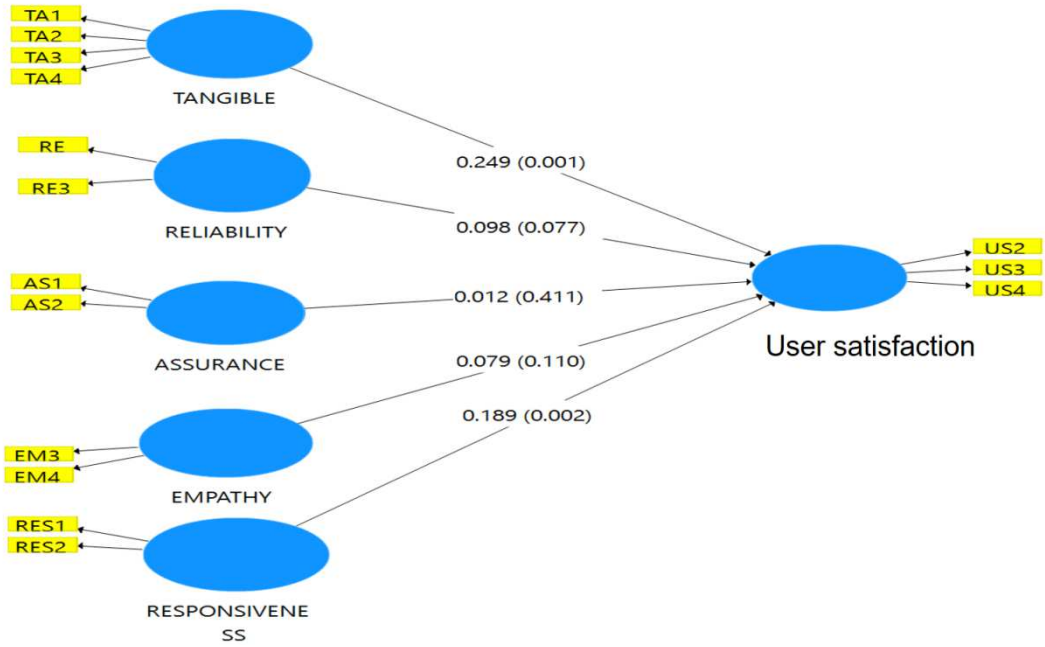

Figure 2: Path analysis results.

Table 6: Hypothesis Testing

	Hypothesis	Result
H_1	There is a significant relationship between tangible and user satisfaction.	Supported
H_2	There is a significant relationship between reliability and user satisfaction.	Supported
H_3	There is a significant relationship between assurance and user satisfaction.	Not supported
H_4	There is a significant relationship between empathy and user satisfaction.	Not supported
H_5	There is a significant relationship between responsiveness and user satisfaction.	Supported

5. Discussions of the Results

The objective of this study is to investigate the determinants of user satisfaction by examining the role of tangibles, reliability assurance, empathy, and reliability in public bus service quality in Kota Samarahan, Sarawak. The study was based on the SERVQUAL model in which the dataset was acquired via a self-administered survey by utilizing PLS-SEM. The model was validated and assessed using the assessment of measurement and structural model. The outcome of the study denotes that tangibles, responsiveness, and reliability are significant in explaining the users' satisfaction with public bus service quality in Kota

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Samarahan, Sarawak. Tangibles are considered the strongest predictor of user satisfaction. This is congruent with studies by Pérez et al., (2007) and Zakaria et al., (2010).

The outcome of the study shows that users perceived tangibles of public buses for instance the facilities, cleanliness, comfort, and maintenance as main indicators of service quality satisfaction. Local service providers should ensure that these aspects are continuously monitored and improved as these qualities can attract more users and retain current public bus users. This is followed by responsiveness which is aligned with the findings by Pérez et al., (2007) and Susnienė (2012). Responsiveness and efficiency are qualities deemed necessary by employees as important inputs to service production. Reliability is also imperative to explain users' satisfaction. The outcome confirms support from past study by Eboli and Mazzulla (2007) and Chou et al., (2014). Generally, time is the main factor when selecting the mode of transport. A person who is commuting for work purposes would opt for the shortest travel time and punctuality. Inadequate travel information may hinder a person to commute using a public bus as that may affect the journey to reach their main destination. An interpretation of these findings explains that, a more concerted effort should be made on improving the tangibles, responsiveness, and reliability in order to achieve greater user satisfaction with public bus quality.

6. Conclusion

The policy implication denotes several implications to policy-makers in order to enhance user satisfaction by identifying factors that could retain current users and attract more users to commute using public transport. Tangible is identified as the main determinant of public bus user satisfaction. Hence, policy-makers and service providers should emphasize providing high-quality tangibles or infrastructure such as upgrading the public buses with facilities including designated seats (particularly for the elderly, disabled, and pregnant women), sufficient handrails and grip straps, and free wireless internet. Cashless payment should be implemented at each bus using local e-payment methods for example S Pay Global and Touch N Go. In terms of safety and security, closed-circuit televisions (CCTVs) should be installed by the service providers to monitor the passengers on the buses and also at the bus stops. Public bus stops should be upgraded to enhance safety and security. This includes installing adequate lights covering the entire bus stop, particularly for passengers commuting at night, sufficient waiting area for people, and panic or emergency buttons in the case of emergency. Policy-makers may also consider solar-based panels at the bus stops as part of the energy saver initiative. Public buses should be in a clean and convenient state by frequent cleaning or sanitizing, providing sufficient bins for litter (at buses and bus stops) as well as enforcing rules and regulations for passengers. Others may also include pedestrian crossing in the vicinity of the bus stop as well as visible road signs indicating the bus stops and pedestrian crossings.

In terms of reliability, an application system (app) is suggested to enrich user satisfaction while taking public buses. Considering that there is a high level of mobile-phone users in Malaysia, the usage of a mobile-friendly app would ease the user's travel journey through online or cashless payment, as well as real-time bus tracking and schedules. In addition, information on public buses' arrival and departure should be displayed appropriately at the respective bus stops via a real-time LED display. Ridership may also be increased by a punctual and frequent bus schedule. Based on the study, the responsiveness of public bus employees is deemed imperative to user satisfaction. It is noted that drivers' skills and behavior are correlated with possible traffic accidents (Zhang, et al., 2019). To transform the public bus services, a few managerial adjustments include improving current practices which focus on enhancing the knowledge on safety through staff training or workshops and also introducing a reward-based system. The limitation of this study includes the scope of this case study area which only focuses on Kota Samarahan city in Sarawak state, Malaysia. More studies should be conducted to include areas in other parts of Malaysia or compare them with other Asian developing cities (E.g. countries in the Borneo region). In addition to that, the framework of this study utilized the SERVQUAL model. Further studies should incorporate other factors or variables which extend the scope of SERVQUAL. In summary, service quality provision that fulfilled the users' expectations would encourage people to shift from private transport to public bus usage.

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8. References

[1] ASEAN Stats, ASEAN Stats Data Portal (2018). Number of registered passenger cars [Excel file]. Retrieved from https://data.aseanstats.org/indicator/ASE.TRP.ROD.B.006

[2] Bates, J., Polak, J., Jones, P., & Cook, A. (2001). The valuation of reliability for personal travel. *Transportation Research Part E: Logistics and Transportation Review*, *37*(2-3), 191-229.

[3] Beirão, G., & Cabral, J. S. (2007). Understanding attitudes towards public transport and private car: A qualitative study. *Transport policy*, *14*(6), 478-489.

[4] Bielen, F., & Demoulin, N. (2007). Waiting time influence on the satisfaction-loyalty relationship in services. *Managing Service Quality: An International Journal*.

[5] Bitner, M. J.(1992). Servicescapes: The Impact of Physical Surroundings on Customers and Employees. *Journal of Marketing*, *56*(2), 56-71.

[6] Budiono, O. (2009). *Customer Satisfaction in Public Bus Transport: A study of travelers' perception in Indonesia*.

[7] Buttle, F. (1996). SERVQUAL: review, critique, research agenda. *European Journal of marketing*.

[8] Cavana, R. Y., Corbett, L. M., & Lo, Y. G. (2007). Developing zones of tolerance for managing passenger rail service quality. *International Journal of Quality & Reliability Management*.

[9] Chou, P. F., Lu, C. S., & Chang, Y. H. (2014). Effects of service quality and customer satisfaction on customer loyalty in high-speed rail services in Taiwan. *Transportmetrica A: Transport Science*, *10*(10), 917-945.

[10] Eboli, L., & Mazzulla, G. (2007). Service quality attributes affecting customer satisfaction for bus transit. *Journal of public transportation*, *10*(3), 2.

[11] Ennew, C., Waite, N., & Waite, R. (2013). *Financial services marketing: An international guide to principles and practice*. Routledge.

[12] Fellesson, M., & Friman, M. (2012, February). Perceived satisfaction with public transport service in nine European cities. In *Journal of the Transportation Research Forum* (Vol. 47, No. 3).

[13] Fillone, A. M., Montalbo, C. M., & Tiglao, N. C. (2005). Assessing urban travel: A structural equations modeling (SEM) approach. In *Proceedings of the Eastern Asia Society for Transportation Studies* (Vol. 5, pp. 1050-1064).

[14] Ghadimzadeh, A., Makmom, A. A., Hosea, M. K., & Narany, T. S. Review on CO2 Emissionfrom Transportation Sector in Malaysia.

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 83-96
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[15] Grönroos, C. (1996). Relationship marketing: strategic and tactical implications. *Management decision*.

[16] Grönroos, C. (2007). *Service management and marketing: customer management in service competition*. John Wiley & Sons.

[17] Ibrahim, A. N. H., Borhan, M. N., Ismail, A., Mat Yazid, M. R., Mhd Yunin, N. A., & Yukawa, S. (2021). Gender and Age Do Matter: Exploring the Effect of Passengers' Gender and Age on the Perception of Light Rail Transit Service Quality in Kuala Lumpur, Malaysia. *Sustainability*, *13*(2), 990.

[18]Kozerska, M. (2007). Managing Service Quality–Servqual Method: Strengths And Weaknesses. *Advanced Logistic systems*, *1*(1), 61-65.

[19] Leong, L. Y., Hew, T. S., Lee, V. H., & Ooi, K. B. (2015). An SEM–artificial-neural-network analysis of the relationships between SERVPERF, customer satisfaction and loyalty among low-cost and full-service airline. *Expert systems with applications*, *42*(19), 6620-6634.

[20] Malaysia Automotive Institute (2018). Vehicle Registration Statistics for Private Vehicle, Goods Vehicle and Others.

[21] McKnight, C. E., Pagano, A. M., & Paaaswell, R. E. (1986). Using quality to predict demand for special transportation. In *Behavioural Research for Transport Policy International Association for Travel Behaviour*.

[22] Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of marketing research*, *17*(4), 460-469.

[23] Parasuramam, A., Zeithaml, V. A., & Berry, L. L. (1985). 17. Mohammad, AAS and SYM Alhamadani, 2011. A conceptual model of service quality and its Service quality perspectives and Customer implications for future research. *Journal of Marketing*, *49*, 41-50.

[24] Parasuraman, A., Zeithaml, V. A., & Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *1988*, *64*(1), 12-40.

[25] Parry, I. W., Walls, M., & Harrington, W. (2007). Automobile externalities and policies. *Journal of economic literature*, *45*(2), 373-399.

[26] Pérez, M. S., Abad, J. C. G., Carrillo, G. M. M., & Fernández, R. S. (2007). Effects of service quality dimensions on behavioural purchase intentions: A study in public-sector transport. *Managing Service Quality: An International Journal*.

[27] Raspor, S. (2010). Measuring perceived service quality using SERVQUAL: a case study of the Croatian hotel industry. *Management (18544223)*, *5*(3).

[28] Rushton, A., & Carson, D. J. (1989). Services–marketing with a difference?. *Marketing Intelligence & Planning*.

[29] Saadat, M., Tahbet, T. R., & Mannan, M. A. (2018). Factors That Influence Customer Satisfaction in Airline Industry in Malaysia. *IOSR JBM*, *20*(8), 1-6.

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 / 2022), pp. 83-
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[30] Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., & Hair Jr, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of family business strategy*, *5*(1), 105-115.

[31] Susnienė, D. (2012). Quality approach to the sustainability of public transport. *Transport*, *27*(1), 102-110.

[32] Thompson, K., & Schofield, P. (2007). An investigation of the relationship between public transport performance and destination satisfaction. *Journal of transport geography*, *15*(2), 136-144.

[33] Ueasangkomsate, P. (2021). Service quality of public road passenger transport in Thailand. Kasetsart Journal of Social Sciences, 40, 74-81.

[34] Zainal, N. S., Shaharudin, M. R., & Jusoff, K. (2010). Service quality perceptions between cooperative and Islamic Banks of Britain. *American Journal of Economics and Business Administration*, *2*(1), 1-5.

[35] Zakaria, Z., Hussin, Z. H., Batau, M. F. A., & Zakaria, Z. (2010). Service quality of Malaysian public transports: a case study in Malaysia. *Cross-Cultural Communication*, *6*(2), 84-92.

[36] Zhang, Z., Ma, T., Ji, N., Hu, Z., & Zhu, W. (2019). An assessment of the relationship between driving skills and driving behaviors among Chinese bus drivers. *Advances in Mechanical Engineering*, 11(1), 1–10.

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Economic Valuation of Regulating Ecosystem Services of Thai Thuy Wetland in the Red River Delta of Vietnam

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Abstract: *The ecosystem in Thai Thuy wetland plays a significant role in providing goods and regulating services such as disaster risk reduction, carbon storage and water purification. This study aims to estimate the value of the major regulating ecosystem services of Thai Thuy wetland. The key regulating ecosystem services of Thai Thuy wetland that were identified for estimating their economic value include the disaster risk reduction (sea dyke protection, aquaculture pond protection and provision of typhoon shelter for fishing boats), carbon storage and water purification. The main methods used for valuing these services are the benefit transfer and replacement cost methods. The total economic value of regulating services in Thai Thuy wetland is estimated at US$6.1 mil. per year. This could help to raise the awareness of the wetland importance for local people and policymakers so that more consideration should be given to better wetland conservation and management.*

Key words: *Economic Valuation, Regulating Service, Wetland, Vietnam.*

JEL Code: Q51, Q56, Q57

1. Introduction

Wetlands are considered one of the most productive and biologically rich ecosystems. They provide a variety of ecosystem services such as provisioning, regulating, supporting, and cultural services (MEA, 2005). In Vietnam, wetlands cover an estimated 30% of the country's land area (around 10 mil. hectares) of which coastal wetlands are significant given Viet Nam's long coastline of 3,260 km. Wetland in Vietnam is extremely diverse in terms of type, morphology, resources, biological value, and functions. Wetlands generate innumerable direct and indirect benefits that have contributed significantly to human wellbeing and economic development across the country.

Covering 13,100 ha (with 1,759 ha of mangrove forest), the wetland in Thai Thuy has been identified as one of seven key wetland sites within the Red River delta. The ecosystems in the Thai Thuy wetland play a significant role in providing goods and services for the coastal communities in Thai Thuy district. It not only offers valued products (fish, shrimp, clam, crop products) for sustaining the everyday needs of local people but also supports many other ecosystem services such as shielding disasters, water purification, and climate conditioning, etc.. (MOE, Birdlife and Viet Nature, 2016; Viet Nam Environment Protection Agency, 2005). Despite a common understanding of the multiple benefits and general commitment to conserving wetlands in Vietnam, the wetlands in general and Thai Thuy wetland in specific currently face many threats and seemingly

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continue to be degraded as the result of a multitude of human development activities. The conversion of the wetland to agriculture (especially to aquaculture ponds), the pollution from agricultural production and industrial facilities, the over-exploitation from fishing, and bird hunting threaten the wetland seriously. This is mainly because the ecosystem services provided by the wetland, especially the regulating are not valued in economic terms, as a result of which the values of the wetland are largely ignored in decision-making on land use planning. Under such a circumstance, this study is conducted to undertake the economic valuation of regulating ecosystem services of Thai Thuy wetland for demonstrating the economic importance of the wetland, then propose the implications for effectively mainstreaming the wetland conservation into the development plans in the coming time.

2. Literature reviews

2.1. Regulating ecosystem services of the wetland

MEA (2005) attempted to create an ecosystem service framework that links ecosystem services to human welfare. Similar to the classification of De Groot *et al.* (2002), MEA (2005) proposed a genetic typology of ecosystem services' classification based on ecosystem functions. They classified ecosystem services into four main groups of provisioning, regulating, cultural, and supporting services (see Table 1). Of those, the regulating services are defined as the benefits of regulation of ecosystem processes. The examples of regulating services and others are described in table 1. Regulating services provide many direct and indirect benefits to humans, including clean air and water, pollination, climate regulation, and natural hazard control.

Table 1. Categories of ecosystem services and examples of related services

Type of services	Service	Type of services	Service
1. Provisioning services	Food Fiber Genetic resources Biochemicals, natural medicines, etc. Ornamental resources Freshwater	3. Cultural services	Cultural diversity Spiritual and religious values Aesthetic values Educational values Inspiration Social relations Cultural heritage values Recreation and ecotourism
2. Regulating services	Air quality regulation Climate regulation Water regulation Erosion regulation Water purification Pest regulation Pollination Natural hazard regulation	4. Supporting services	Soil formation Photosynthesis Primary production Nutrient cycling Water cycling

*(*Source: Adapted from Box 2.1 in the Millennium Ecosystem Assessment, 2005)

According to the Common International Classification of Ecosystem Services (CICES, 2011) ecosystem services are defined as the contributions to the "final output" that ecosystems make to human well-being. The

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classification recognizes these outputs to be provisioning, regulating, and cultural services, but it does not cover the so-called 'supporting services' originally defined in the MEA. The supporting services are treated as part of the underlying structures, processes, and functions that characterize ecosystems.

TEEB (2010) proposed an updated typology of ecosystem services that is mainly based on the classification system initiated by MEA. TEEB provided 22 specific ecosystem services and categorized them into 4 main groups: provisioning, regulating, habitat and cultural and amenity services. The important revision of TEEB in comparison with the MEA is the omission of supporting services and the initiation of habitat services. The habitat services include those that relate to the maintenance of life cycles and genetic diversity.

2.2. Economic valuation techniques for regulating ecosystem services

Economic value refers to the quantified net benefit that humans can derive from a good or service, whether or not there is a market and monetary transaction for the goods and services. Economic valuation is an effort to allocate quantitative values to the goods and services provided by wetland ecosystems (Costanza *et al*., 1997; Daily, 1997). Economic valuation of wetland ecosystems can be useful in indicating the opportunity cost of other land-use practices. The range of value may vary according to the specific approach used, but it can help in land-use decision-making.

Most of the provisioning and cultural services like timber, fish, and recreation are services that the economics profession has long been adept at estimating the economic value of. However, regulating services present much greater challenges (Kumar and Wood 2010). Generally, regulating services are not sold and bought in markets, so people do not pay for these services directly. Valuation of regulating services can provide a powerful instrument for placing this issue on the agenda of decision-makers. The basic aim of valuation is to determine people's preferences: how much are people willing to pay for regulating services, and how much better or worse off would they consider themselves to be as a consequence of changes in the supply of these regulating services. By reflecting these preferences, valuation aims to make regulating services comparable with other economic sectors when decisions are taken regarding land and resource use.

Environmental economists have divided valuation methods into three primary main groups including revealed preference methods, stated preference methods, and other valuation methods (Freeman, 2003; Pearce *et al.*, 2006). Revealed preference methods make use of linkages between non-market ecosystem services and one or more market goods. These methods are well-suited for capturing direct use-values. The four most important valuation methods within this group are production function methods, travel cost methods, hedonic price method, and defensive expenditure method. Stated methods can estimate the WTP for the ecosystem services directly by creating a hypothetical market scenario and presenting this in a survey to a representative sample of the population. This is particularly useful when we suspect that the existing value may be particularly relevant for given resources which cannot be captured using the revealed preference methods. Two main stated preference methods include the contingent valuation method and choice experiment. Other primary methods include the replacement cost method and the human capital method. In addition, the "benefit transfer" method is usually used to transfer primary valuation estimates developed at one location to another location with similar attributes (the transfer site)

3. Research methodology

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3.1. Research site

The coastal wetland of Thai Thuy district covers 13,100 ha including the 1,759 ha of mangrove forest, 4,700 ha of the intertidal zone without mangroves, and 1,429 ha of aquaculture ponds. Thai Thuy wetland has been identified as one of seven key wetland sites within the RRD Biosphere Reserve, approved by UNESCO in 2004. The area includes 16 km of coast bounded by the Thai Binh river to the north and the Tra Ly River to the south. In 2014, Thai Thuy wetland area is included in the list of potential Nature Reserves (for wetland) according to Decision No. 45/QĐ-TTg issued on January 8th, 2014 by the Prime Minister of Vietnam.

The wetland ecosystems of the Thai Thuy coasts are of vital importance as they provide significant ecosystem services to support the well-being of the local communities. The wetlands provide habitats for fish, crustaceans, behalves and other species, which are the main source of income for thousands of local people who daily collect them from intertidal and mangrove areas. The wetland ecosystems also support emergent seafood production systems such as shrimp, fish and clam aquaculture in the area, by providing food inputs, seed, and water purification services. In addition, the wetlands also serve multiple functions such as shore stabilization and erosion reduction, storm prevention, climate regulation and water quality maintenance, which are all essential for the security and well-being of local people.

Key habitat types found in Thai Thuy wetland include mangrove forests, intertidal mudflats, sandy beaches and aquaculture ponds. The mangrove forests found around the Thai Binh and Tra Ly river mouths, which cover some 30 ha dominated by *Sonneratia caseolaris* (mainly located in Thuy Truong commune), represent the largest remaining tracts of old-growth mangrove in the RRD. Other patches of mangrove found here were replanted since 1990s with *Kandelia candel*. Most of the Thai Thuy district's coastal land has been converted to aquaculture ponds, which cover some 1,039 ha. Aquaculture ponds dominate on the landward side of a sea dike that runs parallel to the coast, and around the Tra Ly river mouth.

Like other wetlands with mangrove forests in the world, the Thai Thuy wetland provides a variety of ecosystem services at local, national and global levels. According to Merriman and Murata (2016), the Thai Thuy wetland can provide food for local communities living in five villages next to the wetland and the mangroves in the wetland can provide a protective function from storms for local communities and the global benefit of climate regulation. The wetland also conducts water purification and it provides a home for wildlife such as migratory and residential birds, amphibians, fish, insects, and aquatic plants, etc

3.2. The data collection

This study is conducted in 2017. The secondary data for the study include the statistical data on the aquaculture production from the Department of Agriculture and Rural Development in the Thai Thuy district and the information from the related studies. In addition, the focus group discussions with the local staff and aquaculture households were held to get the assessments on the cost and revenues of aquaculture production, the probability of typhoon occurrence, and the major regulating ecosystem services of Thai Thuy wetland, etc..

3.3. The valuation methods

The main methods used for the valuation of the above-regulating services of the Thai Thuy wetland are replacement cost method and benefit transfer. Replacement cost is the cost that is relevant to determining the price that a market participant would pay as it is based on replicating the utility of the asset, not the exact physical properties of the asset. Usually, replacement cost is adjusted for physical deterioration and all relevant

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forms of obsolescence. Meanwhile, benefits transfer is the valuing methodology employed to estimate ecosystem economic values by transferring available information from a site where a study was realized to a place where the valuation has to be performed under the assumption that characteristics in both sites are similar. Benefit transfer usually is employed when is too expensive or time consuming to produce primary economic valuation studies. Is for this reason that the method has triggered an increasing interest and the literature has expanded rapidly in the last years. This method is more reliable when the original site and the site object of the transfer are similar in quality, location, and population characteristics, when the environmental changes are similar, and when the original study was soundly realized and used appropriate economic valuation methodologies (King *et al.*, 2007). In this sense, it would have to be taken into consideration that the maximum exactitude and reliability attributable to the benefit transfer method are those of the original study.

4. Estimating Economic Value of Regulating Ecosystem Service of Thai Thuy Wetland

4.1. Identification of Regulating Ecosystem Services of Thai Thuy Wetland

Like other wetlands with mangrove forests in the world, the Thai Thuy wetland provides a variety of ecosystem services. According to Merriman and Murata (2016), the Thai Thuy wetland can provide food for local communities living in five villages next to the wetland and the mangroves in the wetland can provide a protective function from storms for local communities and the global benefit of climate regulation. The wetland also conducts water purification and it provides a home for wildlife such as migratory and residential birds, amphibians, fish, insects and aquatic plants, etc.

Based on the previous studies, and the assessment of the importance of the ES services of local people and staff through the focus group discussion, the key regulating services of Thai Thuy wetland selected for valuation include disaster risk reduction (sea dike protection, aquaculture pond protection, typhoon shelter for boats), carbon storages and water purification.

4.2. Valuation of disaster risk reduction of Thai Thuy wetland

Coastal lands are subject to multiple natural hazards such as storms, tsunamis, and over the long-term, rising sea levels. Such hazards and their impacts (such as erosion, wave damage, flooding) may threaten lives, livelihoods, property, health, and economic development. Mangroves are found on the front line in terms of their position relative to many coastal hazards. Mangroves can reduce the height and energy of wind and waves passing through them, reducing their ability to erode sediments and to cause damage to structures such as dikes and sea walls, industrial and private real estate and property. During rising tides, as the sea comes in, waves enter the mangrove forests. They lose energy as they pass through the tangled above-ground roots and branches and their height is rapidly diminished. As this happens, waves lose their ability to scour the sea bed and carry away sediments. Mangroves also reduce winds across the surface of the water and thus prevents the propagation or re-formation of waves, etc.

Realizing the important role of mangrove forests in mitigating natural hazards such as typhoons and tides, the authorities of Thai Binh province and Thai Thuy district had launched many campaigns to plant the mangrove forest since the 1990s. As a result, thousands of hectares of mangrove forest were planted along the coastlines of the Thai Thuy district. The total area of mangrove forest in Thai Thuy was 1,759ha in 2016 and its belt was between 0.7-3.5km wide.

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a. Value of Sea Dike Protection

According to Mazda *et al.* (1997) the height of the sea wave in Thai Thuy would reduce by 20% if it goes over 100 m of mangrove forest. If the wave 1 meter high goes over a mangrove forest (of 6 years old) with 1.5km wide, the height of the wave would remain only 0.05m. This is reconfirmed by Vu Doan Thai (2011) in his study on the role of mangroves in reducing high waves during a typhoon in Dai Hop commune (Kien Thuy district, Hai Phong province) which was very close to and had a similar condition of mangroves to Thai Thuy district.

Dinh Duc Truong (2012) also compared the damages of sea dikes in Giao Thuy district (Nam Dinh province) between two areas: one with mangroves and another without mangroves. When the Damrey typhoon (also called typhoon no. 7) came to the areas in 2005 with the wind gust over 73 miles per hour, the dike in the mangrove area was safe while the dikes in the area without mangroves was seriously broken or blown off parts and needed the urgent maintenance. Based on the data on maintenance costs for the 27km dikes without mangroves, Truong estimated the average maintenance cost for 27 km of sea dike in Giao Thuy (during 1997-to 2006) was around VND3 billion per year or VND144.9 mil./year/km (with the price in 2006). This figure was the avoided maintenance cost for the dikes in the area with mangroves or the contribution of mangroves to the dike protection was equivalent to VND 144.9 mil/year/km at the 2006 price or VND285 mil/km/year at 2016 price (with a discounting rate of 7%/year). It should be noted that during 10 years (1997-2006), there was only one strong typhoon attack Nam Dinh province and the probability of strong typhoon occurrence was just 10%/year.

Thai Thuy had 27km of sea dike which was fully protected by mangrove forest. The FGD with Thai Thuy district staff revealed that the maintenance cost for the Thai Thuy sea dike was nearly zero thanks to the protection of the mangrove forest. Using the benefit transfer methods with the assumption that the avoided maintenance cost of the dike in Thai Thuy was the same in Giao Thuy (for the area with mangroves), and the probability of strong typhoon occurrence was also 10% per year, the contribution of mangroves to dike protection in Thai Thuy district was therefore estimated at VND7.7 billion per year or US$0.345 mil.

b. Value of Aquaculture Pond Protection

- Avoided Loss of Aquaculture Production

The total aquaculture areas between mangroves and dikes in Thai Thuy (including the river estuaries) in 2016 was 1,039 ha and the total value of aquaculture production in this area reached VND107.05 billion in 2016 (Table 2). If there were no mangroves, the aquaculture production would be seriously damaged when the big typhoon came since the sea wave and gust wind due to big typhoons could destroy the pond banks seriously. However, the existence of the mangroves could significantly reduce the height and energy of the coming waves and the power of the winds, thus saving the pond. According to IFRC (2012), the damages by the huge typhoon to the aquaculture production would reduce from 90% to just 25% of total aquaculture production thanks to mangroves. The mangrove forest in Thai Thuy could therefore save up to 65% of total aquaculture production.

Table 2. Total Value of Aquaculture in pond outside the dikes of Thai Thuy wetland in 2016

Items	Total areas (ha)	Total production (ton)	Total Production value (bil. VND)
- Giant tiger prawn	853	185	46.25
- White Leg shrimp	18	36.5	4.02

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-	Greasy back shrimp	45	6.8	0.65
-	Fish	75	337	50.55
-	Crabs	33	23.1	5.08
-	Others (natural harvest)	15	11.25	0.51
	Total	*1,039*	*563.15*	*107.05*

(Source: Authors' calculation based on data from Thai Thuy DARD)

With the assumption of the probability of huge typhoon occurrence is 10% per year, the annual net benefit of mangroves to the aquaculture production (or amount) would be VND6.96 billion or US$0.312 mil. (*107.05 bil. VND x 10% x 65% = 6.96 bil. VND).*

- Avoided Cost for Restoring Pond Banks and Watchtowers

In addition to benefits from the avoided loss of aquaculture production thanks to safe of pond banks, the aquaculture households did also not have to pay the restoration cost due to the devastation of banks and watchtowers (or sentry boxes) in the ponds as well as to collect the garbage in the ponds after a typhoon. This was because during the typhoon, mangrove forest can help to protect the pond banks and watchtowers which are usually established in the pond so that the owner can stay in and watch the pond to prevent aquaculture stealers, observe the situation of the fish and water quality (through watercolor) for proposing right action, and sometimes to keep the feeds inside. Moreover, the mangrove forest also significantly helps prevent the pond from the garbage during the typhoon

According to the household discussions, the restoration cost for the pond banks and watchtowers and garbage collection would be around VND15 mil. per pond of 0.5 ha. Assuming the probability of huge typhoon occurrence was 10% per year, the annual avoided cost for restoring pond banks and sentry boxes and garbage collection would be VND3.12 billion or US$0.14 mil.

In summing up, the annual total value of aquaculture protection from mangrove forest in Thai Thuy district would be VND1,008 billion or US$0.452 mil. if the probability of strong typhoon is 10% per years. In case, the probability of strong typhoon is 20%/years, this annual value of aquaculture protection would be VND 2,016 billion or US$0.904 mil.

c. Provision of Typhoon Shelters for Fishing Boats

Mangrove forests in the Thai Thuy district could provide safe typhoon shelters for fishing boats of the local fishermen. Usually, before the typhoons came, the fishermen directed their boats to go inside the mangrove forests or behind the mangrove belts to avoid the strong waves and winds that could overturn or break their fishing boats. By this way, the fishing boats in Thai Thuy district were safe during the typhoons, even huge typhoons in the past.

Recently, the typhoon anchorage site (namely Diem Ho) was constructed in the Thai Thuy district (Thai Thuong commune) to provide safe shelters for the fishing boats and vessels during typhoons. The area of the site was around 22 ha and total investments for the Diem Ho anchorage site were around VND106 billion (Vietnam Communist Party Newspaper, 2015), and the life cycle of the Diem Ho typhoon anchorage site was estimated at 25 years. The site was designed to provide safe shelters for 104 boats and vessels (up to 300 CV/vessel) and was completed in 2014. The construction cost of an anchorage site for one fishing boat was therefore around VND1.02 billion on average.

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However, according to the fishermen in Thai Thuy, the site was not really safe because there were no trees to prevent the winds during the typhoon. Therefore, almost all fishing boats did not go to the site during the typhoons (Vietnam Newspaper, 2015). The fishermen still used the traditional sites in mangrove forests or behind the mangrove belts to shelter their fishing boats for safety. This indicates that the mangrove forest could provide the typhoon shelters with the safety at least equivalent to the Diem Ho typhoon anchorage site.

According to Thai Thuy DARD (2017), there were a totally 540 fishing boats in Thai Thuy. All of them shelter inside or behind mangrove belts during the typhoon for safety. The value of mangroves in providing the typhoon shelters for a fishing boat in the Thai Thuy district was estimated at VND22.03 billion per year or US$0.986 mil. per year.

4.3. Valuation of Carbon Storage of Thai Thuy wetland

The importance of mangroves in providing ecological services has been highlighted in discussions on global climate change, in particular concerning Reduced Emissions from Forest Degradation and Deforestation Plus (REDD+). Mangroves have a relatively high Greenhouse Gas (GHG) removal capacity and thus higher potential to earn carbon revenues.

Mangroves absorb a significant amount of carbon into the plant biomass through net primary production. Importantly, they also sequester some of this carbon in the soil for long periods. In the context of CO2 sequestration, the relevant carbon sinks to consider are: Carbon buried in sediments - locally or in adjacent systems - generated by the annual turnover of small litter such as flowers, fruits, leaves, twigs, and small branches; Net growth of forest biomass, both above and below-ground, during development, e.g. after (re)planting. A recent assessment of carbon stored in various forest domains found that in comparison with boreal, temperate and tropical upland forests, mangroves throughout the Indo-Pacific are among the most carbon-rich forests in the tropics containing, on average, 1,023 MgC per ha, most of which is stored in soils >30 cm deep (Donato *et al.*, 2011).

Nguyen Thi Kim Cuc (2007) also conducted a study on *Stand structure and carbon accumulation process in mangrove forests in Thai Binh River Mouth, Northern Viet Nam* for her PhD Dissertation (in Ehime University, Japan). According to her study, carbon accumulation in the mangroves in Dai Hop commune (Kien Thuy district, Hai Phong province) could be estimated using the formula: $y = 29.766e^{0.17x}$ where *y* is the cumulative amount of carbon (carbon tons/ha) and *x* is the stand age of planted mangrove trees (Nguyen Thi Kim Cuc, 2015). Dai Hop commune was very close to Thai Thuy district and the natural condition of Dai Hop commune and Thai Thuy district was nearly the same. Mangroves in the Thai Thuy district were mainly planted in the periods 1990-1996 while mangroves in Dai Hop commune were mainly planted in periods 1993-2000. The only significant difference was the stand age of mangroves between Thai Thuy district and Dai Hop commune (Kien Thuy district). With the assumption of the mangroves in Thai Thuy were mainly planted in 1995 or 21 years old up to 2016, the storage carbon of mangroves forest in the Thai Thuy district was estimated at 1,056 MgC per ha using the formula from Nguyen Thi Kim Cuc. This number was only a little bit higher than the average amount of carbon storage estimated by Donato *et al.* (2011) for mangroves in the Indo-Pacific. We, therefore, used the amount estimated by Donato *et al.* (2011) to calculate the carbon storage for Thai Thuy mangroves.

In addition, according to Merriman and Murata (2016) (that is summed up from IPCC 2013 Supplement to 2006 IPCC Guidelines for National Greenhouse Gas Inventories and IPCC in Good Practice Guidance for

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Land use, Land-use Change, and Forestry (Penman *et al.*, 2003)), the carbon storage in intertidal and aquaculture was around 88MgC/ha on average. Using the average rate of carbon storage in the mangrove forest in the Indo-pacific region and in intertidal and aquaculture areas, the total carbon storage in Thai Thuy wetland could be estimated as in the Table 3.

Table 3. Total Carbon Storage in Thai Thuy Wetland

Habitat type in Thai Thuy wetland	Area (ha)	Carbon Storage (MgC/ha)	Total Carbon storage in Thai Thuy wetland (MgC)	Estimate of Carbon storage value -using Plan vivo price (US$mil)
1. Mangrove forest	1,759	1023*	1,799,457	57.02
2. Intertidal mudflat	4,700	88**	413,600	13.11
3. Aquaculture (outside dikes)	1,039	88**	91,432	2.90
Total	7,498	-	2,304,489	73.03

(*) From Donato *et al.* (2011)
(**) From Merriman and Murata (2016)

There is no fixed price for carbon and the market price is highly variable. In this study, the price of Plan Vivo certification (US$31.69 MgC in 2016) was used for the calculation. This is the price that a buyer would pay for carbon credits from the Plan Vivo certification scheme if there were to be a carbon trade project established at Thai Thuy. The price of US$31.69 MgC in 2016 was adjusted from the 2014 price based on the IMF inflation rate and was also used by Merriman and Murata (2016) for valuation. The estimated value was US$73.03 mil. This is a one-off stored value or not an annual value. With the discount rate for the long-term of 3% per year, the value of carbon storage in the Thai Thuy wetland is then equivalent to US$2.19 mil. per year.

4.4. Valuation of water purification of Thai Thuy wetland

Several studies have been conducted to investigate water quality treated by mangrove forests. The study by Jitthaisong *et al.* (2012) conducted at the mangrove forest site of Ban Laem District, Phetchaburi Province, Thailand showed that water quality from mangrove forest met the effluent standards for coastal aquaculture. Mangrove forests can be able to improve water quality by increasing DO (dissolved oxygen) by 32.39%, while reducing phosphate, ammonia, and nitrate by 88.23%, 73.77%, and 64.28% respectively. It can be used as an additional natural system to increase the efficiency of the man-made wastewater treatment system. Wong *et al.* (1997) investigated the feasibility of using mangrove wetlands as a sewage treatment facility in the field of 300-hectare natural mangrove intertidal wetlands in Shenzhen, a newly developed city in southern China and the study results showed that those mangrove intertidal wetlands were of great potential for natural wastewater treatment. Shimoda *et al.* (2009) also assessed the water purification ability of Mangrove (*Sonneratia caseolaris*) in Mesocosm Tanks. Both nitrogen and phosphorus showed high removal rates in the mangrove mesocosm tanks.

Despite the significant function of water purification and waste assimilation, yet very few studies have valued this important function. Schuyt & Brander (2004) based on a sample of 89 case studies of wetlands all around the world showed that the medium value of water filtering of wetlands was US$288 per year per ha. According to Constanza *et al* (1997), the waste treatment value of mangroves was US$6,696 per year per ha. Cabrera *et al.* (1998) estimated the water purification of mangrove forests using the alternative cost method. The

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annual value of this ecological service for one ha of mangrove was obtained by dividing the total annual cost by the mangrove area receiving residual wastewaters. The economic value of the water filtering mangrove service was about US$1,193/year/ha.

Similarly, mangroves in the Thai Thuy district also provide the important service of water purification. In the context of serious environmental pollution in Thai Thuy wetland caused by intensive aquaculture activities and by water discharge from Thai Binh, Tra Ly, and Diem Ho rivers (with pollutants from agricultural activities), the water purification by mangroves plays a more and more important role. Using the benefit transfer from the study of Cabrera *et al.* (1998), the value of water purification of Thai Thuy mangroves was estimated at US$1,193 year/ha. With the total areas of mangroves of 1,759 ha, the total value of water purification service in the Thai Thuy wetland was equivalent to US$2.10 mil. per year.

4.5. Sensitivity Analysis of regulating service value of Thai Thuy Wetland

With the assumption that the probability of big typhoon occurrence is 10%/year (base case), the economic value of regulating services of the Thai Thuy wetland is estimated at US$6.077 mil. per year (Table 4). However, due to the impacts of climate change, strong typhoons seem to happen more often in recent years. In the scenario that if the probability of strong typhoon occurrence increases up to 20%/years, the contribution of mangroves to dike protection and aqua-pond protection in the Thai Thuy district would be two folds. The economic value of regulating services of Thai Thuy wetland then would reach up to US$6.874 mil. per year.

Table 4. Sensitivity Analysis of Economic Value of Regulating Services (USD mil.)

	Base case (Prob. of big typhoon occurrence to be 10% per year)	Scenario (Prob. of big typhoon occurrence to be 20% per year)
a. Disaster risk reduction	1.787	2.584
- Value of sea dike protection	0.345	0.690
- Value of aqua-pond protection	0.452	0.904
-Provision of typhoon shelters	0.990	0.990
b. Carbon storage	2.190	2.190
c. Water purification	2.100	2.100
Total	6.077	6.874

(Source: calculated by authors)

5. Conclusion

The ecosystems in the Thai Thuy wetland play a significant role in providing goods and regulating services such as disaster risk reduction, carbon storage, and water purification. Using the valuation methods of benefit transfer, and replacement cost, the economic value of regulating services in the Thai Thuy wetland is estimated at US$6.1 mil per year, including US$1.787 mil. from disaster risk reduction, US$2.19 mil. from carbon storage and US$2.1 mil. from water purification. In case, the occurrence of big typhoons increases up to 20% per year, the value of regulating services would reach up to US$6.874 mil. The results from the valuation study in Thai Thuy wetlands demonstrate the significant economic value of coastal wetlands in Viet Nam and several recommendations were identified such as (1) the importance of the benefits from wetlands should be reflected in the regulations and policies addressing wetland management and conservation; (2) better dissemination of information on wetland economic values should be implemented for raising the awareness of

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local people, community members and authorities; and (3) more considerations should be given for wetland conservation and management and the value of regulating service should be incorporated into decision making processes for better sustainability.

References:

1) Cabrera M. C., Seijo J. C., Euan J., and Pérez E. (1998). Economic Values of Ecological Services from a Mangrove Ecosystem. International Newsletter of Coastal Management – Intercoast Network. Narragansett, Rhode Island, U.S.A. No.32.
2) CICES 2011, (Haines Young, R & Potschin, M) – Common International Classification of Ecosystem Services: 2011 Update.
3) Costanza R & Folke C. (1997). Valuing ecosystem services with efficiency, fairness and sustainability as goals. In: Daily G, editor. Nature's services: societal dependence on natural ecosystems. Washington, DC: Island Press. 392 pp; p 49–70
4) Daily, G.C. (ed.) (1997). Nature's Services: Societal Dependence on Natural Ecosystems. Island Press, Washington, DC.
5) De Groot, R.S., Wilson, M., Boumans, R. (2002). A typology for the description, classification and valuation of ecosystem functions, goods and services. Ecological Economics 41 (3), 393–408
6) Dinh Duc Truong. (2012). Economic valuation for wetland management: A case study in Ba Lat estuary, Nam Dinh province. PhD disertation. National Economic University.
7) Donato D.C., Kauffman J. B., Murdiyarso D., Kurnianto S., Stidham M., and Kanninen M. (2011). Mangroves among the most carbon-rich forests in the tropics. Nature Geoscience. Vol 4. 293–297
8) Freeman, A. (2003) The measurement of environmental and resource values: theory and methods. 2nd Edition. Washington, DC: Resources for the Future.
9) IFRC - International Federation of Red Cross and Red Crescent Societies (2012). Mangrove plantation in Viet Nam: measuring impact and cost benefit. http://www.ifrc.org/Global/Publications/disasters/reducing_risks/Case-study-Vietnam.pdf
10) Jitthaisong O. , Dhanmanonda P., Chunkao K., & Teejuntuk S., (2012). Water Quality from Mangrove Forest: The King's Royally Initiated Laem Phak Bia Environmental Research and Development Project, Phetchaburi Province, Thailand. Modern Applied Science;Vol. 6, No. 8; 2012.
11) King G., Currie M., Bartlett D.J., Gilpin M., Willoughby C., (2007). The development of expertise in pediatric rehabilitation therapists: changes in approach, self-knowledge, and use of enabling and customizing strategies. Developmental neurorehabilitation, 10, 223-240.
12) Kumar, P, and M D Wood (2010). Valuation of Regulating Services of Ecosystems: Methodology and Applications. Routledge.
13) Marchand M., 2008. Mangrove restoration in Vietnam: Key considerations and a practical guide. Deltares.
14) MEA (2005). Ecosystems and human well-being: synthesis. Millennium Ecosystem Assessment. Island Press, Washington, D.C. [online] URL: http://www.millenniumassessment.org/documents/document.356.aspx.pdf.
15) Merriman, J.C., Murata, N. (2016). Guide for Rapid Economic Valuation of Wetland Ecosystem Services. BirdLife International Tokyo, Japan.
16) MOE, Bird life and Viet Nature. (2016). Benefits of Ecosystem Services provided by Thai Thuy Wetland in Vietnam. http://www.eaaflyway.net/wordpress/new/references/references/VIE_EN_low.pdf
17) Nguyen T. K. C. (2007). Stand structure and carbon accumulation process in mangrove forests in Thai Binh River Mouth, Northern Vietnam. Dissertation, The United Graduate School of Agricultural Sciences, Ehime University, Japan.
18) Nguyen Thi Kim Cuc (2015). Mangrove forest restoration in northern Viet Nam (in Kumar, C., Begeladze, S., Calmon, M. and Saint-Laurent, C., (eds.). (2015). Enhancing food security through forest landscape restoration:

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume23, Issue 1 /2022), pp. 97-xxx
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Lessons from Burkina Faso, Brazil, Guatemala, Viet Nam, Ghana, Ethiopia and Philippines. Gland, Switzerland: IUCN. pp. 5-217.)
19) Pearce, D.W., Atkinson, G. & Mourato, S. (2006) Costbenefit analysis and the environment: recent developments. OECD, Paris.
20) Penman J., Gytarsky M., Hiraishi T., Krug T., Kruger D., Pipatti R., Buendia L., Miwa K., Ngara T., Tanabe K., and Wagner F. (2003). Good Practice Guidance for Land Use, Land-Use Change and Forestry. The Institute for Global Environmental Strategies (IGES) for the IPCC. http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/GPG_LULUCF_FULL.pdf
21) Schuyt, K., Brander, L. (2004). The Economic Values of the World's Wetlands, WWF Living Waters Programme. Downloaded from http://www.panda.org/
22) Shimoda T., Fujiok Y., and Sakami T. (2009) Assessment of the water purification ability of mangrove (Sonneratia caseolaris) in Mesocosm Tanks. Japan Agricultural Research Quarterly 43: 145-156.
23) TEEB (2010). The Economics of Ecosystems and Biodiversity Ecological and Economic Foundations. Edited by Pushpam Kumar. Earthscan, London and Washington.
24) TEEB (2013). Guidance Manual for TEEB Country Studies. Version 1.0. http://www.teebweb.org/resources/guidance-manual-for-teeb-country-studies/
25) Thai Thuy DARD (2017). Report on Thai Thuy district's aquaculture production in 2016 and development plan for 2017.
26) Veettil B. K., Ward R. D, Ngo X. Q., Ngo T. T. and Tran H. G. (2019). Mangrove of Vietnam, Historical Development, Current State of Research and Future Threats. Estuarine, Coastal and Shelf Science. Vol 218, (212-236).
27) Viet Nam Environment Protection Agency (2005). *Overview of Wetlands Status in Viet Nam Following 15 Years of Ramsar Convention Implementation.* Hanoi, Viet Nam. 72 pp.
28) Vietnam Newspaper (2015). The Diem Ho typhoon anchorage site without fishing boats during typhoon. http://dangcongsan.vn/ban-doc/ Accessed date: 10 March 2017.
29) Vu Doan Thai (2011). The role of mangroves for reducing high waves during typhoon in Dai Hop commune, Kien Thuy district, Hai Phong province. Journal of Marine Science and Technology, Vol 11. No. 1
30) Wong, Y.S., Tam, N.F.Y. & Lan, C.Y. (1997). Mangrove wetlands as wastewater treatment facility: a field trial. Hydrobiologia. Vol 352. Issue 1-3. Pp 49-59. doi:10.1023/A:1003040920173.

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Communication channels consumption across awareness building, information search and school choice - perspectives from the VET sector in Kosovo

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Abstract. *This study aims at understanding the channels through which the students have become aware, the channels which they used to search for information on the schools, and the key factor that pushed them to apply for a given school. Through primary data research with n=788 respondents who are currently enrolled in VET across eight schools in Kosovo, the study has identified the critical importance of word-of-mouth through family & relatives, and friends in generating awareness for a given school and sharing information on the school offering. As critical elements to decide to apply for the school have been considered the applicants visit directly to the school to get informed more on the offering and the desire to get equipped with the given qualification the school offers. It is important to note the impact that parents have across all levels from brand awareness development to information search and decision making. The study provides pragmatic recommendations to school management on better optimizing their marketing efforts from a communication channel perspective, such as the importance of the open-days events of the school and the usage of the social media channels (especially Facebook) to communicate their offering.*

Keywords: Marketing, Education, School Choice, Communication channels

JEL Codes: M31, I25, M37

1 Introduction

Selecting a career and enrolling in a specific school is a good indicator of success for all young men and women. In principle students within a municipality in Kosovo, have free access through application to any of the Vocational Education and Training (VET) schools as well as gymnasiums. There is only the aspect of the quotas set per school which position the renowned schools to be filled first and have a pre-selection of students due to the higher demand than the supply. The good reputation schools reach their quota based on the selection of students who have success during elementary school and the scores on the matura exam (a standardized test which needs to be passed by any candidate in grade 9 to be eligible to go to high school). This phenomenon is common only to gymnasiums - as VET schools most commonly are not considered a successful career path (Gashi & Mojsoska-Blazevski, 2016), hence; mainly considered as the second alternative if the student can not get to a gymnasium. These schools must rely on the preferences and the willingness of the students to apply to the school. There are as well students who wishfully apply to VET schools as they perceive a good career potential, but this number is not satisfactory. With regards to career path post-VET secondary school, the student can end up in the labour market or at university studying a field that is not aligned to its VET qualification. This is all due to the fact of the nationwide matura standardized test at the end of the secondary school which is mandatory for any student from any school. The number of students enrolled in VET schools in 2016/17 accounted for a total of 42,600 students, whereas in 2020/21 the

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total number of students enrolled amounted to 37,858 students. The difference between 2016/2017 from the academic year 2015/16 to 2020/21 has seen a decrease 11.3% when compared year over year (Kosovo Agency of Statistics, 2021). On the other hand, the school network in Kosovo for VET is composed of 68 public VET providers. This number has not changed since 2016 and hence the role of marketing efforts in upkeeping or increasing the number of enrolled students has become a very important topic for VET schools' management.

The process during which a student applies for school, school choice, and school preference have been for a long time a focus of academia and practitioners. Previous studies have analyzed the system or school-related activities that influence school choice, such as the impact that school ranking publications have on shaping the decision to apply for a school studied by Ghazala & Montalvo (2012). School ranking publications were used as a metric to guide the information search process for the students and parents in the community to get informed about the educational offer. It was proved that parents who were educated happened to push their children to apply for highly ranked schools. This is supported as well by the findings from Hastings & Weinstein (2008). Such a ranking publication could serve as a reliable source of information to evaluate the school's offer, but such a platform or publication is non-existent within Kosovo. Therefore, students and parents must rely on their sources to find adequate information about the school. As well, as the role of parents in the information search for schools in an effort of pivotal impact on school choice (Burgess et al., 2015). The study analysed the role of parents in information search and the desire of pushing their children to apply for admission to a given school towards they had preferences. The impact of parents and family members on the career path has consistently been a key driver of impact throughout the information search and school selection process. These are areas that have been studied by previous researchers and therefore this study aims to support the area of research through a different prism; by understanding better from a communication channel point of view the source through which a student has become aware of the school has searched for information, and the factors that have pushed them to decide to apply for the school.

Many researchers have focused on understanding the decision-making process related to school choice for students, but no previous research has been concluded within the Kosovan context. Ho & Law (2020), analysed the impact of the 7Ps in marketing and the coordination of the 7Ps to make a more appealing offering to the market. This is an inverted looking of how the school shall design its marketing efforts. On the other hand, Hossler & Gallagher (1987) analyzed the process through which the students go through to decide to apply for a specific school. They proposed the three-phase choice model consisting of the first phase; the predisposition, which mainly focusing on the intentions to get equipped with a qualification; the search step, during which the student collects information on the institution and the qualification it; and the choice, which represents the key factors that have driven the decision to apply for a given educational offer. The steps foresee that the student needs to have a condition of preference towards attending a school.

According to Keller (2001), awareness refers to customers' ability to recall and recognize a certain brand. It is usually referred to as the first step before considering for consumption of a product or a service. Becoming aware of a brand does not only indicate knowing the brand but as well getting familiar with certain brand elements and the offering of the organization. In this sense, the study aims at understanding how the student became aware of the school. Understanding the "how" can lead to a rationalization of communication efforts by the school management to be more effective and have their school and offering renown within their context.

The information search process represents the in-depth assessment of the school offer (Ruijs & Oosterbeek, 2019; Hastings & Weinstein, 2008). The search is not only conducted by the student but as well

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the school searches for potential students by promoting their offering and targeting students to lure them with an appealing offer (Hossler & Gallagher, 1987). Being aware that schools are communicating to students and parents and that the amount of channels through which they can consume information is various, it is interesting to understand the top 3 channels used to conduct the information search for the school. An important view with regards to channels relates to the engagement level that the audience has with the content communicated. Hence, any organization has channels that it pays for, channels that they own - which are directly controlled and monitored by the communication/marketing department, and channels which they have earned - or user-generated content. In this respect, the engagement level of the audience with the brand points out the close or distant relationship they feel towards the organization itself (Dickinson-Delaporte et al., 2018; Colicev et al., 2018)

Apart from searching for information on the market offers, the students come to the point when they have to choose the school or schools to apply. Hossler & Gallagher (1987) see this school choice phase as the identification of the key-value offering to which students see value and to which they want to apply to. Other studies as well support this complex process by analysing the variety of alternatives explored and the school choice success (Hastings & Weinstein, 2008); or willingness to search and choose the best alternative or opt for the most obvious choice (Lovenheim & Walsh, 2017). It is important to note that a key reason for applying is evident and this study aims to understand the key reason why students decided to join a specific school.

This study aims at understanding the channels through which the students have become aware, the channels which they used to search for information on the schools, and the key factor that pushed them to apply for a given school.

2 Methodology

This is a descriptive study that uses primary data collected and it does not aim to test or validate a previous model. The data was collected from grade 10 students - entry academic year for Vocational schools in Kosovo. We disseminated a total of 800 questionnaires, which were filled by 788 students - across eight schools located in six municipalities. The study was conducted from mid-September to end-October 2021, as the students enrolled in Grade 10 from the first week of September. In coordination with the school management, the authors have visited the schools and invited students to compile and submit the questionnaires directly on the online form. From the total number of students enrolled in Grade 10 in Kosovo (Sistemi Menaxhimit te informatave ne Arsim, 2021), the sample size is highly reliable at a confidence level of 95% with a margin of error of 3.438%. There is a total of 68 Public Vocational schools in Kosovo offering VET qualifications.

School selection was done through purposive sampling by depicting schools that were considered large (>1,500 students) and schools that were highly specialized in nature, usually schools that are small (<400 students). Large schools operate more than four departments in the areas of construction, engineering & technology, transportation, and tailoring - where a total n=584 respondents - across five schools has been achieved. Schools that are specialized operate less than two departments mainly in engineering & technology, hotels management, woodworking and automotive - a total sample of n=203 respondents / across three schools.

The questionnaire consisted of two sections, being the background part and the school selection process. In the Background section the collected data related to the current VET school the respondent attends, the profile of studies, the place where they currently live, information on siblings, parents' occupation, the GPA from Grade 9 and the Elementary school they attended. In the School selection process part, the data

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collected related to awareness generation about the school, the channels students engaged with to conduct the information search, and the factors that made the student apply to the school.

As this study focuses on the process of understanding the channels through which students go through to become aware of the school, search for information and decide which school to select.

Considering that the study focuses mainly on the channels used by students to become aware and search for information on the school, we confirm that all the schools which were part of this study use the following marketing efforts to lure students with their offer: school website, school official Facebook page, school Instagram page, yearly open days event (which happens to be a municipality organized event for all schools), brochures and leaflets printed out for distribution, and visiting of several elementary schools to present their offering.

2.1 Sample description

The sample of 788 respondents represents a scattered sample across Kosovan schools, whereby there is a mix of departments and profiles which the students attend; 33.29% of the sample attend a Technology related profile, 16.26% attend an Engineering profile, 14.99% attend a Construction profile, 12.20% attend a Tailoring profile, 12.05% attend a Transportation profile, 5.46% attend a Hotels management profile, 2.54% attend a Wood Working profile, 2.03% attend a Retail profile and 1.14% attend an Automotive profile. With regards to the location of the VET school that they attend, 40.91% of the sample are based in Prishtina, 12.96% attend a school in Suhareke, 12.07% attend a school in Peje, 11.94% attend a school in Ferizaj, 11.56% attend a school in Vushtrri and 10.55% attend a school in Gjilan. In Prishtina, as it is the capital city and the largest city in the country the sample was collected by visiting three schools; whereas in the other municipalities one school per municipality was visited.

Considering that parents play a critical role in the career selected by 14-15 year-olds, the study aimed at understanding as well the parents' occupation. Regarding the Fathers' occupation of the respondents, in 20.44% of the sample, the father was engaged in the construction sector, 10.37% of the fathers were unemployed, 7.26% were drivers, 6.81% were entrepreneurs and security guards, respectively, 6.07% were salesman, 4.89% were managers in private sector organizations, 4.15% were engaged in agriculture, 3.11% were auto-mechanics, 2.67% were traders, 2.22% were engineers, 2.07% were electrical installers, and a total of 48 other professions represented a total of 23.11% of the sample. With regards to Mothers' occupation, 78.00% of the mothers were home-stay mothers with no specific occupation, 3.33% were engaged in hotel management, 2.46% were cleaners and teachers, respectively, 2.03% were hairdressers, 1.74% were saleswomen, 1.45% were tailors, and 23 other occupations accounted for the remaining 8.54% of the sample.

3 Results and Discussions

In this section, the results are split into three main categories, being: Awareness generation for the school, information search process, decision-making criteria that influenced the student to apply for the school.

3.1 Awareness generation for the school

On the set of questions relating to how the student first become aware of this VET school?, Family and relatives scored of highest frequency accounting for 45.13% of the cases, followed by Friends 37.63%, Visits from the VET school personnel to our primary school to present the school offer in 4.87% of the cases, school Facebook page sponsorships in 4.61% of the cases, school website 2.89% of the cases, Education

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fairs 2.37% of the cases, Newspapers and magazines 1.18% of the cases, printed ads on brochures and leaflets 0.92% of the cases.

Table 1 How did you first hear about the school?

Alternatives	Frequency (cases)	Frequency (%)
Family and Relatives	343	45.13%
Friends	286	37.63%
Visit from the VET school personnel	37	4.87%
School Facebook Page	35	4.61%
School website	22	2.89%
Fairs	18	2.37%
Newspapers and Magazines	9	1.18%
Brochures and leaflets	7	0.92%
Basketball trainer	2	0.26%
"Busulla"	1	0.13%
Blank response	18	
Total	760	100.00%

As per the awareness-building activities related to the school brand recognition for the potential school to apply a discussion seems to happen mainly through word-of-mouth, within families, and in peer discussions. As well channels that are controlled by the school such as the visits from the VET school personnel or advertisements on social media have played a role to raise brand awareness of the school. Nevertheless, word-of-mouth marketing seems to be the key driver for brand awareness development. Following this, we wanted to understand if the respondents have had a family relative that has or is currently attending this particular school, so in the question Are you the first person in your immediate family to attend this school?; 54.46% of the cases the respondents pointed out that they were the first person in their immediate family to attend the school, whereas in 45.54% of the cases they confirmed having had or currently having a family member attending this particular school. For students which did not have an immediate family member who previously attend the school the key channel of becoming aware of the school was Friends for 43% of the cases; whereas the other group with a significant advantage was Family & Relatives for 50.90% of the cases.

3.2 Information search process

In the information search process, the aim is at understanding which channels have been utilized to source information on the school and the profiles before the application. In this respect, the split has been to prioritize which channel has been the most significant, denoted with 1st choice and followed-up with the 2nd and the 3rd choice. As represented in Table 2, respondents pointed out 983 at three different levels where they sourced information on the school. The most frequent channel of sourcing information on the school and its offer was through Friends which overall consisted of 31.2% of the cases. On the Other hand, this was as well the most frequent channel ranked as the primary source of information by 206 cases or 27.47% of the frequency as 1st selection of channels. Followed-up by Family and Relatives as a channel of souring information on the school and its offer, 292 respondents ranked this as the 2nd most frequent channel or 29.7% of the cases, As a primary selection, this was the most highly ranked consisting of 237 cases or 31.60% of the 1st selection of channels. School-owned channels such as a Facebook page of the school, the

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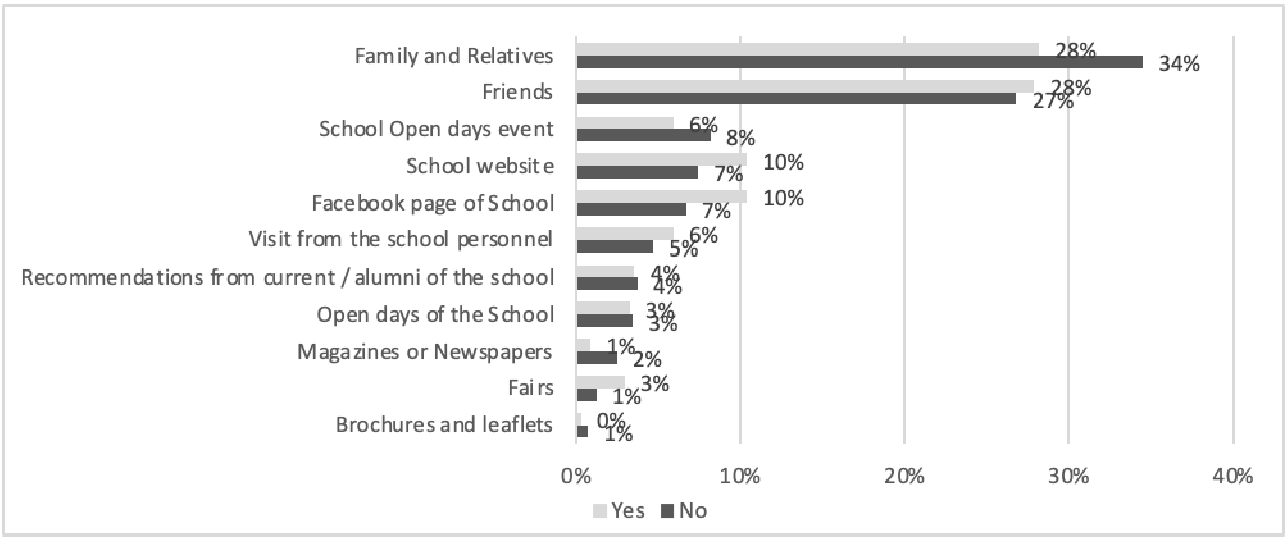
School WEbsite, and School open days events were frequent channels used by respondents to source data on the school and its offer, 79 cases or 8.0%, 67 cases or 6.8%, and 63 cases or 6.4%, respectively.

Table 2 Channels used to conduct the information search process about the school

Channel	Frequency (%)	Frequency (cases)	1st selection	2nd selection	3rd selection
Friends	31.2%	307	206	68	33
Family and Relatives	29.7%	292	237	50	5
Facebook page of the School	8.0%	79	63	14	2
School website	6.8%	67	66	1	
School Open days event	6.4%	63	54	8	1
Recommendations from current / alumni of the school	5.2%	51	27	9	15
Visit from the school personnel	5.2%	51	39	9	3
Open days of the School	2.5%	25	25		
Fairs	1.9%	19	15	4	
Magazines or Newspapers	1.6%	16	13	3	
Brochures and leaflets	1.2%	12	4	6	2
Blank response (788 respondents)			38	616	727
Total	100.0%	983	750	172	61

In line with Ruijs & Oosterbeek (2019), the peer effect for students that enroll in the VET school is significant. Considering the age-sensitiveness of the applicant the parents play a crucial role in the school choice (Burgess et al., 2015). In this study, it is critical to understand that the students have mainly been restructuring sources of information mainly through Family members, Relatives, and Friends. On the other hand, the digital and social channels have scored highly considering the convenience to access the

Figure 1 Information search results / split by Are you the first person in your immediate family to attend the School



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information and reviewing information on the school. Shields & Perutab (2018), have concluded on the remarkable impact that social media channels have the information search process for potential students. A special focus is on the usage of Facebook as Social media to search for information on the school.

Relating the answer received to the question "Are you the first person in your immediate family to attend the school?", presented in Figure 1, we notice a slight shift in the information search channels used when students were the first person in the family to attend the school or when they had a sibling or immediate family member attend the school before. The students that have had an immediate family member part of the school, have a higher tendency to use word-or-mouth channels such as Family & Relatives and Friends, 34% and 27% respectively. Or as cumulative at 61% of the cases, they have considered these channels as the primary way to search for information about the school. On the other hand, students that have not had an immediate family member part of the school, in a cumulative 56% of the cases have used "word-of-mouth" based conversations to search for information on the school such as discussions with Family & Relatives and Friends.

3.3 Decision-making criteria

This dimension focuses on the key factor which has convinced the respondent to apply to the school. In this regard from the reasons acquitted during the research, the authors clustered responses into eight groups. The following results are presented in Table 3. The most important factor that made the respondents to apply for the school was the Physical visit to the school to receive further information in 239 of the cases or 31.82%; followed by the interesting profiles being offered in 219 of the cases or 29.16%, and influence from parents to apply for the school/profile in 100 cases or 13.32%.

Table 3. The most important factor that made you decide to apply to this school

Dimensions	Frequency (cases)	Frequency (%)
My visit to the school to receive further information	239	31.82%
Interesting profiles offered	219	29.16%
Influence from parents	100	13.32%
Professional staff of the school	73	9.72%
Location of the School	73	9.72%
New infrastructure of the school	17	2.26%
Interaction with school personnel	15	2.00%
Interaction with current students	15	2.00%
Total	751	100.00%

The valuable output of this stage is the fact that students need to have direct contact with the school to best understand the value they can receive from the school. As this study targets specifically students, according to Oplatka (2007) parents have not seen the "open-house" type of marketing effort organized by the school as a critical element for success that supports the school choice process. In this study, students and parents were looked at as a whole rather than as separate entities. Albeit expecting that the open-days event would rather empower information-seeking it seems that it has had a direct impact on the decision to apply for the school. The role of parents in the decision-making process seems to be of high importance and according to Ghazala & Montalvo (2012), the influence from parents on school choice is of pivotal effect on

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the quality of the school selected by the student. On the other hand, students have considered as well alternative schools within the municipality. On the question "have you applied for admission to other schools as well?"; 22.2% of the respondents acknowledge having applied to other schools as well; whereas 77.8% have only applied to a specific school.

4 Discussion & Conclusions

In this discussion part, we think it is of high importance to understand the journey of students from becoming aware to applying for the school from a communication channel perspective. Hence, it is critical to point out the difference between channels that are owned and controlled by the school and the channels which are curated by the general public (Lovett & Staelin, 2016). From this point of view, the study points out that the awareness-building process has mainly been invoked by channels that are user-generated or word-of-mouth through family & relatives, and friends. This could derive as well from the limited communication budget with which the public schools in Kosovo are faced. As well the information search process is mainly owned and curated on the willingness of the public to discuss and share opinions on the school with one another. A rise in the importance of school-owned channels such as their open-day events, a social media page and website is starting to bring in results. Whereas the channels which is owned and could be controlled by the school and that seem to be of high importance to support the decision for application of the student to the school is the physical visit of the student to explore the school offers. The use of new advanced technologies such as Augmented Reality, Virtual Reality, and Mixed Reality nowadays are becoming more cost-effective and could be used as tools to enhance the experience between the applicant and the school (Pînzariu, 2020).

This study has specifically targeted already enrolled students in the VET schools to analyse the type of channels they have utilized to become aware of the school, search for the school offering, and the key differentiating factors that have made them apply to the school. An interesting area for future research is to understand the type of content which appeals to students. This is an area that could contribute furthermore to the efficiency and effectiveness of marketing efforts from the school.

The main and the most relevant channel either at generating brand awareness or information search remains the work-of-mouth that students have with their Parents & Family Relatives and Friends. Hence, when planning communication activities to generate awareness and communicate the benefits of the school, the management of the school shall carefully target not only the students but as well their parents.

With regards to the key factor which drives the decision to apply for the school, it is evident that students opted to visit in-person the school and create a more tangible perception about the school as well as their personal desire for the qualification portfolio offered by the school. Only at the third level was considered the influence of their parents to apply for the school.

During the search process, the school management is recommended to carefully review the audience engagement level by mapping the earned media to best assess the sentiments and the user-generated content. On the other side, we have noticed that the owned media - the channels moderated and controlled by the organization have proved to be a consistent performer when it comes to informing the audience on the school offering. This means that marketing initiatives such as school open day events, the school website, and the school Facebook page have proved to be significant channels that are utilized by students during their search process. Coordination of activities to deploy an open-days event seems of relatively high importance as a factor that has a direct impact not only on information search but rather on the decision to apply for the school. On this matter, the school management shall ensure the funnel development (the higher attendance in

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such an event might bring in a higher number of applicants) which would directly impact the number of students applying at the school.

5 References

[1] Burgess, S., Greaves, E., Vignoles, A., & Wilson, D. (2015). What parents want: school preferences and school choice. *The Economic Journal*, 1262-1289. https://doi.org/10.1111/ecoj.12153

[2] Calsamiglia, C., Martínez-Mora, F., & Miralles, A. (2015). *School choice mechanisms, peer effects and sorting.* Leicester: University of Leicester, Department of Economics.

[3] Colicev, A., Malshe, A., Pauwels, K., & O'Connor, P. (2018). Improving Consumer Mindset Metrics and Shareholder Value Through Social Media: The Different Roles of Owned and Earned Media. *Journal of Marketing*,, 37-56. https://doi.org/10.1509/jm.16.0055

[4] Dickinson-Delaporte, S., & Gunness, A. (2018). Engaging Higher Education Learners With Transmedia Play. *Journal of Marketing Education*, 1-11. https://doi.org/10.1177/0273475318775138

[5] Gashi, A., & Mojsoska-Blazevski, N. (2016). The Determinants of Students' Well-being in Secondary Vocational Schools in Kosovo and Macedonia. *European Journal of Education*, 333-344. https://doi.org/10.1111/ejed.12181

[6] Ghazala, A., & Montalvo, J. (2012). The role of awareness, information gathering and processing in school choice.

[7] Hastings, J., & Weinstein, J. (2007). Information, School Choice, and Academic Achievement: Evidence from Two Experiments. *National Bureau of Economic Research*. https://doi.org/10.3386/w13623

[8] Ho, G. K., & Law, R. (2020). Marketing strategies in the decision-making process for undergraduate choice in pursuit of hospitality and tourism higher education: The case of Hong Kong. *Journal of Hospitality & Tourism Education*, 1-13. https://doi.org/10.1080/10963758.2020.1791136

[9] Hossler, D., & Gallagher, K. (1987). Studying Student College Choice: A three-phase model and the implications for policy makers. *The Journal of the American Association of Collegiate Registrars and Admissions Officers*, 207-221.

[10] Kosovo Agency of Statistics. (2021). *Statistikat e Arsimit.* Prishtina, Kosovo: Kosovo Agency of Statistics.

[11] Lane Keller, K. (2001). Building customer-based brand equity: A blueprint for creating strong brands. *Marketing Science Institute*, 573-77.

[12] Lovenheim, M., & Walsh, P. (2017). Does Choice Increase Information? Evidence from Online School Search Behavior. *National Bureau of Economic Research*. https://doi.org/10.3386/w23445

[13] Lovett, M., & Staelin, R. (2016). The role of paid, earned, and owned media in building entertainment brands: Reminding, informing, and enhancing enjoyment. *Marketing Science*, 142-157. https://doi.org/10.1287/mksc.2015.0961

[14] Oplatka, I. (2007). The Place of the "Open House" in the School-Choice Process Insights From Canadian Parents, Children, and Teachers. *Urban Education*, 163-184. https://doi.org/10.1177/0042085906296561

[15] Pînzariu, A. (2020). An educational paradigm shift: Technology-enhanced adaptive and hybrid education. *Review of Applied Socio-Economic Research*, 41-59.

[16] Ruijs, N., & Oosterbeek, H. (2019). *School choice in Amsterdam: Which schools are chosen when school is free?* Cambridge, MA USA: Association for Education Finance and Policy. https://doi.org/10.1162/edfp_a_00237

ISSN: 2247-6172, ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 /2022), pp.109-118
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[17] Shields, A. B., & Perutab, A. (2018). Social media and the university decision. Do prospective students really care? *Journal of Marketing for Higher Education*, 1-17. https://doi.org/10.1080/08841241.2018.1557778

[18] Sistemi i Menaxhimit te Informatave ne Arsim. (2021, June). *Statistikat e Arsimit ne Kosove 2020/21*. Retrieved from Statistikat e Arsimit ne Kosove 2020/21: https://ask.rks-gov.net/media/6072/statistikat-e-arsimit-20202021.pdf

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The Impact of Climate Change on Agriculture and Adaptation Mechanisms: The Case of Egypt

Running title: Climate Change Impact on Agriculture

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Abstract

Climate change has adverse effect on agricultural production in developing countries, especially in those with low incomes and a high rate of hunger and poverty. Although the agricultural sector will be costly to adapt to climate change, it is essential to achieving food security. This study aims to analysis the impact of climate change on agriculture and adaptation mechanisms in Egypt during the period (1980:2018) using Autoregressive Distributed Lags Model (ARDL). The empirical results inferred that most of the variables are insignificant in the short-run. In the long run, the empirical results revealed that the impact of climate change on agricultural production, including the emissions of carbon dioxide and temperature, is positive. Hence, even if the impact of the rain variable is negative, its value is low, and then Egypt has not entered a critical or dangerous stage. On the other hand, the results indicated that the research directed at increasing productivity and developing new varieties more compatible with climate changes is insufficient. Even if the research is available, the Egyptian farmer does not use it due to a lack of agricultural extension. For mechanical and chemical technology effects, the long-run coefficient of Fertilizers is insignificant. The long-run coefficient of the number of tractors is negative and significant, while the rural population coefficient is positive and significant. This means that Egyptian agriculture is more dependent on manpower than mechanical technology.

Key-words: Agriculture; Climate Change; Autoregressive Distributed Lags Model (ARDL) Adaptation Mechanisms; Egypt.

JEL Classification: C51; C88; Q18; Q54.

1- INTRODUCTION

Climate change is any fundamental change in climate parameters - such as temperature, evaporation, rainfall, or wind - that extends over a long period (decades or more). The main reason for these changes is greenhouse gas emissions, resulting in the global warming (IPCC,2007). The mechanism of international conferences and agreements was used as a binding framework to regulate facing this environmental issue. The real interest in climate change goes back to the United Nations Framework Convention and the

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subsequent Kyoto Protocol and Bali Conference. They represent the beginning of the international community's interest in combating this dangerous phenomenon.

Agriculture both affects and is affected by climate change. Climate change will have an adverse effect on agricultural production in developing countries, especially in those with low incomes and a high rate of hunger and poverty (FAO, 2016; FAO, 2018). Although the agricultural sector will be costly to adapt to climate change, it is essential to achieving food security. (Mahmoud, 2019)

Egypt is not far and isolated from the world, as such climate changes will affect the natural resources available in Egypt. This leads to a direct impact on the agricultural sector, and then on Egyptian food security. On the other hand, Egypt is a net importer of food, which makes it vulnerable to the impact of global climate changes due to its negative impact on the global food supply, which leads to an increase in global food prices and thus an increase in The Egyptian food bill. (El Massah and Omran, 2014)

This study investigated the effect of climate change and other control variables on agricultural production by using the Autoregressive Distributed Lags Model (ARDL) approach for the period (1980: 2018). Climate change indicators are represented in CO2 emissions, Rainfall, and Temperature. The study also focused on the adaptation mechanisms to climate change through the other explanatory variables which are the agricultural land area and yield as a proxy of research and development in agricultural sectors. Mechanical and Chemical technology are represented in a number of Tractors and Fertilizers, respectively, and the rural population variable is used as a proxy of the labor force.

2-LITERATURE REVIEW

Many studies have been conducted to examine the connection between climate change and agriculture. Chandio *et al*. (2020a) studied the effect of climate change on China's agriculture using Autoregressive Distributed Lags Model (ARDL) during the period (1982-to 2014). The empirical results indicated that Climate change indicators represented in, Rainfall, and Temperature have a negative long-run effect on agricultural production, while CO2 emissions have a positive effect in the long-run and short-run. Also, Koondhar *et al*. (2020) evaluated the effect of air pollution and carbon dioxide emissions on agricultural productivity in china using Autoregressive Distributed Lags Model (ARDL) from 1998 to 2018.The results of the estimated model showed evidence of the environmental Kuznets curve (EKC) hypothesis.

Rehman *et al*. (2019) used Autoregressive Distributed Lags Model (ARDL) to analyze the relation between climate changes represented in, emissions of carbon dioxide and agricultural productivity in Pakistan during the period (1987- to 2017). Chandio, *et al*. (2020b) used also Autoregressive Distributed Lags Model (ARDL) to analyze the effect of carbon dioxide emissions on agricultural output in Pakistan during the period (1983-to 2016). The empirical results concluded that in the short and long runs, tractors and the labor force positively and significantly affect agricultural output, but carbon dioxide emissions were insignificant.

Asumadu-Sarkodie and Owusu (2016) showed that there was an equilibrium relationship in the long- run between climate change and agriculture using Autoregressive Distributed Lags Model (ARDL) and Vector Error-Correction Model (VECM) over the period (1961-2012) in Ghana. In addition, Houngbedji and Diaw (2018) showed that rainfall had an insignificant impact on agricultural output in Benin, while CO2 emissions and temperature had a significant negative impact in the short run depending on Autoregressive Distributed Lags Model (ARDL).

Furthermore, Ouraich and Tyner (2014) revealed the negative effect of climate change on productivity in Morocco using the General Equilibrium model. On the other hand, Pereira (2017) emphasized that the most

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important challenges facing Africa in adapting to climate changes were the existence of traditional agricultural systems that relied on a high percentage of rainwater in agriculture, in addition to the reliance of African agriculture on smallholder farmers.

Other empirical studies focused on a specific crop, Abd-Elmabod *et.al.* (2020) used MicroLEIS decision support system to examine climate change's effect on the productivity of wheat and sunflower in a Mediterranean area, and the results indicated the negative impact of Climate change on the productivity, but the decline in sunflower productivity was even greater than the decrease in wheat.

For empirical studies on Egypt, Mahmoud (2019) discussed the effect of climate change on agriculture in Egypt, and the adaptation actions to face these changes. Ahmed (2020) predicted the negative effect of climate change in Egypt, which was represented by a decrease in productivity, and agricultural income, and on the other hand, higher crop water needs and increased demand for imports, the study used a multi-market model.

Khalil and Omran (2018) confirmed the significant changes in temperature and humidity in Egypt depending on the temperature-humidity index (THI) during the forecast period of 2046:2060. The values of THI rise from 3%, 0%, and 4% for the Lower, Middle, and Upper Egypt in the period (2016 - 2030) to 16%, 7%, and 11% in the period (2046 - 2060), respectively.

Yassin (2018) investigated the effect of climate change on Egyptian food security using qualitative analysis by conducting a survey with specialists. The results showed that the existing policies are not effective to Mitigate and adapting the climate changes. While, Hashem, (2020) analyzed the effect of climate change on various dimensions of food security in Egypt using a quantitative method through Autoregressive Distributed Lags Model (ARDL), the empirical results concluded that the climate change had an adverse effect on food availability and access, while climate change effect was insignificant for food utilization indicator.

Other empirical studies focused on a specific crop, El Massah and Omran (2014) analyzed the effect of climate change on Egypt's grain imports using the multiple linear regression model over the period (1991:2011), and the results showed that Climate change had no negative effect on Egypt's imports of wheat from the United States of America, although it had a negative impact on Egypt's imports of wheat from Russia. On the other hand, Egypt's imports of maize were negatively affected by the various exporting countries.

Mahrous (2018) studied the effect of climate change on Egypt's grain productivity using Autoregressive Distributed Lags Model (ARDL) during the period (1961:2013); the results revealed that rainfall and temperature had a significant negative impact, a 1% increase in rainfall and temperature leading to decrease the agricultural productivity of grain by 0.037% and 0.643%, respectively.

Ali et al. (2020) inferred that the reduction in Egyptian wheat yield is about 8.7%, 11.4%, and 13.2% in the 2030s, 2050s, and 2080s, respectively. The study proposed the sowing delay mechanism as one of the effective mechanisms for adapting the wheat to the climate changes using the Global Climate Models GCMs and Decision Support System for Agro-technology Transfer (DSSAT).

Elbasiouny and Elbehiry (2020) concluded that the negative impact of climate change on rice cultivation. Moreover, Taha and Zohry (2018) used the Basic Irrigation Scheduling model (BISM) to evaluate the impact of Climate Change on Sugarcane in Egypt, The empirical results revealed that water demand will increase by 17% in 2040, but the use of gated pipes is the best mechanism to preserve the water used in sugarcane cultivation and the best mechanism to mitigate the effects of climate change.

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Additionally, Eid, *et al*. (2007) confirmed the negative effect of climate change on agriculture and water resources in Egypt using General Circulation Models, also Abd Ellah (2020); Khedr (2019) reached the same results. While Mohamed (2019) analyzed the socio-economic impacts of Food insecurity and Water Shortage resulting from climate change.

Hamada (2020); Abd El Mowla and Abd El Aziz (2020) evaluated Climate-smart agriculture (CSA) in Egypt; the study stressed the importance of creating new varieties compatible with climate changes, and able to increase agricultural productivity. Furthermore, Abdel Monem and El Ghandour (2020) focused on the scientific research and technology to adapt to the challenges of climate change in Egypt.

Fawaz and Soliman (2016) studied the benefits of the green economy in Egypt, where annual savings in the agriculture sector would be 1.3 US$ billion, and about 1.1 US$ billion in the Water Resources, moreover, Reducing carbon dioxide emissions by 13% and reducing crop water consumption by about 40%. On the other hand, Farag *et al*. (2018) investigated the carbon footprint of certain cereals the to adapt to climate changes.

Wang et al. (2018) indicated that climate change had a negative impact on production of major cereal crops grain except for millets because of their ability to adapt to climate changes. Hence, the study suggested using millet as an alternative to major grains. Moreover, Mustafa *et al*. (2019) introduced the crop diversification mechanism through wider use of underutilized crops to achieve food security and mitigate climate changes.

3- EGYPTIAN AGRICULTURE AND CLIMATE CHANGES

3-1 National Greenhouse Gas Inventory:

The total greenhouse gas emissions in Egypt were about 248770 Giga grams of carbon dioxide equivalents in 2005, then reached about 325614 Giga gram in 2015, which increased by 31% from 2005 to 2015, as shown in figure (1). Carbon dioxide comes at the forefront of the gases contributing about 73% of the total greenhouse gas emissions, while the Methane and Nitrous Oxide gases are about 13% and 12%, respectively.

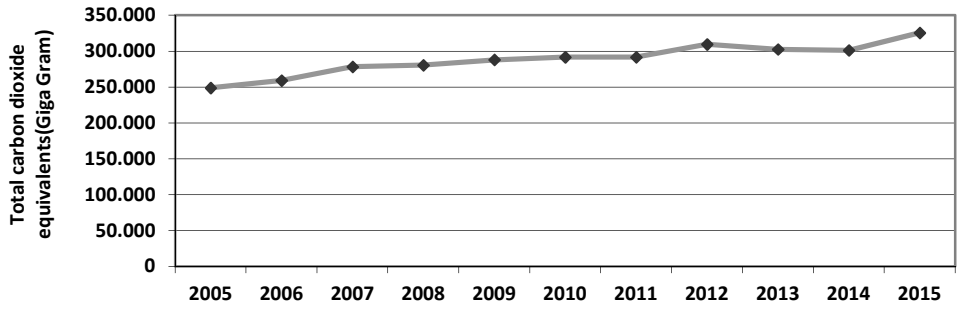

Figure (1) Total Greenhouse Gas (GHG) Emissions Trend In Egypt during the period (2005:2015)

Source: Ministry of Environment, (2018) *Report to the United Nations Framework Convention on Climate Change* (https://www.eeaa.gov.eg/en-us/home.aspx).

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Figure (2) shows the contribution of different sectors to the total greenhouse gas emissions, we find that the energy sector is the primary and main contributor to those emissions by 64.5%, due to Egypt's dependence on fossil fuels (petroleum and natural gas) with about 92% of total energy use. The second sector is the agricultural sector with 14.9%, and then the industrial sector, with a rate of 12.5%, and the emissions of the industrial sector are mainly represented in carbon dioxide emissions from the iron and cement industry, and then, in the end, the waste sector by 8.1%

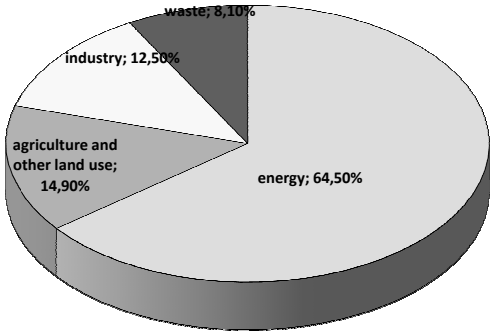

Figure (2) the contribution of the different sectors
to the total greenhouse gas emissions in 2015

Source: Ministry of Environment, (2018) *Report to the United Nations Framework Convention on Climate Change* (https://www.eeaa.gov.eg/en-us/home.aspx).

Furthermore, table (1) shows the percentage of the contribution of each sector to the total of each greenhouse gas in 2015. The energy sector has contributed 87% of carbon dioxide emissions, while industry represents 12% and the agricultural sector 1%. For methane gas, we find that the main sector contributing to methane emissions is the waste sector with 59%, followed by the agriculture sector, with 38%, and the energy sector, with 3%. For Nitrous Oxide gas, we find that the main sector contributing to Nitrous Oxide emissions in the agriculture sector by 81%, followed by the industrial sector by 12%, then the waste sector by 5%, and finally the energy sector by 2%.

Table (1) Contribution of each sector to the total of each Greenhouse gas emissions in 2015

Gas	Sector	%
carbon dioxide	Energy	87%
	Industry	12%
	agriculture	1%
Methane	Energy	3%
	agriculture	38%
	waste	59%
Nitrous Oxide	Energy	2%
	Industry	12%
	agriculture	81%
	waste	5%

Source: Ministry of Environment, (2018*) Report to the United Nations Framework Convention on Climate Change*. (https://www.eeaa.gov.eg/en-us/home.aspx).

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3-2 The impact of climate change on crops

Increasing the concentration of carbon dioxide will have a positive effect on crop productivity through increasing the ability of plants to conduct photosynthesis (El Massah and Omran, 2014; Mahrous, 2018), but from the other hand, the high temperature also affects the growth process. Table (2) shows that the productivity of the wheat in Egypt will decrease by 15% if the temperature increases about 2°C in 2050, the productivity of the rice, maize, Soybeans, barley will decrease by 11%, 14%, 28%, 20%, respectively. But, cotton productivity is expected to increase by 17%.

Table (2) the percentage change in productivity of some major crops in Egypt, when the temperature rises by 2°C in 2050

Crop	2050
Wheat	-15%
rice	-11%
Maize	-14%
Soybeans	-28%
barley	-20%
Cotton	+17%

Source: Ministry of Environment (2020).*Egypt National Environmental, Economic and Development Study (NEEDS) for Climate Change: under the United Nation framework convention on climate change*.

Most studies indicate that the global annual average temperature will lead to a change in the crop structure as the period of crop maturity changes - whether by increase or decrease - which leads to an increase in food prices as a result of the slow increase in global food supplies and the increase in global demand (FAO, 2018). On the other hand, increased temperatures raise soil erosion rates; raise the rates of evaporation and an imbalance of humidity; increase the number of agricultural pests and diseases (FAO, 2016); increase the rates of decomposition of the organic components of the soil, which reduces its water holding capacity, and reduces its fertility. (Elbasiouny and Elbehiry (2020)

3-3 The Impact of climate changes on water resources:

Many studies discussed the impact of climate changes on water resources, which are directly related to food production, and this can be explained as follows:

- The expected increase in global temperature will lead to an increase in the water needs of agricultural crops, which will increase the demand for water resources and reduce the productivity of these crops, thus threatening food security (Hashem, 2020). In Egypt, for example, the water consumption of wheat increased by 2.5% compared to the current water consumption of it, while the water consumption of rice, maize, and cotton increased by 16%, 8%, and 10%, respectively. (Mahmoud, 2019)
- It is expected that some rivers will be affected by drought as a result of changing rainfall rates at the headwaters of the river, Strzepek *et al*. (2001) came up with nine different scenarios to explain the impact of climate change on the Nile River. All these scenarios indicate a decline in the rate of water flow in the Nile by about 20% until 2040, while only one scenario predicts an increase in the rate of flow of the Nile water after 2045, and that will severely affect agricultural productivity (Abdel Monem and El Ghandour, 2020)
- Egypt is considered one of the Nile Basin countries most affected by what climate changes can have on the size of the flood, as it will not only be affected by what climate changes can cause within its borders,

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but it will be affected by the climate changes in the rest of the basin countries and on the rates of consumption of Nile River water in these countries. (Khedr, 2019)

3-4 Institutional Arrangements that Egypt has taken to confront climate changes:
Egypt is considered one of the most active Arab and African nations in terms of climate change adaptation, in the following part we summarize the most important policies and procedures that Egypt has undertaken in this field:

A- In 1994, Egypt signed the United Nations Framework Convention on Climate Change (Gelil, 2014).

B- In 1995, Egypt has implemented two schemes: The "Strengthening the National Action Plan" program, where many studies were conducted in the field of climate change, and The "Egyptian Capacity Building in the Field of Climate Change" in cooperation with the Global Environmental Facility. (Ministry of Environment, 2010)

C- Egypt signed the Kyoto Protocol on March 5, 1999, intending to impose obligations on industrialized countries to reduce their emissions of greenhouse gases, compared to the emissions of greenhouse gases in 1990 (Gelil, 2014).

D- In 2005, Egypt activated the clean development mechanism, which aims to implement projects aimed at reducing greenhouse gases from various sectors such as industry, waste recycling, and transportation, as well as gardening projects that absorb greenhouse gases (Ministry of Environment, 2020).

4- MATERIALS AND METHODS

4-1 The data: The analysis uses observations of nine variables for the period (1980:2018). All the variables are in logarithmic form. Data were collected from Food and Agriculture Organization (FAO), World Development Indicator (WDI), and Central Agency for Public Mobilization and Statistics (CAPMAS).

4-2 Methodology: The Autoregressive Distributed Lags Model (ARDL) developed by Pesaran *et al*. (1999, 2001) will be used to reveal the existence of an equilibrium relationship (cointegration) between the variables under study. ARDL model does not require that time series be Integrated to the same degree, but the only condition for applying this model is that the time series not be Integrated to a second degree I(2). (Asumadu-Sarkodie and Owusu, 2016; Mahrous, 2018)

Moreover, this model has better properties in the case of short time series compared to the other usual methods of testing co-integration such as the two-stage Engle & Granger method or Johansen's cointegration test in Vector Autoregression (VAR) method (Chandio *et a*l. 2020a; Chandio *et a*l. 2020b). Furthermore, The (ARDL) model provides estimation in both the short and long run. (Rehman *et al.* 2019 ; Houngbedji and Diaw 2018).

The study model can be described as:

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$$\Delta \ln AGRI_t = \alpha + \beta_1 \ln AGRI_{t-1} + \beta_2 \ln CO_{t-1} + \beta_3 \ln RAIN_{t-1} + \beta_4 \ln TEMP_{t-1} +$$

$$\beta_5 \ln YLD_{t-1} + \beta_6 \ln AREA_{t-1} + \beta_7 \ln TR_{t-1} + \beta_8 \ln F_{t-1} + \beta_9 \ln RPOP_{t-1} + \sum_{i=1}^{q1} \gamma_1 \Delta \ln CO_{t-i}$$

$$+ \sum_{i=1}^{q2} \gamma_2 \Delta \ln RAIN_{t-i} + \sum_{i=1}^{q3} \gamma_3 \Delta \ln TEMP + \sum_{i=1}^{q4} \gamma_4 \Delta \ln YLD_{t-i} + \sum_{i=1}^{q5} \gamma_5 \Delta \ln AREA_{t-i}$$

$$+ \sum_{i=1}^{q6} \gamma_6 \Delta \ln TR_{t-i} + \sum_{i=1}^{q7} \gamma_7 \Delta \ln F_{t-i} + \sum_{i=1}^{q} \gamma_8 \Delta \ln RPOP_{t-i} + \sum_{i=1}^{q} \gamma_8 \Delta \ln AGRI_{t-i} + \varepsilon_t$$

Where: AGRI	Agricultural value added (constant US$)
CO	CO2 emissions (metric tons per capita)
RAIN	Rainfall (MM)
TEMP	Temperature (Celsius)
YLD	Yield (hectograms per hectare (hg/ha))
AREA	Agricultural Land area (hectare)
TR	No. of Tractors
F	Fertilizers(tons)
RPOP	Rural population

The Autoregressive Distributed Lags approach involves checking the long-term equilibrium relationship between the model variables, and for this we calculate the (F) statistic through (Wald test). (Koondhar *et al.* 2020)

H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = 0$

H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq \beta_9 \neq 0$

5- RESULTS AND DISCUSSIONS

5-1 Results of Augmented Dickey Fuller (ADF) Test

Table (3) shows the results of Augmented Dickey Fuller test, we find that some variables are stationary in levels and some variables are stationary in first-differences, so we can use ARDL model.

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Table (3) Results of Augmented Dickey Fuller (ADF) test

	Augmented Dickey Fuller (ADF)				
	Log level		Log difference		
	Intercept	Trend and intercept	Intercept	Trend and intercept	
LNAGRI	1.469882	-3.347409	-3.52648**	-3.191369	I(1)
LNCO	-1.241682	-1.782172	-4.6027***	-4.555127***	I(1)
LNRAIN	-4.33815***	-4.806687***			I(0)
LNTEMP	-0.643065	-5.148648***			I(0)
LNYLD	-1.837122	-1.126876	-4.2785***	-4.891752***	I(1)
LNAREA	-1.000558	-1.095716	-5.2737***	-5.383822***	I(1)
LNTR	-1.718770	-2.279060	-3.1819**	-3.164450	I(1)
LNF	-1.551473	-2.059300	-4.9333***	-4.934021***	I(1)
LNRPOP	-0.784067	-5.477036***			I(0)

Source: Compiled by researcher from unit root test depending on the E-Views program depending on the data of Food and Agriculture Organization (FAO), World Development Indicator (WDI), and Central Agency for Public Mobilization and Statistics (CAPMAS).

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Note: *** indicates statistical significance at 1% level, **significance at 5%level, * significance at 10%level.

Table (4) shows that the value of F-Statistic is greater than the upper bound value. Hence, the model's variables have a long-run equilibrium relationship.

Table (4) ARDL Bounds test results (Unrestricted intercept and no trend)

F-Statistic	Significance Levels	Lower Bound	Upper Bound
	10 percent	1.95	3.06
6.609812	5 percent	2.22	3.39
	1 percent	2.79	4.10

Source: Compiled by researcher depending on the E-Views program, depending on the data of Food and Agriculture Organization (FAO), World Development Indicator (WDI), and Central Agency for Public Mobilization and Statistics (CAPMAS).

Table (5) shows that most of the variables are insignificant in the short-run which means the effect of the explanatory variables on agricultural production is the weak in short run. But rural population variable is

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significant and negative, which reflects the negative impact of the rural population on agricultural production. The error correction term ECT_{t_1} denotes the speed of adjustment toward the long-run equilibrium. The value of ECT is negative and significant, so the model can get back to the long-run equilibrium at speed of 26%.

Table (5) Results of ARDL model in Long-run and short-run

long-run estimation				
variables	**Coefficient**	**Standard Error**	**T-Statistic**	**Prob.**
LNCO	0.147838***	0.041525	3.560234	0.0013
LNTEMP	0.406485**	0.179542	2.264006	0.0310
LNRAIN	-0.029380**	0.014109	-2.082266	0.0459
LNYLD	-0.241539***	0.067645	-3.570661	0.0012
LNAREA	0.191164	0.115313	1.657784	0.1078
LNTR	-0.233781***	0.060303	-3.876764	0.0005
LNF	-0.007157	0.037995	-0.188362	0.8519
LNRPOP	1.549177***	0.102979	15.04358	0.0000
C	-1.356739	1.758111	-0.771702	0.4463
Short-run estimation				
ΔLNCO	-0.026990	0.020049	-1.346184	0.1899
ΔLNTEMP	0.036227	0.054036	0.670419	0.5085
ΔLNRAIN	0.001035	0.003480	0.297399	0.7685
ΔLNYLD	-0.008322	0.032630	-0.255056	0.8007
ΔLNAREA	-0.057691	0.039487	-1.461004	0.1560
ΔLNTR	-0.047812	0.029534	-1.618879	0.1175
ΔLNF	0.022652	0.013974	1.620962	0.1171
ΔLNRPOP	-0.996441***	0.358306	-2.780979	0.0099
ECT(_1)	-0.263110***	0.081520	-3.227554	0.0034
Residual diagnostic tests				
Breusch-Godfrey Serial Correlation LM Test: 0.771222(0.388202)			**F-statistic**	3.295774***
ARCH Test: 0.037163 (0.848281)			**R-squared**	0.559006
White Heteroskedasticity Test: 0.527830 **(**0.911602**)**				
Ramsey RESET Test: 1.231473 (0.277681)				
CUSUM Test stable				

Source: Compiled by researcher depending on the E-Views program, depending on the data of Food and Agriculture Organization (FAO), World Development Indicator (WDI), and Central Agency for Public Mobilization and Statistics (CAPMAS)..

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Note: ***, **, and * indicate significant at the 1%, 5%, and 10% significance levels, respectively

In the long run, the empirical results revealed that the emissions of carbon dioxide and temperature have a significant positive effect on agricultural production, a 1% increase in CO2 emissions and temperature can increase agricultural production by 0.147838%, and 0.406485%, respectively. However, rainfall has a significant negative impact, with a 1% increase in rainfall leading to a decrease the agricultural production of about 0.029380%. Consequently, the impact of climate change, including the emissions of carbon dioxide and temperature on agricultural production, is positive. Hence, if the impact of the rain variable is negative, but its value is low, then Egypt has not entered a critical or dangerous stage.

Moreover, the long-run coefficient of agricultural land area is positive but insignificant, while the long-run coefficient of yield has a significant negative effect, so the increase in yields by 1% led to a decline in agricultural production by 0.241539%. The study used to yield as a proxy of research and development in agricultural sectors. This indicates that the research directed at developing new varieties more adaptable to climate changes is inadequate. Even if the research is available, the Egyptian farmer does not use it due to a lack of agricultural Extension.

Furthermore, the long-run coefficient of Fertilizers is insignificant. The study used rural population as a proxy of the labor force, the long-run coefficient of the rural population is positive and significant, with a 1 % increase in rural population leading to an increase the agricultural production by 1.549177%. The long-run coefficient of the number of tractors is negative and significant a 1% per cent increase in the number of tractors, production decreased by 0.233781%. This means that Egyptian agriculture is more dependent on manpower than mechanical technology.

The quality of the model should be tested, and this is done by diagnostic tests as shown in table (5):

- The Breusch-Godfrey Serial Correlation LM Test results indicate that we can't reject the null hypothesis of no serial correlation.
- The White Heteroskedasticity Test results indicate the model isn't Heteroskedasticity.
- The Autoregressive Conditional Heteroscedasticity (ARCH) test indicates that we can't reject the null hypothesis of the homoscedasticity in the estimated model.
- The Ramsey RESET test confirms the validity of the functional form used in the estimated model
- The value of the F test is significant, which means that the estimated model had a good fit.
- Figure (3) shows the results of CUSUM Test, the model is stable as CUSUM line falls within the critical limits at a 5% level of significance.

Hence, the model's results can help investors, and policymakers in drawing various agricultural policies.

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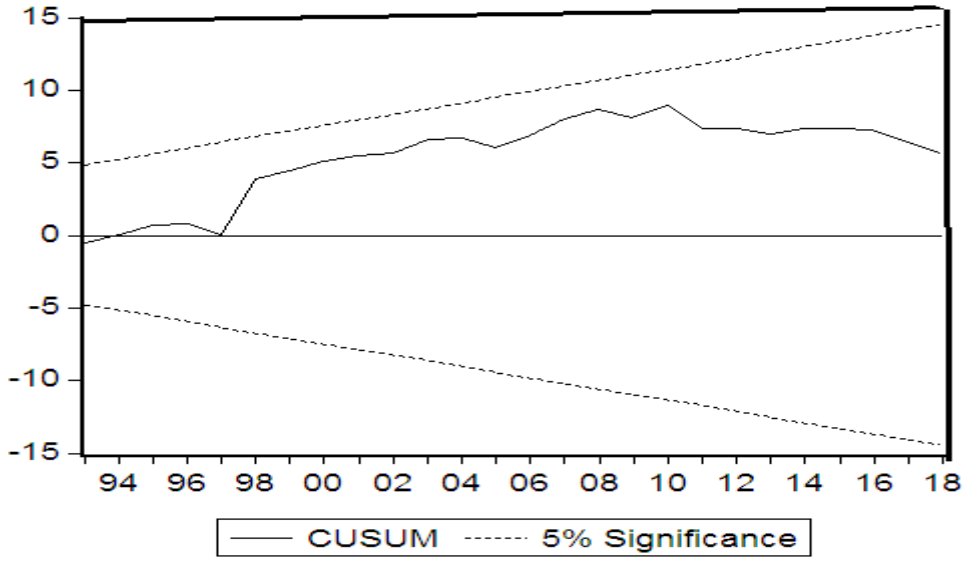

Figure (3) results of CUSUM Test

Source: Compiled by researcher depending on the E-Views program**.**

6- CONCLUSION

This study aims to examine the impact of climate change on agriculture and adaptation mechanisms in Egypt from 1980 to 2018 using Autoregressive Distributed Lags Model (ARDL). Climate change indicators are represented in carbon dioxide emissions, Rainfall, and Temperature. The non-climatic indicators are expressed in agricultural land area and yield as a proxy of research and development in agricultural sectors. Mechanical and Chemical technology are represented in a number of Tractors and Fertilizers, Respectively, and the rural population variable is used as a proxy of the labor force.

The empirical results revealed that most of the variables are insignificant in the short-run except the rural population variable is significant and negative. In the long run, the results revealed that the impact of climate change on agricultural production, including the emissions of carbon dioxide and temperature, is positive, even if the impact of the rain variable is negative, but its value is low. Hence, Egypt has not entered a critical or dangerous stage

Moreover, the results indicated that the research directed at developing new varieties more adaptable to climate changes is inadequate. Even if the research is available, the Egyptian farmer does not use it due to a lack of agricultural Extension. For mechanical and chemical technology effect, the long-run coefficient of Fertilizers is insignificant. The long-run coefficient of the number of tractors is negative and significant, the study used the rural population as a proxy of the labor force, and the long-run coefficient of the rural population is positive and significant. This means that Egyptian agriculture is more dependent on manpower than mechanical technology.

Previous results clearly show that the Egyptian state is making significant efforts, whether at the level of institutions or policies, to confront the challenges of climate change, but there remains a need for a number of complementary measures, especially at the level of scientific research, developing community awareness, and activating the role of civil society.

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7- REFERENCES

Abd Ellah, R.G. (2020) "Water resources in Egypt and their challenges, Lake Nasser case study", *Egyptian Journal of Aquatic Research*, (46), 1-12. https://doi.org/10.1016/j.ejar.2020.03.001

Abd-Elmabod, S., Muñoz-Rojas, M., Jordán, A., *et.al*. (2020)."Climate change impacts on agricultural suitability and yield reduction in a Mediterranean region", *Geoderma*, 374, pp: 1-14. https://doi.org/10.1016/j.geoderma.2020.114453

Abdel Monem, M., El Ghandour, I. (2020) Role of Science, Technology and Innovation in Addressing Climate Change Challenges in Egypt E.-S. E. Omran and A.M. Negm (eds.), *Climate Change Impacts on Agriculture and Food Security in Egypt*, Springer Nature Switzerland AG, pp 59:79. https://doi.org/10.1007/978-3-030-41629-4_4

Abd El Mowla, K. and Abd El Aziz, H.,(2020) "Economic analysis of climate-smart Agriculture in Egypt", *Egypt Journal Agricultural Research*., 98 (1), pp:52-63. https://dx.doi.org/10.21608/ejar.2020.101423

Ahmed, Y., Delin, H., Belford, C., Shaker, V., and Abdelrahaman, n. (2020) " An estimate of the potential economic impacts of climate change on Egypt's agriculture: a multi-market model approach", *Climate and Development*, DOI:10.1080/17565529.2020.1754156

Ali, M., Ibrahim**,** M., El baroudy, A., *et al*. (2020)" Climate change impact and adaptation on wheat yield, water use and water use efficiency at North Nile Delta", *Front. Earth Sci*., 14(3): 522–536. https://doi.org/10.1007/s11707-019-0806-4

Al-Mulali, U., Solarin, S.A., Ozturk I., 2016, Investing The Presence Of Environmental Kuznets Cruve Hypothesis In Kenya: An Autoregressive Distributed Lag (ARDL) Approach, Nat Hazard Springer, (80), pp1729-1747. DOI: 10.1007/s11069-015-2050-x

Asumadu-Sarkodie, S., Owusu,P., (2016)."The relationship between carbon dioxide and agriculture in Ghana: a comparison of VECM and ARDL model", *Environmental Science Pollution Research*, 23:10968–10982. DOI 10.1007/s11356-016-6252-x

Chandio, A., Jiang, Y., Rehman, A., and Rauf, A. (2020a) "Short and long-run impacts of climate change on agriculture: empirical evidence from China*"*. *International Journal of Climate Change Strategies and Management*, Vol. 12 No. 2, pp. 201-221. DOI 10.1108/IJCCSM-05-2019-0026

Chandio, A., Jiang, Y., Rauf, A., Ahmad, F., and Amin, W.(2020b) "Assessment of Formal Credit and Climate Change Impact on Agricultural Production in Pakistan: A Time Series ARDL Modeling Approach" *Sustainability*, 12, (5241),pp2-19 doi:10.3390/su12135241

Eid, H., El-Marsafawy, S., Ouda, S.,(2007) "*Assessing the Economic Impacts of Climate Change on Agriculture in Egypt: A Ricardian Approach*", The World Bank, Policy Research Working Paper 4293. https://openknowledge.worldbank.org/handle/10986/7485

Elbasiouny,H., Elbehiry, F.,(2020) Rice Production in Egypt: The Challenges of Climate Change and Water Deficiency E.-S. E. Omran and A.M. Negm (eds.), *Climate Change Impacts on Agriculture and Food Security in Egypt*, pp295:319https://doi.org/10.1007/978-3-030-41629-4_14

El Massah,S., Omran, G. (2014). "Would Climate Change Affect the Imports of Cereals? The Case of Egypt, "Handbook of Climate Change Adaptation, Springer-Verlag Berlin Heidelberg. DOI 10.1007/978-3-642-40455-9_61-2

ISSN: 2247-6172, ISSN-L: 2247-6172
Review of Applied Socio- Economic Research
(Volume 23, Issue 1 /2022), pp. 119- 134
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

FAO. (2018). *The state of agricultural: commodity markets: Agricultural trade, climate change and food security*,Food and Agriculture Organization of the United Nations, Rome. https://www.fao.org/publications/soco/2018/en/

FAO. (2016).*The State of Food And Agriculture: climate Change, Agriculture and Food Secur*ity, Food and Agriculture Organization of the United Nations, Rome. https://www.fao.org/publications/sofa/2016/en/

Farag, A. El-Moula, M., Maze, M., El- Gendy, R., Radwan, H., (2018). "Carbon footprint for wheat and corn under Egyptian Conditions, *Future of Food: Journal on Food, Agriculture and Society.* 6 (2), 41- 54 doi:10.17170/kobra-2018122070

Fawaz, M. ,and Soliman,S., (2016) "Climate Change, Green Economy and its Reflections on Sustainable Agricultural Development in Egypt" the 24 conference of agricultural economists "*The Future of Agriculture - The Egyptian in light of local, regional and international changes*, The Egyptian Association for Agricultural Economics, , pp: 324-295.

Gelil, I.,(2014) *"History Of Climate Change Negotiations And The Arab Countries: The Case of Egypt"*, Research Report, the Issam Fares Institute for Public Policy and International Affairs, American University of Beirut.

Hamada, Y. (2020)." Sustainable Food Security via Climate–Smart Agriculture*", Indian Journal of Applied Business and Economic Research*, Vol. 1, No. 2, pp: 127-146. http://www.arc.sci.eg/Pub_Details.aspx?OrgID=9&PUB_ID=424886&lang=en

Hashem, E. (2020). "The Impacts of Climate Change on Food Security- Case Study: Egypt". *Journal of Economics and Business*, Vol.3, No.2, 868-884. DOI: 10.31014/aior.1992.03.02.244

Houngbedji, C and Diaw, A., (2018)." Analysis of Climate Change Effect on AgriculturalProduction in Benin", *Asian Journal of Agricultural Extension, Economics &Sociology*, 24(4), pp: 1-12. DOI: 10.9734/AJAEES/2018/40522

IPCC (2007).*Intergovernmental panel on climate change fourth assessment report: climate change 2007*, Synthesis report, World Meteorological Organization, Geneva.

Khalil A. and Omran, F.,(2018)." Impact of climate change on Temperature Humidity Index Values in Egypt" *International Journal of Scientific Research in Science, Engineering and Technology*, Vol. 4 (1), pp: 1059-1064. https://www.academia.edu/37069715/Impact_of_climate_change_on_Temperature_Humidity_Index_Values_in_Egypt

Khedr, M (2019), "Challenges and Issues in Water, Climate Change, and Food Security in Egypt" Negm, A. (Ed.) *Conventional Water Resources and Agriculture in Egypt*, Springer International Publishing, Switzerland, pp229-244DOI 10.1007/698_2017_67,

Koondhar, M., Li, H., Wang, H., Bold, S., and Kong, R.(2020) "Looking back over the past two decades on the nexus between air pollution, energy consumption, and agricultural productivity in China: a qualitative analysis based on the ARDL bounds testing model" *Environmental Science and Pollution Research* .27:13575–13589 https://doi.org/10.1007/s11356-019-07501-z

Mahmoud, M. (2019), "Impact of Climate Change on the Agricultural Sector in Egypt", Negm, A. (Ed.) *Conventional Water Resources and Agriculture in Egypt*, Springer International Publishing, Switzerland, pp213-227 DOI 10.1007/698_2017_48,

Mahrous, W., (2018) "Dynamic Impacts of Climate Change on Cereal Yield in Egypt: An ARDL Model", *Journal of Economic & Financial Research*. Vol.5 (1), pp: 886-908. https://www.asjp.cerist.dz/en/article/55216

Ministry of Environment (2020).*Egypt National Environmental, Economic and Development Study (NEEDS) for Climate Change : under the United Nation framework convention on climate change*, Egyptian Environmental Affairs Agency.

ISSN: 2247-6172
Review of Applied Socio- Economic Research
(Volume 23,Issue 1 /2022), pp. 119-133
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

Ministry of Environment (2018). *Report to the United Nations Framework convention on Climate Change*, Egyptian Environmental Affairs Agency.

Ministry of Environment (2010).*Egypt state of the Environmental report 2009*, Egyptian Environmental Affairs Agency.

Mohamed, N (2019). "Egyptian Food Insecurity under Water Shortage and Its Socioeconomic Impacts" Negm, A. (Ed.) *Conventional Water Resources and Agriculture in Egypt*, Springer International Publishing, Switzerland, pp245-273. DOI 10.1007/698_2018_239

Mustafa, M., Mayes, S., and Massawe, F. (2019) "Crop Diversification through a Wider Use of Underutilised Crops: A Strategy to Ensure Food and Nutrition Security in the Face of Climate Change" A. Sarkar et al. (eds.), *Sustainable Solutions for Food Security*, pp: 125-149 https://doi.org/10.1007/978-3-319-77878-5_7

Ouraich, I. & Tyner, W., (2014) *Climate change impacts on Moroccan agriculture and the whole economy*, World Institute for Development Economics Research, Working Paper 2014/083. http://dx.doi.org/10.35188/UNU-WIDER/2014/804-9

Pereira, L. (2017)"*Climate Change Impacts on Agriculture across Africa*", Oxford Research Encyclopedia of Environmental Science .Oxford, UK: Oxford University Press. http://dx.doi.org/10.1093/acrefore/9780199389414.013.292

Pesaran, M.H., y. Shin and R.J. Smith (2001)" Bounds Testing Approaches to The Analysis of Level Relations" *Journal of applied econometric*. Vol. 16:no.3, pp289-326. https://doi.org/10.1002/jae.616

Pesaran, M. H., Shin, Y., and Smith, R., (1999). "Pooled Mean Group Estimation of Dynamic Heterogeneous Panels", *Journal of the American Statistical Association*, 94, 621-634. https://doi.org/10.2307/2670182

Rehman, A., Ozturk, I., and Zhang D. (2019) "The Causal Connection between CO2 Emissions andAgricultural Productivity in Pakistan: Empirical Evidence from an Autoregressive Distributed Lag Bounds Testing Approach", *applied sciences*, 9, (1692), pp:2-16. doi:10.3390/app9081692

Strzepek, K., Yates , D.Yohe, G., Tol,R. ,and Mader,N. (2001) Constructing not implausible: climate and Economic Scenarios For Egypt, *Integrated Assessment* (2),P:139-157 http://dx.doi.org/10.1023/A:1013387619362

Taha, A., Zohry, A.,(2018) "Adaptation of Sugarcane National Production in Egypt To Climate Change", *Egypt Journal of Applied Science 33 (5)*,pp 203-218. https://www.researchgate.net/publication/342159538_ADAPTATION_OF_SUGARCANE_NATIONAL_PRODUCTION_IN_EGYPT_TO_CLIMATE_CHANGE

Wang, J., Vanga, S., Saxena, R., Orsat, V., and Raghavan, V. (2018) "Effect of Climate Change on the Yield of Cereal Crops", *Climate*, Vol. 6(41), pp: 2-19. doi:10.3390/cli6020041

Yassin, L.,(2018)" *Climate change and food security in Egypt*" Master's thesis, American University in Cairo. https://fount.aucegypt.edu/etds/315

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The Implications of the Incursion of Cryptocurrency on the Effectiveness of Fiscal Policy

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Abstract. *Existing literature has examined a plethora of factors that can affect the effectiveness, performance, or nature of fiscal policy in an economy. In this paper, we build on the fundamental tenets of micro-economic models to examine the potential ways cryptocurrencies can affect the effectiveness of a country's fiscal policy. Our finding is that under the assumptions of an absence of uncertainties, perfectly competitive markets, household utility maximization, and usage of public money and cryptocurrency, the government purchases as well as the ability of the government to raise funds by issuing bonds and by taxation is decreasing in new investments in cryptocurrencies but increasing in the income earned from cryptocurrencies. We go further to discuss the factors that account for the sustained ability of cryptocurrencies to weaken the state's fiscal-policy capabilities and possible ways the effects of cryptocurrencies on the state's fiscal integrity can be mitigated.*

Keywords: Cryptocurrency, Effectiveness, Fiscal Policy, Micro-economic models, Technology.

JEL Codes: E62, F36, F65

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1. Introduction

Over the last few decades, several private monies have been issued both by identifiable, regulated organizations as well as by invisible, unidentifiable, and unregulated institutions in most major economies across the globe. For the sake of clarity and precision, we will provide a working definition of private money or cryptocurrency as we will use private money and cryptocurrency interchangeably in this paper. Private money or cryptocurrency is a widely accepted digital instrument of payment, medium of exchange, or store of value supplied by a non-governmental organization devoid of any guarantees from the state or any legal privileges (Dowd, 2014). Experience proves that a necessary and sufficient condition for an instrument to be accorded the status of private money is widely accepted even though it may not command a general acceptance. In other words, for a currency to stand the test of time, it must attract and maintain a critical mass of users (Dowd, 2014). The predominant and most renowned cryptocurrency is Bitcoin (Binance Capital management, 2021). From this same platform, we can also infer those other notable cryptocurrencies such as Ethereum and Tether. It has been recounted in public media that Facebook made an entry into the

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cryptocurrency industry with the launching of 'Libra' (Chatenay, 2021). This heterogeneity of interests has been reflected in the capitalization of the cryptocurrencies market, which has grown exponentially from around 19 billion dollars in February 2017 to over 2.4 trillion dollars in December 2021 (Binance Capital management, 2021). Also, there are approximately 8500 cryptocurrencies in existence and actively trading.

Over the years, the demand, acceptance, and use of private money have been building up in leaps and in bounds for several reasons. Most notable of which include the credence that cryptocurrencies will not deteriorate in value or purchasing power; the resentment against galloping governmental control of economic and financial behaviour; and the conviction that it can generate returns superior to state money (Dowd, 2014). While several regulatory institutions have made efforts to thwart the success of certain private monies, a good number continue to exist with their triumph, aided by the rise of internet technology. A case in point is Bitcoin. Bitcoin is a totally decentralized digital currency and system of money creation or issuance that would be challenging for law enforcement institutions to truncate given that it is not associated with any 'point of failure'. Bitcoin is churned out in the course of a 'digital mining' process that is typified by constrained supply in a way that is significantly comparable to the gold-standard monetary policy regime. In a similar manner to other cryptocurrencies, Bitcoin can compete with state money, restoring financial privacy as well as creating a stable crypto-turbulent communal order that would be operational in a manner that is sufficiently beyond the whims and caprices of any governmental force (Dowd, 2014). Having a full grasp of private money, the ramifications of its impact and reach becomes very crucial, especially for unregulated or loosely regulated cryptocurrencies that have been emerging spontaneously through market forces and growing prodigiously as well as operating outside the control of the state. It is against this backdrop that we wish to demonstrate in this paper that in an environment where private monies are beyond the reach of government regulations or are allowed to freely coexist with state money, it has the potential to erode the ability of the state to utilize its fiscal policies to stabilize fluctuations typical of business cycles in an economy. We will show this theoretically by building on the basic tenets of the micro models in economics and incorporating some modifications.

2. Research Elaboration: Literature Review

Many authors have immensely espoused the enormous literature on fiscal policy and the growing literature on cryptocurrency in many distinct ways. This paper is differentiated from this vast literature on fiscal policy, in addition to those on private money by seeking to demonstrate a nexus between cryptocurrencies and the usefulness of the fiscal policy of a nation. In this paper, we strive to contribute to both the literature on fiscal policy as well as in private money. In the ensuing paragraphs, we will summarize some of the most important works within the fiscal policy as well as in private money, and ultimately, we will precisely specify how this paper would differ from and contribute to the existing literature in both fields of endeavour.

2.1. Fiscal Policy

Amid the overwhelming body of literature on the ramification of fiscal policy, we will review some of the most prominent strands. An incredibly large chunk of studies examines the consequences of fiscal policy on economic output under various circumstances and in distinct economies. Lotz (1970) proposed a model for evaluating the impact of fiscal policy on economic output in developing economies. Rao (1975) presents a neoclassical two-sector model that examines the economic impact of fiscal policy on output growth. Tanzi and Zee (1997) summarize that fiscal policy could be a core determining factor for the long run economic growth performance of countries. Gemmell, Kneller, and Sanz (2011) demonstrated that previously

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forecasted long-run growth consequences of fiscal policy are generally generated rapidly in line with outcomes elicited by short-run models with persisting short-run consequences.

Recent research reveals the circumstances under which and the degree to which a fiscal multiplier could respond to variations in government expenditure. Gali, Lopez-Salido, and Valles (2007) perceived the possibility for a fiscal multiplier to be enormous if the ratio of non-Ricardian consumers is big and policies for stimulating the economy perform fundamentally by way of the consumption channel. Leeper, Traum, and Walker (2017) demonstrate that fiscal multipliers might be steadfastly high if the expenditure of the government interrelates positively with consumer choices.

Modern theoretical research calls attention to prospective channels through which nonlinear propagation of fiscal policy shocks can occur. Michaillat (2014) demonstrates that public employment might have much greater multiplier effects in situations in which the unemployment rate is high than in circumstances in which it is low. In the studies undertaken by Canzoneri, Collar, Dellas, and Diba (2016), it can be understood that the role of the credit channel when credit constraints are not only infrequently binding but also endogenous in supporting the propagation of fiscal policy shocks can be substantial. Barnichon and Matthes (2017) observe that government expenditure depletion has greater impacts than increments and noted that the outcomes were propelled fundamentally by overly robust unfavourable reactions of output to government expenditure reductions during recessions. Jones, Olson, and Wohar (2015) demonstrate that tax cuts create tremendous favourable results for output in the United States, while tax increments have no tremendous unfavourable impacts, nevertheless, these outcomes are contradicted in the UK. Guajardo, Leigh, and Pescatori (2014) as well as Jorda and Taylor (2016) observe big reductions in output in reaction to exogenous fiscal consolidations. Alesina, Favero, and Giavazzi (2015) observe over 30 years that for 16 OECD nations, fiscal adjustments premised on expenditure reductions are cheaper by way of output forfeiture than adjustments premised on tax increments. McManus, Ozkan, and Trzeciakiewicz (2018) demonstrated that the credit channel if credit constraints are not only infrequently binding but also endogenous in supporting the propagation of fiscal policy shocks can be substantial.

There are strands of theoretical and empirical economic research that study the factors that can affect the performance, effectiveness, or the nature of the fiscal policy. Conesa and Garriga (2008) demonstrated that the optimal design of a social security reform reflects significant welfare gains attributable to decreases in the distortion of labour supply. Lewis (2012) examined the ratings of public bonds for the period ranging from 1996 to 2009 and observed that term limits unfavourably affect a state's fiscal performance resulting in lower bond ratings. Goolsbee (2001) examined the effects of electronic commerce on fiscal policy and observed that the potential losses are modest over several years in the future. Kaminsky, Reinhart, and Végh (2004) examined a sample of 104 countries and observed the procyclicality of net capital inflows, the procyclicality of fiscal policy, and that eras of capital inflows are correlated with expansionary macroeconomic policies together with the finding that eras of capital outflows are associated with contractionary macroeconomic policies for most of developing nations. Our study is related to this strand of literature given that it examines a factor that can impact fiscal policy. And by examining how private money could likely interfere with the government's ability to impact the national output through the manipulation of fiscal policy, this differs from other factors that have been studied in contemporary economic research.

2.2. Private Money

Several authors have worked on exploring issues associated with the usage of cryptocurrencies in relation to regulations and regulatory frameworks. Trautman (2018) analyses the greater comprehension of the constant struggle of the law and regulations to keep pace with the speed of technological advancements. Seng and Yew (2015) explored the economics of the financial reporting of Bitcoin, applied accounting

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principles to the understanding of Bitcoin valuation, and strives to add value to the thinking process which may help accounting bodies issue an interpretation of Bitcoin reporting.

There also subsists an enlarging availability of published work that examines methodically the motivations, serviceability, and practicality of specific cryptocurrencies. Leshno and Strack (2020) designate Bitcoin as a payment system that fulfills the characteristics of uniqueness, confidentiality, and the absence of unreal identities. Garratt and Van Oordt (2019) examine how double-spending attacks can be eliminated by cryptocurrency particularly mining equipment. Biais, Bisiere, Bouvard, and Casamatta (2019) examine equilibria in consensus protocols of cryptocurrencies such as Bitcoin and research Bitcoin's acceptability as a payment system. Ebrahimi, Routledge, and Zetlin-Jones (2019) evaluate solid proof-of-work protocols for blockchain-based distributed ledgers, and Cong and He (2019) examine how competition could be affected by the presence of decentralized consensus that is implemented through the application of a distributed ledger technology. Prat and Walter (2018) forecast the computing capability of the Bitcoin network, by applying the Bitcoin-Dollar exchange rate. Huberman, Leshno, and Moallemi (2017) analyses the origination of revenue in the Bitcoin system.

There are strands of literature that examine the interaction between cryptocurrencies and monetary policy. Schilling and Uhlig (2018) focus on the potential outcome that can result from a cryptocurrency competing with public money. Fernández-Villaverde and Sanches (2016), as well as Chiu and Koeppl (2019), examine monetary policy and currency rivalry within the context of a Lagos-Wright framework. Benigno, Schilling, and Uhlig (2021) analysed a two-country economy characterized by a global cryptocurrency and two-state currencies, in a complete market and also emphasized the irreconcilability of the classic impossible trinity. In a different study, Benigno (2019) focused on a one-country model and perceived that given the existence of competition emanating from cryptocurrencies, the central bank can confront constraints on inflation and interest rates if the government currency continues to perform its role as a medium of exchange.

Despite these numerous publications on cryptocurrencies and fiscal policy, no effort has been made to demonstrate how private money could impact the capabilities of a government to implement its fiscal policies. Hence, we differ from the large swathe of studies above that have been conducted in both fiscal policy and private money by examining the consequences of cryptocurrency's unregulated existence on the government's fiscal policy. Our framework focuses on how an increase in the adoption of private money could trigger drastic consequences for a country's fiscal policy if no measures are instituted to curtail the growth in the dominance of cryptocurrencies.

3. Research Methodology and Models

3.1 General Framework:

We analyse an infinitely lived economy of a single country operating under perfect market conditions, featuring one state currency together with one unregulated cryptocurrency in the absence of uncertainties. The economy comprises many identical firms that are price takers and several identical households that are also price takers. The inputs required for production to take place include capital (K), labour (L), and technology (A). Output is divided among investments (I_t), private goods(C_t^p), and public goods(C_t^g). Labour and capital are paid their nominal prices. Firms seek to maximize profits and Households maximize their utility function from the consumption of a fraction of the output of the economy. Payments to factors of production are implemented in the national currency while returns can be earned in investments in both the

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state money and the unregulated cryptocurrency. Public goods result from government's expenditure, which the government finances by imposing lump-sum taxes and issuing bonds.

3.2 Assumptions:

Assumption 1 – Behaviour of Firms

We assume that the market for private goods is characterized by perfect competition. Therefore, firms are identical, make zero economic profits, and are price takers. The representative firm hires labour and capital to produce a good, Y_t, the price of which is P_t. Labour and capital are paid nominal wages, W_t, and nominal interest rate, R_t, respectively. The representative firm maximizes profits, π_t , in each period bounded by the constraints specified by the production function. Therefore, the following equation holds.

$$\pi_t = P_t Y_t - W_t L_t - P_t R_t K_t$$

The representative firm produces a good, Y_t , using the Cobb-Douglas production function, which is specified as follows:

$$Y_t = AK^{\alpha} L^{1-\alpha}, \quad 0 < \alpha < 1$$

Furthermore, we assume that technology or total factor productivity, A, is constant and the production function is increasing and concave.

Assumption 2 – Behaviour of Households

We make the following assumptions about the population, household, and labour supply. Households are homogenous. Households own the factors of production labour and capital and rent it out to firms on a period-by-period basis and receive compensations: a nominal wage, W_t, on unit labour supply, $L_t = 1$, and a nominal rent, R_t.

Households own firms and manage the firm's capital in consistency with the law of motion for capital. In other words, the household invests, I_t^k, to replenish the capital $\delta_t K_t$ that is lost through depreciation. Therefore, the following equation holds.

$$K_{t+1} = (1 - \delta_t)K_t + I_t^k$$

The Households' capital respects the "time to build" constraint. Therefore, Households' real return on capital can be expressed as follows: $1 + r_t = 1 + R_t - \delta_t$

Households also invest in the bonds issued by the government and in any given period t, the amount of bonds held is denoted by, B_t.

Households maximize their utility and the representative household maximizes the value of U $= \sum_{t=0}^{\infty} \beta^t u(C_t^p, C_t^g)$

Where, C_t^p = Demand for private goods, and C_t^g = Demand for public goods

u(•) is the specific or instantaneous utility function of the representative household

The population and the number of households are normalized to 1 and assumed to grow exogenously at the rate of 0. The labour supply is normalized to 1 and there is no disutility from working. Labour is perfectly divisible

The specific utility function, u(•), features two arguments, which are the demand for private goods and the demand for public goods. We assume an increasing and concave instantaneous utility function with constant relative risk aversion.

For simplicity, u(•) is a power utility function in the arguments:

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$u(C_t^i) = \sum_{i=0}^{n} \frac{1}{1-b} \left(C_t^i\right)^{1-b}$, where $b \geq 0$ and $b \neq 1$. Also i = (p,g)

Where, C_t^i= consumption or demand for private or public goods, P_t = Prices in period t

Assumption 3 – Fiscal Policy of the Government

Here, we make assumptions about the fiscal policies of the government. The government implements its fiscal policy through taxation, borrowing, making lump-sum transfers to the households, and making provisions for public goods. The public goods, C_t^g, and lump-sum transfers, X_t , are financed by lump-sum taxes, tW_tL_t , on wages earned by the household and by borrowing through the issuance of bonds, B_t. For the sake of simplicity, we assumed that taxes are levied only on wages. Public goods result from the government's purchases and are freely available to households.

The government is only able to levy taxes on the income earned in the national currency and can only issue bonds in the national currency. We make this assumption about taxes given available evidence about the growing challenges to the government's ability to tax income generated in cryptocurrencies. For example, the US treasury department reported that Cryptocurrency has indeed posed a major detection challenge by enabling unlawful transactions including tax evasion, and also reported that around 80% of the United States tax deficit is a result of underreported revenue, particularly amongst the very rich ones who hide their revenues in opaque structures (Lacurci, 2021). Therefore, we can specify the following equation for this economy. $C_t^g + X_t = tW_tL_t + B_t$

Assumption 4 – Private Money and Public Money

We make the following assumptions about private and public monies. In this economy, both the national currency and the cryptocurrency are applied in economic transactions and are also used for transferring wealth (assets and incomes) across periods. All wages are paid in the national currency and firms issue securities for raising capital in the national currency only.

The sum of households' nominal consumption, new asset holdings, and nominal money balances (of both private and public money) must be equal to the sum of their nominal incomes (in both private and public money), their initial asset holdings, and initial nominal money balances. We assume that the representative household must enter the period with enough nominal money balances of both private and public money to pay for consumption consistent with the cash-in-advance model. Given these assumptions, the following equation holds to be valid. $P_tC_t^p + M_{t+1} + m_{t+1} + B_{t+1} + P_tI_t^k = (1-t)W_tL_t + R_tP_tK_t + (1+r_t)B_t + M_t + (1 + rtm)mt \neq Xt$

We assume that private money can be converted into public money at a variable conversion ratio, n_t, such that: $n_tM_t = m_t$

Finally, we assume that the supply of private money or cryptocurrency, m, and public money, M, is given. The motivation for this assumption is to give room for abstracting from monetary policy issues and focus primarily on fiscal policy issues.

4. Results and Discussions

4.1 MAIN RESULTS

Proposition 1: Government purchases are decreasing with the increasing adoption of cryptocurrency

Assuming no uncertainties, perfectly competitive markets, household utility maximization, and usage of public money and cryptocurrency then the household optimal demand for public goods and by

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extension government purchases is decreasing in new investments in cryptocurrencies but increasing in the income earned from cryptocurrencies.

So, while a growing usage of cryptocurrency negatively impacts the government's fiscal policy capabilities, this effect can be potentially neutralized by the tendency of income earned in investments in cryptocurrency to have a favourable impact on the effectiveness of the fiscal policy. This is demonstrated in equation (C) below and the proof of which is available in the appendix. This is reasonable because a fraction of the income earned in cryptocurrencies finds its way back into the real economy and supports consumption and production and ultimately enhancing the government's revenue derivation from taxation. This kind of feedback loop ensures that the state's currency will remain the dominant currency. However, this can only be the case as long as firms pay wages and issue securities in the public currency. A development that can substantially hurt the stabilization capabilities of the government through fiscal policies is the onset of private firms' usage of cryptocurrencies to pay wages and raise capital to a significantly high degree.

$$C_t^g = \{(1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t - (m_{t+1}-m_t) - P_tK_{t+1} + P_tK_t\} - \left((P_t)^{\frac{b-1}{b}}\left[\frac{(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_tK_{t+1})}{\left((P_t)^{\frac{b-1}{b}}+1\right)}\right]\right) \quad (A)$$

Proposition 2: Government revenue generated through taxation and borrowing is decreasing with the increasing adoption of cryptocurrency

Assuming no uncertainties, perfectly competitive markets, household utility maximization, and usage of public and private money, then the revenue generated by a government through taxation and borrowing is increasing in income earned in the private money but decreases in new investments in cryptocurrencies.

This is true because government purchases are financed by revenue raised through taxation and the issuance of bonds. Thus, taxation and borrowing are positively correlated with government purchases. This is evident in equation (C) below and the proof of which is demonstrated in the appendix as previously stated.

$$C_t^g = \{(1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t - (m_{t+1}-m_t) - P_tK_{t+1} + P_tK_t\} - \left((P_t)^{\frac{b-1}{b}}\left[\frac{(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_tK_{t+1})}{\left((P_t)^{\frac{b-1}{b}}+1\right)}\right]\right) \quad (B)$$

Also, from equation (1) in the appendix, we have that: $C_t^g + X_t = tW_tL_t + B_t$

Thus,

$$tW_tL_t + B_t = \{(1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t - (m_{t+1}-m_t) - P_tK_{t+1} + P_tK_t\} - \left((P_t)^{\frac{b-1}{b}}\left[\frac{(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_tK_{t+1})}{\left((P_t)^{\frac{b-1}{b}}+1\right)}\right]\right) + X_t \quad (C)$$

4.2 DISCUSSIONS

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The acuteness of the potential problem posed by cryptocurrencies to the fiscal policies of nations cannot be overemphasized. The threat of cryptocurrencies to the integrity of a country's fiscal policy is sustainable because of the high usefulness of cryptocurrencies for tax evasion. Cryptocurrencies possess some of the most crucial nature of the archetypical tax haven. Firstly, they do not operate within the confines of any specific jurisdiction, and they are taxed at the source (Marian, 2013). In the second instance, enduring nature of cryptocurrency accounts is anonymity. The possibility of users maintaining an innumerable number of online "wallets" to mine or execute trades in Bitcoins devoid of ever furnishing any recognizing information remains solidly intact (Marian, 2013). Thirdly, the growing predominance of cryptocurrencies is for the most part not reliant on the presence of financial institutions including banks. Cryptocurrencies thus appear to be invulnerable to the emerging international tax anti-evasion programs. Overall, given the nature of cryptocurrencies, they possess the capabilities to turn out to be fantastic tax havens (Freeman, 2011).

One of the factors that account for a cryptocurrency's ability to facilitate tax evasion is lax reporting requirements, according to tax experts. It has been noted in the US that to the extent that the IRS falls short of tracing crypto-related transactions or income when such are not reported by organizations, businesses, exchanges, and other counterparties or third parties, there will be lost or unrecoverable taxation income (Lacurci, 2021). The need to remedy lax reporting becomes more crucial given that despite it being a relatively tiny proportion of business revenue at the moment, cryptocurrency dealings are bound to significantly rise in the next few years, particularly under the current broad-based financial account reporting regime (US Treasury report as cited by Marian, 2013). An additional factor that facilitates a cryptocurrency's capacity to weaken the state's tax collection abilities is that currently, existing anti-tax-evasion mechanisms do not possess the capabilities to successfully resolve cryptocurrency-based tax circumvention. As an instance, exchange-of-information treaties are not relevant, given that a cryptocurrency's operation has nothing to do with the presence of an autonomous jurisdiction. As with currently prevailing instances of offshore tax dodging, public authorities might apply intricate statistical scrutiny in an attempt to detect users of a cryptocurrency account. Nevertheless, Marian (2013) noted that such techniques are only suitable in specific cases and cannot represent a systematic approach to addressing the problem.

The second factor that accounts for the fact that the threat of cryptocurrencies to the integrity of a country's fiscal policy remains unwavering is that cryptocurrencies are endowed with the potential to motivate financial innovation, improve efficiencies by way of faster and cheaper payments and supplement financial inclusion (Chinoy, 2021). Other considerations that tend to sustain the tendency for cryptocurrency to be influential on fiscal policy encompasses the promotion of cryptocurrencies as a remedy to enduring challenges in financial ecosystems, ranging from financial inclusion to inter-bank settlements in the money market – even though minimal meticulous assessment of its fitness for purpose and feasibility has been implemented, Digital currency governance consortium compendium report (2021). Fortunately, the capabilities of any cryptocurrency appear to be limited, in addition to the fact that there are ways the threat of cryptocurrencies to fiscal policy can be mitigated. First and foremost, cryptocurrencies have inherent weaknesses. They are associated with infamous cases of fraud, operational catastrophes, and security fissures, together with allegations of its usage for illicit activities, He (2018). The result of my model demonstrates that there are positive feedback effects from increasing use of cryptocurrencies because if investors earn returns from cryptocurrencies, they inevitably have to channel a fraction back to the mainstream economy or the public currency. This kind of feedback loop ensures that the state's currency will remain the dominant currency.

Secondly, cryptocurrencies tend to be responsive to attempts by the government to curb its excesses. Auer and Claessens (2018) evaluated the actual behaviour of cryptocurrency markets in reaction to regulation and observed that notwithstanding the boundary-less and peer-to-peer characteristic of

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cryptocurrencies, regulatory measures and news of potential regulatory measures have a robust impact on the markets for cryptocurrency. Consistent with the idea of mitigating the threats of private money, the innovation inherent in the very nature of Bitcoin as a viable tool for tax evasion will necessitate pioneering policymaking. Marian (2013) elaborated on why remedies such as targeting business intermediaries that clear the way for transactions undertaken using Bitcoins may be apposite, even though there is uncertainty about the degree to which they can be implemented. Although there is an absence of involvement of traditional financial institutions in the exchange of cryptocurrencies, it appears that as cryptocurrencies continue to gain ground, some sort of web-based intermediaries will certainly arise across the market landscape. Likely, web sites that enable the exchange of cryptocurrencies to national legal tender would carry useful information about its account owners to make possible the exchange. The regulation of such intermediaries by the tax authorities applying the same approach by which they traditionally regulate financial intermediaries might be practicable. However, regulation is solely beneficial when cryptocurrencies can be exchanged for national currencies. Therefore, transactions that are completely executed in cryptocurrencies avoid such regulation. Theoretically, it is believed that in the event of cryptocurrencies gaining wide acceptance in a way that makes it possible for taxpayers to conduct the entirety of their daily transactions in a cryptocurrency, taxpayers could totally avoid national currencies and evade reporting income (Kashmir Hill, 2013). A Telegraph staff (2013) hinted that the German government had put forward the idea of taxing Bitcoins as capital assets. As previously mentioned, implementing such a strategy would solely be important for point-of-exchange transactions, for which cryptocurrency users willingly divulge their income from beneath their blanket of cyber-secrecy (Marian, 2013). More radical approaches to weaken the rise in the pre-eminence of cryptocurrencies is to operate against cryptocurrency users and/or to implement an outright ban on its usage. If such a method were to be implemented, legislators could potentially strive to dampen the enthusiasm surrounding cryptocurrencies by precluding the implementation of transactions in cryptocurrencies. While such an approach falls short of accosting the matter of tax circumvention explicitly, inhibiting payments in cryptocurrencies could undermine the liquidity and value of cryptocurrencies, and as a result, undermine their effectiveness for tax-evasion objectives. Such outsmarting approaches could likely metamorphose into the erosion of social privileges that come along with cryptocurrencies (Plassaras, 2013). One country that implemented an outright ban on the usage of cryptocurrencies within its jurisdiction in Nigeria. On the other hand, Venezuela attempted to aggressively support the usage of cryptocurrency within its jurisdiction in the wake of the precipitous collapse of its national currency. There could be plausible factors that support the necessity to allow cryptocurrencies to freely circulate, even though they are equally applied in facilitating illegal transactions. In the final analysis, We believe that consideration for one or more of the solutions proposed above could be an interesting way to initiate deliberations for the most appropriate approaches to implement fiscal policy in the face of private money reality.

5. Conclusions

Starting from a general framework and based on certain assumptions, we analyse a one-country economy featuring a cryptocurrency and a national currency. For the standard situation in which there are no uncertainties, perfectly competitive markets, and utility maximization by households from the consumption of both private and public goods and usage of both the crypto and national currencies in an economy for certain purposes, we demonstrated that government purchases are decreasing with increasing households' adoption of cryptocurrency but increasing with the returns in private money. we discussed the possibility that the fiscal policy of a government stands a chance of encountering a substantial reduction in its effectiveness if private money is allowed to coexist with public money devoid of any restrictions and we chronicled

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potential ways the over exuberance of cryptocurrencies can be clamped down. In the appendix, we demonstrated our results by specifying the household's optimal behaviour, the firm's profit-maximizing behaviour, and the general equilibrium. We,, therefore, conclude that the incorporation of unrestricted usage of a cryptocurrency in an economy may substantially impact the landscape of a nation's fiscal policy, but this unfavourable impact can also be potentially neutralized by positive feedback effects that can emanate from returns earned on a cryptocurrency.

6. References

[1] Alesina, A., Favero,C., & Giavazzi, F. (2015). The Output Effects of Fiscal Consolidation Plans. Journal of International Economics, 96(S1):19-42.

[2] Auer,A., & Claessens,S. (2018). Regulating cryptocurrencies: assessing market reactions" BIS Quarterly Review September 2018.

[3] Barnichon, R. & Matthes, C. (2017). Stimulus versus Austerity: The Asymmetric Government Spending Multiplier. CEPR Discussion Papers 10584.

[4] Benigno, P. (2019). Monetary policy in a world of cryptocurrencies. CEPR Discussion Paper No. DP13517.

[5] Benigno, P., Schilling, L.M., & Uhlig, H. (2019). Cryptocurrencies, Currency Competition and the Impossible Trinity. No 13943, CEPR Discussion Papers.

[6] Biais,B., Bisière,C., Bouvard,M & Casamatta,C. (2019). Blockchains, coordination, and forks. In AEA Papers and Proceedings, volume 109: 88-92.

[7] Binance Capital Management. (2021). [Online] Available: https://coinmarketcap.com [17 December 2021]

[8] Bernadini, M & Peersman, G (2018) Private Debt Overhang and the Government Spending Multiplier: Evidence for the United States. Journal of Applied Econometrics, 33:485-508.

[9] Cong, L.W., & He, Z. (2019). Blockchain disruption and smart contracts. The Review of Financial Studies, 32(5):1754-1797.

[10] Canzoneri, M., Collar, F., Dellas, H., & Diba, B, (2016). Fiscal Multipliers in Recessions. Economic Journal 126:75-108.

[11] Chinoy,S.Z. (2021). Brace up for cryptocurrency. The Indian Express. [Online]. Available: https://indianexpress.com/article/opinion/columns/cryptocurrency-challenges-digital-economy-policies-7630023/ [7 November 2021].

[12] Chatenay, V. (2021). "Facebook-backed Diem has cleared regulatory hurdles to finally launch in Q1". [Online]. Available: https://www.businessinsider.com/facebook-digital-currency-to-finally-launch-q1-2021-2?r=US&IR=T [25 February 2021].

[13] Chiu,J & Koeppl,T.V (2019). The economics of cryptocurrencies of bitcoin and beyond. Staff Working Paper, Document de travail du personnel 2019-40. Canada: Bank of Canada (Banque Du Canada).

[14] Conesa,J.C & Garriga,C. (2008). Optimal fiscal policy in the design of social security reforms. International Economic Review, 49 (1):291-318.

[15] Digital Currency Governance Consortium Compendium Report, (2021). [Online]. Available: https://www3.weforum.org/docs/WEF_Digital_Currency_Governance_Consortium_White_Paper_Series_2021.pdf [22 November 2021].

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23,Issue 1/ 2022), pp. 134-150
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[16] Dowd, K. (2014). New private monies. A bit-part player?" Institute of economic affairs. United Kingdom: Fraser Institute.

[17] Ebrahimi, Z., Routledge,B., & Zetlin-Jones,A. (2019). Getting blockchain incentives right." Technical report. Pennsylvania: Carnegie Mellon University Working Paper.

[18] Fernández-Villaverde, J & Sanches, D. (2016). Can currency competition work?" Technical report. Massachusetts: National Bureau of Economic Research.

[19] Freeman, A. (2011). Bitcoin: The ultimate offshore bank account? Economics and Liberty: Observations from a Freeman. [Online]. Available: http://economicsandliberty.wordpress.com/2011/08/23/bitcoin-the-ultimate-offshore-bank-account/ [12 August 2021]

[20] Gali, J., Lopez-Salido, J.D. & Valles, J (2007). "Understanding the Effects of Government Spending on Consumption." Journal of the European Economic Association 5:227-270.

[21] Gemmell, N., Kneller, B., & Sanz, I. (2011). "The timing and persistence of fiscal policy impacts on growth: evidence from OECD countries." The Economic Journal,121 (550):33-58.

[22] Goolsbee, A. (2001). The implications of electronic commerce for fiscal policy (and vice versa)." The journal of economic perspectives, 15 (1):13 – 23.

[23] Guajardo, J., Leigh, D. & Pescatori, A. (2014). Expansionary Austerity? International Evidence. Journal of the European Economic Association 12 (4): 949-968.

[24] He, D (2018). Monetary policy in the digital age. IMF Finance and Development publications, Vol 55, No 2. [Online]. Available: https://www.imf.org/external/pubs/ft/fandd/2018/06/central-bank-monetary-policy-and-cryptocurrencies/he.htm [13 March 2021]

[25] Hill, K. (2013). Living on Bitcoin for a week: The expense report. [Online]. Available: http://www.forbes.com/sites/kashmirhill/2013/05/17/living-on-bitcoin-for-a-week-the-expense-report/ [21 September 2018].

[26] Huberman,G., Leshno,J.,& Moallemi,C.C (2017). Monopoly without a monopolist: An economic analysis of the bitcoin payment system." Finland: Bank of Finland Research Discussion Paper 27.

[27] Jones, P.M., Olson, E & Wohar. M.E., (2015). Asymmetric Tax Multipliers. Journal of Macroeconomics, 43:38-48.

[28] Jorda,O & Taylor, A.M (2016). The Time for Austerity: Estimating the Average Treatment Effect of Fiscal Policy." The Economic Journal, 126: 219-255.

[29] Kaminsky, G.L., Reinhart, C.M., & Végh, C.A., (2004). When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies. NBER Macroeconomics Annual, 19:11-53

[30] Lacurci, G (2021). "Crypto Currency Poses a Significant Risk of Tax Evasion. [Online]. Available: https://www.cnbc.com/2021/05/31/cryptocurrency-poses-a-significant-risk-of-tax-evasion.html [10 December 2021].

[31] Leeper,E.M., Traum,N., & Walker,T.B (2017). Clearing Up the Fiscal Multiplier Morass. American Economic Review 107(8): 2409-2454.

[32] Leshno, J.D., & Strack, P. (2020). Bitcoin: An axiomatic approach and an impossibility theorem. American Economic Review: Insights, forthcoming.

[33] Lewis,D.C (2012). Legislative Term Limits and Fiscal Policy Performance. Legislative Studies Quarterly, 37(3):305-328.

[34] Lotz, J.R. (1970). Measuring the Effects of Fiscal Policy in Developing Countries" FinanzArchiv / Public Finance Analysis, New Series, Bd. 29, H. 2, pp. 238-255

ISSN: 2247-6172; ISSN-L:2247-6172
Review of Applied Socio- Economic Research
(Volume 23,Issue 1 / 2022), pp. 134-150
URL: http://www.reaser.eu
e-mail: editors@reaser.eu

[35] Marian,O (2013). "Are Cryptocurrencies Super Tax Havens?" 112 MICH. L. REV. FIRST IMPRESSIONS 38, available at http://scholarship.law.ufl.edu/facultypub/358

[36] Richard, M and Gulcin, O.F., & Trzeciakiewicz, D, (2018) Why Are Fiscal Multipliers Asymmetric? The Role of Credit Constraints. [Online]. Available: https://ssrn.com/abstract=3262309 or http://dx.doi.org/10.2139/ssrn.3262309 [24 July 2020].

[37] Michaillat, P. (2014). A Theory of Countercyclical Government Multiplier" American Economic Journal: Macroeconomics, 6(1):190-217.

[38] Plassaras, N.A. (2013). Regulating Digital Currencies: Bringing Bitcoin within the reach of IMF. Chicago Journal of International Law, 377:387-51.

[39] Prat, J., & Walter, B. (2018). An equilibrium model of the market for bitcoin mining. Cesifo working paper series, CES. Munich: University of Munich.

[40] Rao, T.V.S.R. (1975). Fiscal Policy and Economic Growth: A Neoclassical two Sector Model". Pakistan Economic and Social Review, 13(1):1-11

[41] Schilling,L. & Uhlig,H. (2018). Some simple bitcoin economics. Technical report, National Bureau of Economic Research.

[42] Tan,S.B and Low,K.Y (2017). Bitcoin – Its Economics for Financial Reporting. Australian Accounting Review, 27(2): 220 227.

[43] Tanzi, V. & Zee, H.H (1997). Fiscal Policy and Long-Run Growth. Staff Papers, International Monetary Fund Vol. 44 (2):179-209.

[44] Telegraph staff (2013). Germany plans tax on bitcoins after virtual currency recognized as Private Money. [Online]. Available: https://www.telegraph.co.uk/finance/globalbusiness/10252383/Germany-plans-tax-on-bitcoin-after-virtual-currency-recognised-as-private-money.html [24 May 2020]

[45] Trautman, L. J., (2018). Bitcoin, Virtual Currencies, and the Struggle of Law and Regulation to Keep Pace. [Online] Available: https://ssrn.com/abstract=3182867 [24 June 2020].

8. APPENDIX

8.1 Proof of Main Results

8.1.1 Optimal Household's Behavior

Households derive utility from the consumption of both private and public goods.

The households' optimization problem is to maximize their utility subject to income constraints.

$$\text{Max } U = \sum_{t=0}^{\infty} \beta^t u(C_t^p, C_t^g)$$

Subject to:

$$C_t^g + X_t = tW_tL_t + B_t \quad (1)$$

$$P_tC_t^p + M_{t+1} + m_{t+1} + B_{t+1} + P_tI_t^k = (1-t)W_tL_t + R_tP_tK_t + (1+r_t)B_t + M_t + (1+r_t^m)m_t + X_t \quad (2)$$

$$K_{t+1} = (1-\delta)K_t + I_t^k \quad (3)$$

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$$n_t M_t = m_t \quad (4)$$

Rearranging equation (3), we have the following equation:

$$I_t^k = K_{t+1} - K_t + \delta K_t \quad (5a)$$

$$-tW_t L_t = B_t - C_t^g - X_t \quad (5b)$$

Substituting equations (4), (5a) and (5b) in equation (2), we have:

$$P_t C_p^t + M_{t+1} + m_{t+1} + B_{t+1} + P_t(K_{t+1} - K_t + \delta K_t) = W_t L_t + R_t P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - C_t^g$$

$$P_t C_p^t + M_{t+1} + m_{t+1} + B_{t+1} + P_t K_{t+1} = W_t L_t + R_t P_t K_t + P_t K_t - \delta P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - C_t^g$$

$$P_t C_t^p + C_t^g + M_{t+1} + m_{t+1} + B_{t+1} + P_t K_{t+1} = W_t L_t + P_t K_t(1 + R_t - \delta) + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t \quad (6)$$

Substituting the household's real return on capital equation: $1 + r_t = 1 + R_t - \delta_t$ in equation (6), we have the following.

$$P_t C_t^p + C_t^g + M_{t+1} + m_{t+1} + B_{t+1} + P_t K_{t+1} = W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t \quad (7)$$

Now, we can re-write a simplified version of the household's utility maximization problem as follows.

$$\text{Max } U = \sum_{t=0}^{\infty} \beta^t u(C_t^p, C_t^g)$$

Subject to:

$$P_t C_t^p + C_t^g + M_{t+1} + m_{t+1} + B_{t+1} + P_t K_{t+1} = W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t$$

We set up the Lagrangean equation as follows:

$$L = \sum_{t=0}^{\infty} \beta^t u(C_t^p, C_t^g) + \lambda_t\{W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - P_t C_t^p - C_t^g - M_{t+1} - m_{t+1} - B_{t+1} - P_t K_{t+1}\} \quad (8)$$

The first order conditions are as follows:

$$\frac{\partial L}{\partial C_p^t} = \beta^t \left(C_t^p\right)^{-b} - P_t \lambda_t = 0 \quad (9)$$

$$\frac{\partial L}{\partial C_g^t} = \beta^t \left(C_t^g\right)^{-b} - \lambda_t = 0 \quad (10)$$

From equation (9), we have

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$$\beta^t\left(C_t^p\right)^{-b} = P_t\lambda_t$$

$$C_t^p = \left(\frac{\beta^t}{P_t\lambda_t}\right)^{\frac{1}{b}} \quad (11)$$

Also, from equation (10), we have

$$\beta^t\left(C_t^g\right)^{-b} - \lambda_t$$

$$C_t^g = \left(\frac{\beta^t}{\lambda_t}\right)^{\frac{1}{b}} \quad (12)$$

Substituting for C_t^p and C_t^g in the budget constraint, the following results

$$P_t\left(\frac{\beta^t}{P_t\lambda_t}\right)^{\frac{1}{b}} + \left(\frac{\beta^t}{\lambda_t}\right)^{\frac{1}{b}} + M_{t+1} + m_{t+1} + B_{t+1} + P_tK_{t+1} = W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t \quad (13)$$

$$\frac{1}{\lambda_t^{\frac{1}{b}}}\left(P_t\left(\frac{\beta^t}{P_t}\right)^{\frac{1}{b}} + (\beta^t)^{\frac{1}{b}}\right) + M_{t+1} + m_{t+1} + B_{t+1} + P_tK_{t+1} = W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t$$

$$\frac{1}{\lambda_t^{\frac{1}{b}}}\left(P_t\left(\frac{\beta^t}{P_t}\right)^{\frac{1}{b}} + (\beta^t)^{\frac{1}{b}}\right) = (W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - Mt+1 - mt+1 - Bt+1 - PtKt+1$$

$$\left(P_t\left(\frac{\beta^t}{P_t}\right)^{\frac{1}{b}} + (\beta^t)^{\frac{1}{b}}\right) = \lambda_t^{\frac{1}{b}}(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - Mt+1 - mt+1 - Bt+1 - PtKt+1$$

$$\lambda_t^{\frac{1}{b}} = \frac{\left(P_t\left(\frac{\beta^t}{P_t}\right)^{\frac{1}{b}} + (\beta^t)^{\frac{1}{b}}\right)}{\left(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_tK_{t+1}\right)}$$

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$$\lambda_t = \left[\frac{\left(P_t \left(\frac{\beta^t}{P_t} \right)^{\frac{1}{b}} + (\beta^t)^{\frac{1}{b}} \right)}{(W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_t K_{t+1})} \right]^b \quad (14)$$

Substituting λ_t for the expression in equation (14) in equations (11) and (12), the following results:

$$C_t^p = \left(\frac{\beta^t}{P_t} \right)^{\frac{1}{b}} \left[\frac{(W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_t K_{t+1})}{\left(P_t \left(\frac{\beta^t}{P_t} \right)^{\frac{1}{b}} + (\beta^t)^{\frac{1}{b}} \right)} \right]$$

$$C_t^p = \left(\frac{1}{P_t} \right)^{\frac{1}{b}} \left[\frac{(W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_t K_{t+1})}{\left((P_t)^{\frac{b-1}{b}} + 1 \right)} \right] \quad (15)$$

Also,

$$C_t^g = (\beta^t)^{\frac{1}{b}} \left[\frac{(W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_t K_{t+1})}{\left(P_t \left(\frac{\beta^t}{P_t} \right)^{\frac{1}{b}} + (\beta^t)^{\frac{1}{b}} \right)} \right]$$

$$C_t^g = \left[\frac{(W_t L_t + (1+r_t)P_t K_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_t K_{t+1})}{\left((P_t)^{\frac{b-1}{b}} + 1 \right)} \right] \quad (16)$$

Equations (15) and (16) are the optimal consumption of private and public goods that maximizes the utility for the representative household.

8.1.2 Optimal Behavior of the Firm

Firms seek to maximize their profits in this economy. Given the assumption of perfectly competitive markets, firms make zero economic profits. Effectively firms seek to attain the maximum economic profits of zero.

$$\text{Max } \pi_t = P_t Y_t - W_t L_t - P_t R_t K_t \quad (17)$$

Subject to

$$Y_t = A K_t^{\alpha} L_t^{1-\alpha} \quad 0 < \alpha < 1 \quad (18)$$

When we substitute Y_t for $A K_t^{\alpha} L_t^{1-\alpha}$

$$\text{Max } \pi_t = P_t A K_t^{\alpha} L_t^{1-\alpha} - W_t L_t - P_t R_t K_t$$

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The first order conditions are:

$\frac{\partial \pi_t}{\partial K_t} = \alpha P_t A K_t^{\alpha-1} L_t^{1-\alpha} - P_t R_t = 0$

$\frac{\partial \pi_t}{\partial L_t} = (1-\alpha) P_t A K_t^{\alpha} L_t^{-\alpha} - W_t = 0$

Given $\frac{\partial \pi_t}{\partial K_t} = \alpha P_t A K_t^{\alpha-1} L_t^{1-\alpha} - P_t R_t = 0$, we have:

$\alpha P_t A K_t^{\alpha-1} L_t^{1-\alpha} = P_t R_t$

$K_t^{\alpha-1} = \frac{P_t R_t}{\alpha P_t A L_t^{1-\alpha}}$

$K_t^{\alpha-1} = \frac{R_t}{\alpha A L_t^{1-\alpha}}$

$R_t = \alpha A K_t^{\alpha-1} L_t^{1-\alpha}$ (19)

Substituting R_t for $\alpha A K_t^{\alpha-1} L_t^{1-\alpha}$ in the equation for the household's real return on capital: $1 + r_t = 1 + R_t - \delta_t$, we have the following expression.

$1 + r_t = 1 + \alpha A K_t^{\alpha-1} L_t^{1-\alpha} - \delta_t$ (20)

Given that $\frac{\partial \pi_t}{\partial L_t} = (1-\alpha) P_t A K_t^{\alpha} L_t^{-\alpha} - W_t = 0$, we have:

$W_t = (1-\alpha) P_t A K_t^{\alpha} L_t^{-\alpha}$ (21)

8.1.3 General Equilibrium

At the general equilibrium, we can postulate that the following statements hold.

The labor supply, $L_t = 1$

The profits, π_t, of the representative firm given competitive market conditions = 0

Given our assumption that public money is introduced through lump-sum transfers to consumers, then in equilibrium, $M_{t+1} = M_t + X_t$

The sum of the aggregate households' optimal demand or consumption and aggregate households' investment is equal to the aggregate optimal output. Therefore, we have the following expression:

$C_t^p + C_t^g + I_t = Y_t$

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Where, I_t is equal to the aggregate of the households' investment in firms' capital, government bonds and crypto currencies.

Thus, we have the following expression:

$$P_tC_t^p + C_t^g + m_{t+1} - m_t + P_tK_{t+1} - P_tK_t = W_tL_t + r_tP_tK_t + r_tB_t + r_t^m m_t \quad (22)$$

We understand from the equation for the household's real return on capital invested in firms that: $1 + r_t = 1 + R_t - \delta_t$, thus we have:

$$r_t = R_t - \delta_t$$

Therefore, substituting for the real return on capital in equation (22), we have the following expression:

$$P_tC_t^p + C_t^g + m_{t+1} - m_t + P_tK_{t+1} - P_tK_t = W_tL_t + (R_t - \delta_t)P_tK_t + r_tB_t + r_t^m m_t \quad (23)$$

Given equations (19) and (21) if we substitute R_t for $\alpha AK_t^{\alpha-1}L_t^{1-\alpha}$ and W_t for $(1-\alpha)P_tAK_t^{\alpha}L_t^{-\alpha}$ in equation (23), we have the following expression:

$$P_tC_t^p + C_t^g + m_{t+1} - m_t + P_tK_{t+1} - P_tK_t = (1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t \quad (24)$$

$$P_tC_t^p + C_t^g + = (1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t - (m_{t+1} - m_t) - P_tK_{t+1} + P_tK_t \quad (25)$$

$$C_t^g = \{(1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t - (m_{t+1} - m_t) - P_tK_{t+1} + P_tK_t\} - P_tC_t^p \quad (26)$$

If we substitute C_t^p for the expression below:

$$\left(\frac{1}{P_t}\right)^{\frac{1}{b}}\left[\frac{(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_tK_{t+1})}{\left((P_t)^{\frac{b-1}{b}} + 1\right)}\right]$$,the following results:

$$C_t^g = \{(1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t - (m_{t+1} - m_t) - P_tK_{t+1} + P_tK_t\} - P_t\left(\left(\frac{1}{P_t}\right)^{\frac{1}{b}}\left[\frac{(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_tK_{t+1})}{\left((P_t)^{\frac{b-1}{b}} + 1\right)}\right]\right)$$

$$C_t^g = \{(1-\alpha)P_tAK_t^{\alpha}L_t^{1-\alpha} + (\alpha AK_t^{\alpha-1}L_t^{1-\alpha} - \delta_t)P_tK_t + r_tB_t + r_t^m m_t - (m_{t+1} - m_t) - P_tK_{t+1} + P_tK_t\} - \left((P_t)^{\frac{b-1}{b}}\left[\frac{(W_tL_t + (1+r_t)P_tK_t + (2+r_t)B_t + (1+n_t)M_t + r_t^m m_t - M_{t+1} - m_{t+1} - B_{t+1} - P_tK_{t+1})}{\left((P_t)^{\frac{b-1}{b}} + 1\right)}\right]\right) \quad (27)$$

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Equation (27) is the demand for public goods at the general equilibrium.

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