



Value Relevance of Operating Performance During the GST and SST Periods in Malaysia

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ABSTRACT

This study's primary objective is to determine the value relevance of operating performance, represented by earnings per share (EPS), cash flow from operations (CSH) and book value of equity (BVE) during the GST and SST indirect tax periods. The Ohlson (1995) model was used to determine the market value-relevance. We used Ordinary Least Squares (OLS) regression to examine the hypotheses constructed based on 249 non-financial listed firms from the manufacturing and service sectors on the Malaysian Market from 2015 to 2019. Based on the combined 1,245 firm observations of Goods and Services Tax (GST) and Sales and Services Tax (SST) periods, the outcome reveals the existence of significantly positive relationships between EPS, CSH and BVE and share price (SHP). The findings suggest that EPS, CSH and BVE were the accounting information adopted by investors to decide on any investments during the indirect tax periods. In addition, by regressing separately GST and SST indirect tax period by utilising 498 firm-year observations, we find only EPS and CSH are positive and significant to SHP. This study has implications for academics, industrialists, regulators and investors, that EPS and CSH validated value relevance of operating performance during the GST and SST indirect tax periods.

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INTRODUCTION

Based on previous literature, there are many studies on value relevance around the world, including Malaysia (e.g., Al-Dhamari and Chandren, 2018; Hassan et al., 2020; Maigoshi et al., 2018; Mirza et al., 2019; Pervan and Bartulović, 2014; Srivastava and Muharam, 2021). However, no previous study has compared the value relevance of operating performance during the transition from the indirect tax law, i.e., from GST to SST. This paper offers new and valuable findings by examining the value relevance of operating performance during the GST and SST periods. It is important to compare the value relevance of the operating performance between two different indirect tax law periods, i.e., from GST to SST, to determine the investors' perception on operating performance during the transition of the indirect tax law from one period to the other. In essence, the implementation or reintroduction of the indirect tax system can influence the operating performance of firms (Chandren et al., 2018). If the GST and SST implementation has negative impacts to operating performance, the investors will loss trust and confidence in the firm's management which ultimately possible to affect the share prices of the firm. Practically firms had to comply with the transition from the GST to the SST. This is reason why good corporate governance is vital for indirect tax implementation to ensure strong operating performance that can safeguard the wealth and investment of shareholders (Chandren et al., 2019). In addition, for decision-making, investors possible to use operating performance as value relevant information, even during any transition from one indirect tax law period to another. The investors' reaction through the value relevant of operating performance information during both indirect tax periods are essential particularly to regulators and firms on the whether the operating performance has impact to share prices during the indirect tax periods.

Generally, the financial statements are a summary of the performance and position report of a business. Accounting information can influence the economic decisions made by its users by assisting them in evaluating the reporting entity's past, present, and future prospects (IASB, 1989). A firm's current performance reflected in the financial statement is essential for the assessment of future net cash flows and market valuations (Kothari, 2001). The accounting information should help investors to make decisions for venture or investment decisions by allowing them to select between alternative uses of limited resources based on accurate and timely information (Mirza et al., 2019). Financial statement analysis is used by active stock investors to determine the underlying value of companies (Beisland, 2009). It also helps investors to know a company's worth by comparing stock prices (Beisland, 2009). Further, the value relevance of accounting information is associated with the protection of shareholders. For example, the lesser use of accrual accounting increases the value relevance of accounting performance for countries with strong shareholder protection (Hung, 2000).

The reaction of investors to a firm's share price is a good indication of the firm's worth, which can be evaluated by the firm's value relevance (Al-Dhamari and Chandren, 2018). The outcome of value relevance of operating performance is important for future firm growth and economic development of Malaysia. During the GST implementation in the country, Chandren et al. (2018) reported that because of setting price issues for goods and services, as well as the cost of implementation, GST adoption had a negative impact on operating performance, notably on the profitability and cash flow situation of businesses. In addition, financial performance recognised for one of the essential firm performance measurement tools for investors and other stakeholders (Bello et al., 2022; Chandren et al., 2017; Ismail et al., 2022). This further needed to be investigated whether the GST or even SST adoption has negative impact to the value relevant of operating performance to investors. With the indirect tax transition from GST to SST, this study addresses the investors' confidence in firms for managing operating performance during the indirect tax law transition from GST to SST through the identification of the value relevance of operating performance. The outcome of the study to determine whether operating performance a value relevance information (earnings, operating cash flow and book value of equity) to investors using the Ohlson model during both indirect tax periods. Accordingly, the first research objective of this study is to analyse the value relevance of operating performance during the two indirect tax periods (GST and SST). The second research objective is to investigate the value relevance of operating performance separately during the GST and SST periods. Previous studies have highlighted the impact of indirect tax on operating performance, mainly on profitability and operating cash flow. Thus, the main value relevance factors of operating performance for this study are earnings and operating cash flow. However, this study includes book value of equity (BVE) as one of the value relevance variables so as to be aligned with many studies on value relevance (Al-Dhamari and Chandren, 2018; Mirza et al., 2019; Nijam and Jahfer, 2018; Srivastava and Muharam, 2021; Tanaka, 2015).

The contributions of this study are as follows: firstly, it determines that investors used the value relevance of operating performance for decision-making on investments during the indirect tax periods; and secondly, this study finds that when the indirect tax periods between GST and SST were analysed separately, investors still used the same value relevance factors of operating performance for decision-making. As a matter of fact, the key contribution of this paper is the investors' perception and investment decisions based on the value relevance of operating performance during the two different indirect tax law periods. To our best knowledge, this is the first-time investigating value relevant of accounting information during GST or SST indirect tax periods even during the change of indirect tax periods from GST to SST. Thus, this paper presents the first such evidence relevant to academics, industrialists and regulators.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Indirect Tax Law

The taxation system plays a significant role in a firm's financial performance and position and provides the ultimate outcome to firm value and financial health of shareholders. Malaysia had been using the SST for a long time as the indirect tax before switching to GST in 2015. The SST is a consumption tax at a single stage under which businesses cannot reclaim the tax paid on purchases. The GST or value added tax (VAT) is recognised as a consumption tax (Chandren et al., 2018). GST is the percentage of tax on value added (the distinction between sales with purchase cost of material inputs) at every production stage (Palil and Ibrahim, 2011). The introduction of the GST was to help reduce the country's growing budget deficit by increasing revenue collection (Mansor and Ilias, 2013). In spite of the growing popularity and effectiveness of the implementation of GST around the world (Hooper and Smith, 1997), Malaysians were sceptical of this tax system (Saira et al., 2010). The implementation of the GST raised concerns of the public with the impact on price level (Narayanan, 2014). GST implementation may have an impact on a company's cash flow and pricing policies (Mansor and Ilias, 2013). Audit firms have reported that businesses evaluate the GST impact on its operations and strategy for pricing because poor decisions have a negative impact on firm performance (Chandren et al., 2018). Once the GST which is incorporated into the business process influences the price policy and cash flows, it may reduce operating performance (Chandren et al., 2018). In 2018, the Malaysian government reintroduced the SST after completely abolishing the GST. The SST became effective on 1 September 2018 with the objective of reducing the cost of living. Malaysia is the only country in the world that reverted to SST (Wong and Eng, 2018). The transition of the indirect tax law may have influenced the value and growth of firms, including economic development. This effect could be validated from this paper the value relevance of the operating performance between the two indirect tax law periods, i.e., the GST and SST.

Value Relevance

Managers use financial reporting and disclosure to communicate their firm's performance and governance to external investors (Healy and Palepu, 2001). The link between prices or returns and financial information, statistically indicates value relevance (Francis and Schipper, 1999). Consequently, there is much evidence to link value relevance to accounting information (Amir et al., 1993; Mirza et al., 2019; Srivastava and Muharam, 2021; Tanaka, 2015). The ability of accounting information to represent or encapsulate information that affects share price or stock returns, is defined as value relevance (Mirza et al., 2019). The relevance of accounting information is expected to have a significant relationship with security returns (Francis and Schipper, 1999). There appears to be substantial opportunity for raising the market share of financial information by increasing its value relevance, as perfect foresight of earnings would encourage a user to earn nearly half of all the returns available in a normal year (Francis and Schipper, 1999). Further, value relevance studies have mainly aimed to determine if specific accounting values accurately reflect information utilised by investors in valuing a company's stock. Thus, the usefulness of accounting information to stock investors has been investigated empirically in value relevance research (Beisland, 2009). The statement of changes in owners' equity the book value and earnings has an essential integrative function in accounting (Ohlson, 1995). Generally, earnings and book value equity have led the value relevance research (Beisland, 2009; Maigoshi et al., 2018; Srivastava and Muharam, 2021). In the process of valuing a company, BVE and earnings have been used as a reference point (Tanaka, 2015). However, when comparing the value relevance of several factors, the combined effect of

earnings per share (EPS), book value per share and cash flow per share, have been shown to be the most valuable (Tanaka, 2015). Cash flow data is valuable for estimating future operating cash flows and valuing businesses when combined with other data (Vichitsarawong, 2011). Moreover, cash flow has no issues with accruals; so, it can be used as the alternative measurement for firm performance (Vichitsarawong, 2011). To an extent, this paper also includes cash flow since this variable is important towards making investment decisions (Mirza et al., 2019). Further, tax adjustments are value-relevant since they indicate future dividends or profitability, while also capturing measurement differences (Amir et al., 1993). This indicates the importance of examining whether or not the indirect tax transition that has caused changes to business policies and processes, is value relevant to investors. The transition from GST to SST may have possibly affected the financial performance of the firms and the value relevance of operating performance. Thus, three variables, namely earnings (EPS), BVE and cash flow (CSH) are used to determine the value relevance for operating performance during the transition from the GST to the SST periods.

Accounting information value relevance is the potential of accounting figures to influence the share prices of listed firms (Purswani and Patnaik, 2017). Investors consider the value relevance of earnings and book value equity recorded in financial statements when evaluating the value of a Malaysian company (Ali et al., 2018). Increased accounting information value relevance, such as EPS and book value per share, is crucial for attracting investment and selling existing business stocks (internal users), as well as enhancing investors' decision-making ability (external users) (Abdollahi et al., 2020). By observing capital markets as a whole, book value is significant and positively connected to share prices, indicating that objectively, there is a testable relationship between book value and share prices (Pervan and Bartulović, 2014). Further, accounting information, proxied by dividends per share, book value and EPS, is more value relevant than cash flow statement indicators (Bhatia and Mulenga, 2019). A study of Malaysian firms from years 2012 to 2014 for 153 firm-year observations has found that Big-4 audit firms' female audit partners enhance reliability and value-relevance of earnings (Al-Dhamari and Chandren, 2018). In addition, an analysis of 369 sampled firms in Malaysia from years 2009 to 2015, has identified that the disclosure of related party transactions (RPTs) is value relevant (Maigoshi et al., 2018). Generally, the adoption of the International Financial Reporting Standards (IFRS) has enhanced the value relevance of book value per share (BVE) and EPS, as well as the value relevance of BVE and EPS with significant related party transactions (RPTs) (Maigoshi et al., 2018).

A study of Italian listed firms has reported that under the Italian GAAP, as a whole, the intangible assets are value relevant, with a positive and strong relationship with stock prices (Cordazzo and Rossi, 2020). The adoption of the new set of accounting standards under IFRS, has altered investors' perception that the amount of assets classified as intangible resources by a firm, is not value relevant (Cordazzo and Rossi, 2020). Srivastava and Muharam (2021) revealed that accounting information, for example, earnings and book value, has had value relevance throughout the IFRS implementation period in India. In fact, value relevance of earnings has been increasing, while the value relevance of book value has been decreasing; earnings have a higher explanatory power than book value, indicating that market participants value earnings more than book value (Srivastava and Muharam, 2021). A study on Iranian listed firms from years 2008 to 2017, has revealed that the positively significant relationships between audit firm size and EPS and book value, indicate that large audit firms provide good quality work ("possessing more resources, equipment and reputation") (Abdollahi et al., 2020, p. 735). The financial reporting quality and predicting power have increased, leading to high value-relevance of accounting information (Abdollahi et al., 2020). A study of 188 listed firms in Sri Lanka has found that prior to IFRS adoption, EPS was not an important predictor of market value per share; however, after adoption of IFRS, both book value of equity per share (BVEPS) and EPS, significantly and positively explain market value per share (Nijam and Jahfer, 2018). Further BVEPS' value relevance decreased in the post-IFRS implementation (Nijam and Jahfer, 2018).

Further, a study on the analysis of earnings and cash flow value relevance in Thailand during the financial crises period ("pre-crisis, crisis and post-crisis periods") has identified that users of financial statements are more likely to use cash flow information when making investment decisions rather than relying just on earnings information (Vichitsarawong, 2011, p. 51). The findings indicate the value relevance of cash flow in addition to earnings information (Vichitsarawong, 2011). After the early adoption era of IFRS in Peru, the value relevance of companies listed on the Peruvian stock market remained strong (Tanaka, 2015). In addition, the combined effect of book value, EPS and cash flow per share, has been found to be more relevant compared to the combined effect of book value and EPS (Tanaka, 2015). The study of non-financial Malaysian listed firms

from years 2012 to 2016 has highlighted that for investment decision-making, EPS, cash flow from operations and book value of equity are all relevant, with operation cash flow becoming increasingly important in the Malaysian Capital Market (Mirza et al., 2019). According to a statistical analysis from 2010 to 2016, cash flow from operating operations has a significantly positive relationship with market price per share of firms in the Nifty Pharma Index, India (Girish and Desai, 2017). Sharma et al. (2012), who studied 71 firms from CNX 100, India from 2000 to 2008, identified that cash flow has an insignificantly positive relationship with stock returns. The recent study investigated the value relevance of cashflows during the Covid-19 pandemics of banks in Gulf Cooperation Council countries., identified that for valuation purpose, investors used cash flows as value relevant information (Abou-El-Sood, 2023). Liu and Sun (2022) said that the value relevance of earnings was impaired during the pandemic where the earnings had lower explanatory power.

The literature related to value relevant studies over the years incorporated as to rationalise the gap of value relevant information study during the implementation of the indirect tax periods in this study. From the findings of the previous studies, it is critically identified on the importance of value relevant information to investors. However, to our knowledge there is gap in the literature investigating value relevant information particularly on tax related studies as tax returns considered government main source of revenue for country economic development. The investors' reaction on operating performance information during GST and SST periods critically provides an insightful information on how a transition or implementation of indirect tax periods impacts on firm operating performance that has ultimate impact to share prices. Therefore, this study predicts that the value relevance of operating performance during the GST and SST indirect tax periods requires empirical verification. Thus, this present study, based on prior theoretical findings of accounting information and value relevance, will answer questions on whether or not the operating performance (EPS, CSH and BVE) is value relevant to share prices during the entire indirect tax periods, and distinctly, during the two different indirect tax law periods of GST and SST. The following is the summary of the hypotheses.

H1: The operating performance is value relevant to share prices during the indirect tax periods.

H2: EPS is value relevant to share prices during the GST and SST tax periods.

H3: CSH is value relevant to share prices during the GST and SST tax periods.

H4: BVE is value relevant to share prices during the GST and SST tax periods.

RESEARCH METHODOLOGY

Study Sample

The sample listed firms were drawn from Bursa Malaysia from years 2015 to 2019. The data for the variables were hand-collected from the annual reports and share price history section available in the Bursa Malaysia website. The listed firms were confined to the manufacturing and service sectors in accordance to SST indirect tax guidelines in Malaysia. This study includes two years for GST period (2015–2016) and two years for SST period (2018–2019). For SST period, the sample firms were selected from year 2018 with financial year ended as of 30 September or 31 October or 30 November or 31 December, following the SST implementation date on 1 September 2018. Table 1 presents the details of the sample firms.

Table 1 Details of the Sample Firms

No.	Sector	Number of Firms GST Period (2015 to 2016)	Number of Firms SST Period (2018 to 2019)
1	Consumer Products and Services	88	88
2	Industrial Products and Services	108	108
3	Telecommunications and Media	13	13
4	Transportation and Logistics	17	17
5	Technology	24	24
6	Utility	8	8
	= Total firms	258	258
	(-) Missing data firms	(9)	(9)
	= Sample firms	249	249

Model Specification and Variables Definition

The implementation of the indirect tax system, e.g., GST, can influence the profitability and liquidity position of firms (Chandren et al., 2018). Thus, this indirect tax implementation impacted accounting information, mainly EPS, BVE and CSH, that possibly affected stock prices. For share prices, this study used four months in line with the listing requirement enforcement in Malaysia to announce audited accounts within 4 months from the financial year ended. For this study, the operating performance is represented by EPS, BVE and CSH. The Ohlson (1995) model ties a firm's market value to accounting data (earnings, book value and dividends). Many researchers have validated the model (Purswani and Patnaik, 2017; Tanaka, 2015). Similar to Mirza et al.'s (2019) study, the Ohlson (1995) model was used to examine the value relevance of EPS, BVE and CSH. Based on previous studies, we took into account firm-specific characteristics, for example, firm size, firm age, leverage, audit firm and growth as the control variables for the studies (Al-Dhamari and Chandren, 2018; Alshorman et al., 2022; Mirza et al., 2019).

This study used Nijam and Jahfer's (2018) model specification to analyse the relationship of the variables in the study. To determine the impact of the indirect tax transition period on the value relevance of operating performance, the analysis for this study was conducted in four stages for the model specifications as follows:

First, Model 1 used to determine the overall value relevance of operating performance (represented by EPS, BVE and CSH) among the listed firms in Malaysia, particularly manufacturing firms in the combined GST and SST periods. The purpose of Model 1 to observe the overall impact of indirect taxes on value relevance of operating performance by combining GST and SST periods before separately analysing the individual tax periods in Model 2 and Model 3. The sample years were from 2015 to 2019, combination of GST and SST periods (refer to Model 1).

Second, this study separately analysed the GST (2015 to 2016) and SST (2018 to 2019) indirect tax periods to identify the value relevance of operating performance corresponding to GST in Model 2 and SST in Model 3. Finally, to investigate the augmentation of the value relevance of operating performance after the SST period, the dummy variable was multiplied by EPS, BVE and CSH in Model 4 with the sample years of 2015, 2016, 2018 and 2019. The outcome of the regression analysis reports on the effect of change in operating performance on the value relevance of EPS, BVE and CSH. The period before SST is represented by a dummy value of '0' if observation was prior to SST period and "1" for after SST period. This dummy value "SST" is interacted with EPS, BVE and CSH or "SST*EPS, SST*BVE and SST*CSH".

The regression model is as below:

GST and SST periods (2015, 2016, 2017, 2018, 2019):

$$SHP_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 CSH_{it} + \beta_3 BVE_{it} + \beta_4 FSIZE_{it} + \beta_5 FAGE_{it} + \beta_6 LEV_{it} + \beta_7 BIG4_{it} + \beta_8 MTBV_{it} + INDUSTRY_i + YEAR_t + \varepsilon_{it} \quad (1)$$

Model 1

GST period (Year 2015 -2016):

$$SHP_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 CSH_{it} + \beta_3 BVE_{it} + \beta_4 FSIZE_{it} + \beta_5 FAGE_{it} + \beta_6 LEV_{it} + \beta_7 BIG4_{it} + \beta_8 MTBV_{it} + INDUSTRY_i + YEAR_t + \varepsilon_{it} \quad (2)$$

Model 2

SST period (2018 -2019):

$$SHP_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 CSH_{it} + \beta_3 BVE_{it} + \beta_4 FSIZE_{it} + \beta_5 FAGE_{it} + \beta_6 LEV_{it} + \beta_7 BIG4_{it} + \beta_8 MTBV_{it} + INDUSTRY_i + YEAR_t + \varepsilon_{it} \quad (3)$$

Model 3

After SST implementation period :

$$SHP_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 CSH_{it} + \beta_3 BVE_{it} + \beta_4 SST*EPS_{it} + \beta_5 SST*CSH_{it} + \beta_6 SST*BVE_{it} + \beta_7 FSIZE_{it} + \beta_8 FAGE_{it} + \beta_9 LEV_{it} + \beta_{10} BIG4_{it} + \beta_{11} MTBV_{it} + INDUSTRY_i + YEAR_t + \varepsilon_{it} \quad (4)$$

Model 4

The variables for this study are as in Table 2 below:

Table 2 Summary of Variable Measurements

Code	Variables	Definitions
Dependent variable		
SHP	Share price	4 months' share price after the financial year ended
EPS	Earnings per share	Earnings per share for the firm year
CSH	Cash flow	Net cash flow from operating activities divided by the total number of outstanding shares
BVE	Book value of equity	Total assets minus total liabilities divided by the total number of outstanding shares
Control variables		
FSIZE	Firm size	The natural log of firms' total assets
FAGE	Firm age	The natural log of the number of years of incorporation. The use of the logarithm is intended to normalize its density function, proving that the variable shows high persistence
LEV	Financial leverage	The ratio of total liabilities divided by total assets
BIG4	Audit firm	A dummy variable of "1" if accounts were audited by big audit firms (BIG4), and 0 otherwise
MTBV	Growth	Book-to-Market ratio. Total assets minus total liabilities divided by the total number of outstanding shares divided by the market share price at year end
ε		Error term

RESULTS AND DISCUSSION

Descriptive Statistics

Table 3 displays the descriptive statistics, i.e., the mean, standard deviation, median, minimum and maximum values of the dependent variable (SHP) and independent variables (EPS, BVE and CSH), including the control variables (FSIZE, FAGE, LEV, BIG4 and MTBV) of the study for the 1,245 firm-year observations from years 2015 to 2019. The mean SHP is RM2.688 with minimum of RM0.010 and maximum of RM146.10. The mean share prices for GST of 2.64 and SST of 2.68 are almost the same for both the indirect tax periods. The average of the value of EPS is 0.115 (median: 0.050), CSH is 0.208 (median: 0.077) and BVE is 1.716 (median: 1.025). The mean EPS in the GST period at 0.132 is better than the SST period at 0.101. The CSH mean is slightly higher in the GST period (1.723) relative to the SST period (1.719). The BVE mean value is higher in the SST period (0.225) relative to the GST period (0.214). Basically, there is not much difference in the operating performance value (EPS, CSH, BVE) during GST and SST periods. The FSIZE (log) mean is 13.142 and the average FAGE is 27 years with minimum of two years and maximum of 100 years from the date of incorporation. The leverage ratio range of firms is within 0.004 to 12.595. Around 46 percent of these firms were audited by BIG4. Finally, MTBV mean is 2.160, ranging from a minimum value of -14.610 to a maximum value of 78.70.

Table 3 Descriptive Statistics (Combined GST and SST Periods)

Panel A: Descriptive Statistics for Combined GST and SST (2015 to 2019) (N= 1,245)					
Variables	Mean	Std. Dev.	Median	Min.	Max.
SHP(4 months)	2.688	9.298	0.765	0.010	146.100
EPS	0.115	0.463	0.050	-6.000	8.070
CSH	0.208	0.460	0.077	-1.551	4.282
BVE	1.716	2.192	1.025	-0.107	21.526
FSIZE	3,286,866.26	12,903,252.58	426,737.00	346.00	178,722,900.00
Ln FSIZE	13.142	1.639	12.964	5.846	19.001
FAGE	26.545	13.622	22.678	2.374	99.570
Ln FAGE	3.153	0.511	3.121	0.864	4.601
LEV	0.382	0.409	0.342	0.004	12.595
BIG4	0.459	0.498	0.000	0.000	1.000
MTBV	2.160	5.912	0.910	-14.610	78.700
Panel B: Descriptive Statistics for GST Period (2015 and 2016) (N= 498)					
Variables	Mean	Std. Dev.	Median	Min.	Max.
SHP(4 months)	2.640	7.310	0.855	0.030	82.000
EPS	0.132	0.384	0.058	-1.750	3.187
CSH	1.723	2.053	1.073	-0.069	15.629
BVE	0.214	0.470	0.087	-1.156	3.797
FSIZE	3,090,897.00	11,700,000.00	387,732.00	19,963.00	133,000,000.00
Ln FSIZE	13.102	1.616	12.868	9.902	18.705
FAGE	25.041	13.563	20.932	2.374	96.572
Ln FAGE	3.079	0.545	3.041	0.864	4.570
LEV	0.366	0.203	0.338	0.007	1.365
BIG4	0.460	0.499	0.000	0.000	1.000
MTBV	2.056	5.903	0.900	-1.880	78.700
Panel C: Descriptive Statistics for SST Period (2018 and 2019) (N= 498)					
Variables	Mean	Std. Dev.	Median	Min.	Max.
SHP(4 months)	2.680	10.466	0.620	0.010	146.100
EPS	0.101	0.573	0.039	-6.000	8.070
CSH	1.719	2.353	0.992	-0.107	21.526
BVE	0.225	0.492	0.083	-1.551	4.282
FSIZE	3,494,230.00	14,000,000.00	474,713.50	346.00	178,722,900.00
Ln FSIZE	13.176	1.674	13.070	5.846	19.001
FAGE	28.051	13.570	23.981	5.374	99.570
Ln FAGE	3.225	0.468	3.177	1.682	4.601
LEV	0.407	0.596	0.357	0.004	12.595
BIG4	0.456	0.499	0.000	0.000	1.000
MTBV	2.202	5.809	0.880	-14.610	54.280

Note: Table 2 has the definition of the variables.

Diagnostic tests

To resolve the outlier problem, the study winsorized all continuous variables that have extreme values (Chandren et al., 2021). Pearson correlation matrix and variance inflation factor (VIF) tests, as shown in Table 4, demonstrate that the data in our study has no multicollinearity issues. However, the Breusch-Pagan/Cook-Weisberg test shows that the dataset suffers from the heteroscedasticity problem. The analysis of Wooldridge's test indicates the autocorrelation problem does not exist. Thus, the current study utilised Ordinary Least Squares (OLS) regression, including the robust standard errors to control the heteroscedasticity problem.

Correlations

Table 4 displays the Pearson correlation matrix for all research variables. The result shows that the highest correlation coefficients exist between SHP and EPS (0.781), while other variables have low levels of correlation coefficients, indicating the absence of multicollinearity problems. Gujarati and Porter (2009) confirmed that if the maximum correlation coefficients equal to ± 0.80 , multicollinearity does not affect the validity of the results. The results in Table 4 also show that the VIF values do not exceed 10, suggesting that there are no serious multicollinearity issues as VIF values are less than 10 (Hair et al., 2014).

Table 4 Pearson Correlation matrix (N= 1,245)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	VIF
(1) SHP	1.000									-
(2) EPS	0.781***	1.000								2.165
(3) CSH	0.703***	0.632***	1.000							2.393
(4) BVE	0.498***	0.512***	0.601***	1.000						3.086
(5) FSIZE	0.485***	0.442***	0.520***	0.616***	1.000					2.494
(6) FAGE	0.340***	0.249***	0.261***	0.344***	0.272***	1.000				1.234
(7) LEV	0.122***	0.019	0.143***	-0.086***	0.304***	0.048*	1.000			1.364
(8) BIG4	0.376***	0.318***	0.342***	0.389***	0.507***	0.307***	0.125***	1.000		1.473
(9) MTBV	0.536***	0.417***	0.349***	-0.078***	0.172***	0.035	0.206***	0.191***	1.000	1.752

Note: *** p<0.01, ** p<0.05, * p<0.1

Regressions

Table 5 presents the regression results for Models 1, 2, 3 and 4, where the F statistics are significant at the 1 percent level for all Models. Model 1 is based on the combination of GST and SST indirect tax periods for the 1,245 firm-year observations from years 2015 to 2019. Model 1 results show a positive and significant relationship at the 1 percent level between EPS ($\beta = 6.257$, t-value: 10.02, p-value: 0.000), CSH ($\beta = 2.299$, t-value: 5.72, p-value: 0.000) and BVE ($\beta = 0.221$, t-value: 3.08, p-value: 0.002) and SHP. EPS, CSH and BVE are value relevant for investors' decision-making, which supports Mirza et al. (2019). This indicates that EPS, CSH and BVE had explanatory power for the value relevance of operating performance during indirect tax periods. Further, Tanaka (2015) highlighted that value relevance improves with the combination of EPS, CSH and BVE. Thus, this study's findings support H1 that the operating performance (EPS, CSH and BVE) is value relevant to SHP. This positively demonstrates that investors used EPS, CSH and BVE as value relevant information during the indirect tax periods.

As for the control variables, FSIZE has an insignificantly positive relationship with SHP. According to Al-Dhamari and Chandren (2018), the positive association for FSIZE and SHP is due to large firms having a good internal control system. However, this study does not find FSIZE to have any pragmatic effect on investors' investment decision-making. FAGE and SHP are significantly positive at the 1 percent level, evincing firm stability and operating experience built the investors' confidence and trust of the firms. In line with Mirza et al. (2019), this study reports an insignificant relationship between LEV with SHP. Further, the insignificant relationship between BIG4 and SHP reflects that it is most likely that the investors do not consider audit firms as value relevant information for investment purposes. MTBV and SHP have a significant and positive relationship, in tandem with Mirza et al. (2019), that investors consider the value relevance of firm growth as part of their investment decision-making. Furthermore, the significant relationship of MTBV with SHP for all models validates those investors utilized MTBV or firm growth essentially as value relevant information for firm valuation.

The outcome of value relevance of operating performance and share price during GST (2015 and 2016) is shown in Model 2 regression results and SST (2018 and 2019) in Model 3 regression results for 498 firm observations for both indirect tax periods. The direction and significance level for the relationships between SHP and EPS and CSH in Models 2 and 3 are identical to Model 1 (refer to Table 5). EPS (Model 2: $\beta = 4.308$, t-value: 4.17, p-value: 0.000; Model 3: $\beta = 7.462$, t-value: 8.11, p-value: 0.000) and CSH (Model 2: $\beta = 1.787$, t-value: 4.85, p-value: 0.000; Model 3: $\beta = 1.448$, t-value: 3.39, p-value: 0.001) relationships with SHP are significant and positive at the 1 percent level. Interestingly, the EPS coefficient in SST period was higher compared to GST period, the investors used EPS more significantly as valuation purpose during SST period. BVE has a positive and significant relationship with SHP at the 1 percent level during the GST period (Model 2: $\beta = 0.314$, t-value: 3.66, p-value: 0.000), and an insignificantly positive relationship during the SST period (Model 3: $\beta = 0.065$, t-value: 0.55, p-value: 0.580). The results of this study fully support H2 and H3 and partially support H4 that EPS and CSH were value relevant to SHP during the GST and SST periods, while BVE was only value relevant to SHP during the GST period compared to SST period. The investors used BVE as value relevant information during GST period only. This reflects that EPS and CSH were consistently value relevant information for valuation purposes for both indirect tax periods.

The outcomes imply that there were no significant differences in the relationship between value relevance (EPS and CSH) of operating performance and share prices during the GST or SST period. This is an essential contribution that the investors basically used and accepted EPS and CSH as value relevance of operating performance during the GST and SST periods. In addition, the coefficients for EPS in Model 3 ($\beta = 7.462$) are

higher than in Model 2 ($\beta = 4.308$) by 73.2 percent, which explains that EPS had higher explanatory power during the SST compared to the GST period, similar to the finding of Nijam and Jahfer (2018), that EPS explanatory power increased in the post-IFRS adoption period. The higher explanatory power for EPS in the SST period validates investors' perception of preferring to use EPS as value relevance for their decision-making, followed by CSH. Thus, the increase in the value relevance of earnings representing operating performance in the SST period evinces the investors' confidence and support for the transition of indirect tax from GST to SST.

New interaction variables were included for EPS, CSH and BVE in Model 4. The interaction variable coefficients are consistently insignificant for all value relevance of operating performance (EPS, CSH and BVE) relationships with SHP. There was no effect of change identified in SST period in Model 4 adopting Nijam and Jahfer (2018) approach. Indeed, the findings in Model 2 and 3 justify the value relevance of operating performance mainly the EPS and CSH used for investor investment decision-making. Vichitsarawong (2011) opined those earnings is essential for firm performance measurement and cash flow data is valuable for estimating future operating cash flows and valuing businesses when combined with other data. To an extent, Purswani and Patnaik (2017) elaborated that EPS is vital for investment decision-making. Hence, this study shows that both EPS, representing performance efficiency, and CSH, representing operating cash flow effectiveness, were the two prominent value relevance factors of operating performance, either in the GST or SST indirect tax periods used by investors for valuation purpose. The interaction results revealed that no significant difference between the operating performance as value relevance information during GST or SST periods. Therefore, firm has to effectively implement business policy and practices during GST and SST periods in order to avoid any unfavourable results to operating performance that possible to influence the valuation of investors.

Table 5 OLS regression results

Variables	Model 1			Model 2			Model 3			Model 4		
	Coef.	t-value	p-value	Coef.	t-value	p-value	Coef.	t-value	p-value	Coef.	t-value	p-value
EPS	6.257***	10.02	0.000	4.308***	4.17	0.000	7.462***	8.11	0.000	4.715***	4.96	0.000
CSH	2.299***	5.72	0.000	1.787***	4.85	0.000	1.448***	3.39	0.001	3.058***	4.93	0.000
BVE	0.221***	3.08	0.002	0.314***	3.66	0.000	0.065	0.55	0.580	0.250***	2.69	0.007
FSIZE	0.022	0.44	0.662	0.086	1.18	0.240	0.042	0.52	0.604	0.009	0.16	0.873
FAGE	0.826***	7.96	0.000	0.730***	4.84	0.000	1.028***	5.46	0.000	0.870***	7.51	0.000
LEV	0.202	0.76	0.450	0.100	0.28	0.781	-0.182	-0.42	0.676	0.065	0.23	0.817
BIG4	0.135	1.60	0.109	0.223*	1.85	0.065	0.101	0.74	0.457	0.137	1.46	0.144
MTBV	0.448***	9.67	0.000	0.522***	5.85	0.000	0.369***	5.87	0.000	0.459***	8.75	0.000
EPS* SST										1.886	1.58	0.114
CSH* SST										-0.920	-1.16	0.246
BVE* SST										-0.085	-0.67	0.504
Constant	-2.922***	-4.61	0.000	-3.495***	-4.06	0.000	-3.430***	-3.17	0.000	-2.858***	-4.16	0.000
Year & Industry	Yes			Yes			Yes			Yes		
Observations	1245			498			498			996		
R-Squared	0.756			0.768			0.757			0.759		
F-test	84.090***			43.709***			47.798***			66.224***		
Prob > F	0.000			0.000			0.000			0.000		
Breusch-Pagan / Cook-Weisberg test	1018.19 (0.000)			596.61 (0.000)			233.19 (0.000)			772.26 (0.000)		
Durbin Watson test	1.829			2.086			1.933			1.886		

Note: *** p<0.01, ** p<0.05, * p<0.1.

Robustness Analysis

An additional test was conducted with year-end share price of three months following the financial year-end, in accordance with literature of value-relevance and to ensure the robustness of the findings (Al-Dhamari and Chandren, 2018). The results of the study presented in Table 6 are almost similar in terms of direction and significance levels of the relationship between the independent and control variables and the dependent variable as reported in Table 5. The coefficients and significance levels of the variables in Models 1, 2, 3, and 4 in Table 5 using the 4 months' share price as the dependent variable are almost the same as the regression results in Table 6 for Models 1, 2, 3, and 4 using the three months' share price outcome. This reveals that the regression results

are not affected by the changes in the year-end as mentioned in Al-Dhamari and Chandren's (2018) study. Thus, this validates the robustness of the regression results for the main model.

Further, the regression was analysed without the control variables for the Models in 1, 2, 3 and 4 in Table 7. The purpose of this analysis was to determine the effect of the relationship between SHP (the four months' share price) with value relevance of operating performance (EPS, CSH and BVE) without the control variables. The results show that the value relevance, particularly for EPS and CSH direction and significance levels of the relationship with SHP, is consistent with the main analysis in Table 5.

Regression analysis was carried out to identify on a yearly basis the explanatory power effect of value relevance of operating performance to share price for the GST and SST periods. The yearly regression analysis was conducted for years 2015, 2016, 2017, 2018 and 2019 individually for the GST and SST periods. Table 8 displays the yearly data regression analysis results during the GST and SST periods. Interestingly, we find that EPS and CSH consistently have a significant and positive relationship with SHP for all the years. This validates the investors' preference for using EPS and CSH as value relevant information for their decision-making. Indeed, the coefficient of EPS during GST implementation ($\beta = 4.591$) in 2015 was higher than after the implementation ($\beta = 4.060$) in 2016. For the SST period, during the implementation period in year 2018, the coefficient ($\beta = 7.254$) was relatively higher than the after implementation period in 2019 ($\beta = 6.843$). The consistent coefficient trend highlights that EPS had higher explanatory power during both GST and SST implementation periods. In sum, during the indirect tax implementation period, EPS was used by investors as value relevant information. Further, Table 8 reveals that EPS' explanatory power during the SST implementation ($\beta = 7.254$) in year 2018 was higher than its explanatory power during GST implementation ($\beta = 4.591$) in year 2015. The investors relied more on EPS value relevance during the SST implementation period. Indeed, the robustness analysis findings strengthen the findings in the main analysis.

Table 6 OLS regression results of alternative measure of share price

Variables	Model 1			Model 2			Model 3			Model 4		
	Coef.	t-value	p-value	Coef.	t-value	p-value	Coef.	t-value	p-value	Coef.	t-value	p-value
EPS	6.732***	10.14	0.000	4.742***	4.79	0.000	7.69***	8.42	0.000	5.142***	5.69	0.000
CSH	1.369***	5.09	0.000	1.624***	4.52	0.000	1.432***	3.44	0.001	2.869***	4.74	0.000
BVE	0.170**	2.29	0.022	0.314***	3.70	0.000	0.059	0.51	0.612	0.257***	2.75	0.006
FSIZE	0.084	1.44	0.151	0.096	1.33	0.185	0.036	0.45	0.653	0.009	0.16	0.872
FAGE	0.838***	7.97	0.000	0.714***	4.83	0.000	0.973***	5.26	0.000	0.831***	7.34	0.000
LEV	-0.073	-0.26	0.792	-0.044	-0.12	0.902	-0.357	-0.84	0.400	-0.079	-0.29	0.771
BIG4	0.198**	2.51	0.012	0.277**	2.37	0.018	0.134	1.03	0.303	0.179**	2.00	0.046
MTBV	0.413***	9.04	0.000	0.512***	5.98	0.000	0.337***	5.65	0.000	0.436***	8.75	0.000
EPS* SST										1.583	1.37	0.170
BVE* SST										-0.838	-1.09	0.278
CSH* SST										-0.078	-0.62	0.533
Constant	-3.507***	-5.01	0.000	-3.52***	-4.20	0.000	-3.106***	-2.89	0.004	-2.686***	-3.98	0.000
Year & Industry	Yes			Yes			Yes			Yes		
Observations	1245			498			498			996		
R-Squared	0.765			0.782			0.767			0.771		
F-test	86.236***			48.173***			48.177***			70.075***		
Prob > F	0.000			0.000			0.000			0.000		

Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 7 OLS regression results (without control variables)

Variables	Model 1			Model 2			Model 3			Model 4		
	Coef.	t-value	p-value	Coef.	t-value	p-value	Coef.	t-value	p-value	Coef.	t-value	p-value
EPS	8.57***	12.89	0.000	6.919***	6.13	0.000	9.065***	9.43	0.000	6.747***	6.00	0.000
CSH	3.57***	8.31	0.000	4.326***	5.98	0.000	3.36***	5.33	0.000	4.282***	5.98	0.000
BVE	0.003	0.05	0.962	0.061	0.57	0.570	-0.067	-0.59	0.554	0.043	0.47	0.641
EPS*SST										2.116	1.43	0.153
CSH*SST										-0.906	-0.95	0.341
BVE*SST										-0.087	-0.72	0.469
Constant	0.395***	5.09	0.000	0.318**	2.46	0.014	0.470***	4.19	0.000	0.407***	4.74	0.000
Observations	1245			498			498			996		
R-Squared	0.683			0.667			0.704			0.685		
F-test	182.097***			55.230***			116.075***			84.598***		
Prob > F	0.000			0.000			0.000			0.000		

Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 8 Yearly OLS regression results

Variables	2015			2016			2017		
	Coef.	t-value	p-value	Coef.	t-value	p-value	Coef.	t-value	p-value
EPS	4.591***	3.03	0.003	4.060***	3.11	0.002	7.495***	5.05	0.000
CSH	2.432**	2.49	0.013	3.269***	3.89	0.000	1.671*	1.79	0.074
BVE	0.296**	2.01	0.045	0.273*	1.90	0.059	0.280	1.57	0.117
FSIZE	0.093	0.77	0.441	0.028	0.24	0.812	0.062	0.51	0.613
FAGE	0.688***	3.10	0.002	0.860***	4.21	0.000	0.650***	2.72	0.007
LEV	-0.019	-0.03	0.973	0.151	0.28	0.776	0.635	1.02	0.307
BIG4	0.114	0.60	0.552	0.270	1.46	0.145	0.260	1.30	0.194
MTBV	0.605***	4.32	0.000	0.489***	4.92	0.000	0.429***	3.93	0.000
Constant	-3.444**	-2.35	0.020	-3.179**	-2.29	0.023	-3.27**	-2.13	0.034
Year & Industry	Yes			Yes			Yes		
Observations	249			249			249		
R-Squared	0.746			0.784			0.764		
F-test	17.656***			27.548***			21.735***		
Prob > F	0.000			0.000			0.000		

Note: *** p<0.01, ** p<0.05, * p<0.1.

Table 8 Cont.

Variables	2018			2019		
	Coef.	t-value	p-value	Coef.	t-value	p-value
EPS	4.591***	3.03	7.254***	5.07	0.000	6.843***
CSH	2.432**	2.49	2.794***	2.69	0.008	2.149***
BVE	0.296**	2.01	0.157	0.84	0.399	0.128
FSIZE	0.093	0.77	-0.028	-0.26	0.794	-0.077
FAGE	0.688***	3.10	1.038***	4.32	0.000	0.822***
LEV	-0.019	-0.03	0.070	0.11	0.915	-0.066
BIG4	0.114	0.60	0.086	0.45	0.651	0.053
MTBV	0.605***	4.32	0.351***	3.91	0.000	0.409***
Constant	-3.444**	-2.35	-2.957*	-1.96	0.051	-1.632
Year & Industry	Yes			Yes		
Observations	249			249		
R-Squared	0.746			0.758		
F-test	17.656***			21.337***		
Prob > F	0.000			0.000		

Note: *** p<0.01, ** p<0.05, * p<0.1.

CONCLUSION

The indirect tax law and the transition from GST to SST may have had direct or indirect impact on operating performance, which could have influenced earnings, operating cash flows and book value of equity of firms. For investors, accounting information is crucial for their investment decision-making. Hence, it is vital to investigate whether or not investors still found operating performance as value relevant information during the GST and SST indirect tax periods. Thus, this study examined the value relevance of operating performance (EPS, CSH and BVE) during the combined and separate indirect tax periods.

Based on the value relevance data from 2015 to 2019, we found that the operating performance (EPS, CSH and BVE) was value relevant information for investors during both indirect tax periods. The theoretical implication of this study enriched the literature of value relevance studies with the application of the Ohlson (1995) value relevance model, the operating performance (EPS, CSH, BVE) or the accounting information has the explanatory power (Mirza et al., 2019; Nijam and Jahfer, 2018; Purswani and Patnaik, 2017; Tanaka, 2015) for the investors' perceptions on the firm performance and position during the GST and SST tax periods. When different indirect tax periods were analysed, it is found that EPS and CSH are the two-value relevant operating performance factors used by the investors during the GST and SST indirect tax periods. Further, the explanatory power for EPS increased during SST compared to the GST period. In sum, from the main and the robustness analyses outcomes, EPS and CSH had good predictive power of being value relevant to investors during the indirect tax periods.

For practical implications, the results of the study will be valuable for firms, investors and regulators to see how the impacts of value relevant information during the GST and SST indirect tax periods. Therefore, the value relevance of operating performance indicates investors' confidence and protection for appropriate investment decision-making from the relevant accounting statements prepared during the indirect tax periods. This will be valuable information to regulators that operating performance had effective predictive power of being value relevant to investors during GST and SST indirect tax periods. The investors relied on the operating performance for valuation purposes during the indirect tax periods. Therefore, the operating performance is value relevant information to investors. Generally, during indirect tax implementation firms needed to be more diligent on implementing policy and procedures to avoid negative consequences to operating performance as to avoid any unfavourable reactions from investors.

The limitation of this study is that it only used EPS, CSH and BVE as the operating performance proxies for the value relevance of accounting information. This study recommends future studies to incorporate other accounting information measurements to represent the value relevance of accounting information, for example return on assets (ROA), return on equity (ROE) and dividends per share.

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