

Uncovering Toshiba's Fraudulent Financial Statements: An Audit Perspective

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I. Introduction

Comprehensive analysis of fraudulent financial reporting by Committee of Sponsoring Organizations (Henceforth, COSO) (1999: 2010) has highlighted the increase of fraud in terms of magnitude and extent of the occurrence and repercussion of such fraud to the affected organizations, their people, shareholders and the global economy. Auditors are faced with continuous and significant challenges posed by their clients, watchdog organizations, and the regulators due to their failure in detecting fraud and the issuance of unqualified audit opinions, including audit opinions from the Big Six/Four audit firms (COSO 2010).

Toshiba is just another example of fraud companies in Japan. As Japan is the world's third biggest economy and home to some of the biggest multinational companies in the world, the accounting scandals involving major Japanese companies such as Kanebo, Livedoor, Olympus, Daio Seishi, and Toshiba are of concern. Toshiba, for instance, has a proud history of more than 140 years and was well known for its brands, both in the home and abroad, but was tainted by shocking revelations of its fraud and was removed from the Dow Jones Sustainability World Index on August 3, 2015. Many have questioned its corporate culture and the reliability of the audit being performed by the independent auditor, Ernst and Young ShinNihon LLC.

Recent studies have examined how the fraud could have been detected using various forensic tools, including Benford's Law digital analysis (DA). Benford's Law (Benford 1938) postulates that in many classes of data, the digits of the numbers are distributed in a predictable pattern (see Table 1). BL has been used in detecting accounting data anomalies (e.g., Carslaw 1988; Nigrini 1999, 2005, 2015; Johnson and Weggenmann 2013; Verbruggen and Christiaens 2012; Barjaktarović, Milojević and Terzić 2014; Mehta and Bhavani 2017). DA is insensitive to the magnitude of error, independent of the numbers' relationship to other data, and analyses a data stream without regard to the period of the data and the location of the manipulation (Busta and Weinberg 1998: 363). DA works well with financial data expressed in different currencies (Nigrini 1999). Amiram, Bozanic and Rouen (2015) demonstrated that financial statements without error are distributed according to BL across industries and years.

Earlier studies such as Coglitore and Berryman (1988), Nigrini and Mittermaier (1997), and Ashcroft, Bae and Norvell (2002) have all suggested the use of DA as part of analytical procedures by the auditors. Auditors have been relying on trend and ratio analysis. According to Ashcroft, *et al.*, (2002), digital analysis enables the auditor to employ cost-effective tools for selecting and analysing audit evidence amidst increasing volumes of transactions and greater demand to effectively and efficiently uncover misstatements and fraud by identifying sets of transactions or amounts for further scrutiny. For instance, the first digit test of DA is an initial test of reasonableness, that is, it is used to indicate the year(s) that show signs of having the highest risks of errors or fraud, as the general rule is that if the first digit test was a weak fit to BL, it is a signal that the data set might contain abnormal duplications and abnormalities (Nigrini 2011: 100; Nigrini and Mittermaier 1997). DA is effective as a screening tool of suspicious accounts that warrant further examination (Durtschi, Hillison and Pacini 2004).

Table 1 The expected digit frequencies of Benford's Law

Digit	First Digit	Second Digit	Third Digit	Fourth Digit
0	-	11.968	10.178	10.018
1	30.103	11.389	10.138	10.014
2	17.609	10.882	10.097	10.010
3	12.494	10.433	10.057	10.006
4	9.691	10.031	10.018	10.002
5	7.918	9.668	9.979	9.998
6	6.695	9.337	9.940	9.994
7	5.799	9.035	9.902	9.990
8	5.115	8.757	9.864	9.986
9	<u>4.576</u>	<u>8.500</u>	<u>9.827</u>	<u>9.982</u>
Total	100	100	100	100

Recent studies on Toshiba, such as Hass, Burnaby and Nakashima (2018) and Mehta and Bhavani (2017), have not approached Toshiba from an audit perspective. Mehta and Bhavani (2017: 705) indicate that Toshiba's data set may have had abnormal duplications and anomalies. Using Toshiba as a fraud education case study, it would be fruitful to see how the Benford's Law DA may have been used in an audit context, as an additional tool for analytical procedure.

In this article, Toshiba's 14 years of financial statements, from 2002 to 2015, were analysed using digital and trend analysis on sales, expenses and current assets, with the aim to examine how DA may have been used in an audit context to help detect the fraud. Toshiba announcement its wrongdoings in 2015 and revealed that the fraud started from 2009. As such, this study splits the financial statements into pre-fraud period (2002 to 2008) and during fraud period (2009 to 2015). The American Institute of Certified Public Accountants' Statements on Auditing Standards (hereafter, SAS) No. 56 requires the auditors to perform analytical procedures during the planning and in the overall review of the financial statement, using various methods, including trend analysis. DA was carried out to examine its consistencies with trend analysis results. As suggested by Trompeter, *et al.*, (2013), the possible use of the fraud motivation triangle and the triangle of fraud action (see also Albrecht, *et al.*, 2019) are used to explain the fraud schemes, supported by the context from Toshiba's annual reports and the Independent Investigation Committee (IIC) report. This triangulation offers some perspective on how the fraud may have been concealed from the auditor.

Overall, the article is aimed to provide an understanding of the auditor's responsibilities for detecting fraud (SAS No. 99), which shows that his or her effectiveness at the planning stage could have been fruitful in later stages of the audit to obtain a reasonable assurance that the financial statements are true and fair. This case study highlights the repercussions of an auditor's failure to maintain professional skepticism and a questioning mind to their reputation and the credibility of the services they provide.

II. Toshiba Corporation: its Brief History

Established as Tanaka Seisakusho in July 1875, Toshiba was the first Japanese company to manufacture telegraph equipment. The company became insolvent in 1893, then was taken over by Mitsui Bank and was later known as Shibaura Seisakusho. Mitsui Bank then merged with GE USA in 1910 who had stakes in Tokyo Denki. Consequently, Shibaura and Tokyo Denki merged in 1939 to form Tokyo Shibaura Denki, which became officially known as Toshiba Corporation in 1978. The next two decades marked an aggressive approach by Toshiba in expanding its business through acquisitions of companies, including companies in the U.S., Brazil and Norway (Toshiba Corporation, 2019).

Toshiba sells a diverse group of offerings from home appliances, computers, cameras to power plants, nuclear reactors and healthcare solutions (Hass, *et al.*, 2018). In 2001, through contract with Orion Electric, Toshiba manufactured and supplied TV and video products to North America. Most notably, in 2006, Toshiba acquired 77% of Westinghouse

Electric Company for \$5.4 billion, which had devastating results for its financial performance and still remains a questionable purchase by the current auditor. Toshiba also made various international acquisitions, including Landis+Gyr in 2011, IBM's point of sale business in 2012 (BBC News 2012) and OCZ Storage Solutions in 2014 to further extend its businesses to surveillance equipment and wireless power receiver (Hruska, 2013).

Toshiba started to experience the adverse consequences of the global financial crisis in 2008 and continued until 2014. The accounting scandal only came to light in February 2015 after the Securities and Exchange Surveillance Commission under the financial watchdog of Financial Services Agency launched a probe into Toshiba's accounting in relation to its infrastructure projects. The shocking scandal of earnings manipulation of more than US\$2 billion revealed company-wide deceits perpetrated by managers and three generations of its top executives. The company overstated profits for its home electrical appliance and power plant equipment business to win new projects after the Great East Japan earthquake in 2011; overstated profits for electronic toll collection and overseas subway projects in 2011; overstated profits in its memory chip, TV and PC businesses in 2012; and overstated profits for its smart meter and overseas electrical substations projects in 2013 (Hass, *et al.*, 2018).

Seeing the gravity of situation, Toshiba decided to set up an in-house investigation committee in April 2015. The scale of irregularities was deeper than the firm could believe, and it handed the investigation over to an Independent Investigation Committee (hereafter, IIC) in May 2015 and said that it would postpone reporting of its 2014 fiscal earnings. The IIC report submitted to Toshiba on 20 July 2015 found a series of inappropriate accounting entries. In the same month, CEO Hisao Tanaka announced his resignation, followed by the president and seven other directors. Questions were raised as to how the fraud managed to escape the independent auditor's annual audits for many years. IIC report did not mention any specific issues in relation to the auditor's application of SAS No. 99, which requires an auditor to look for fraud throughout the entire process, including to critically assess the responses from the reporting entity's management and other evidence to determine the risk or existence of fraudulent misstatements. IIC found that the audits were insufficient, not only because evidence was concealed but also because the matters investigated by the IIC had not been raised by the auditor in their previous audits.

III. Toshiba's Auditors

Ernst and Young ShinNihon LLC is the biggest auditing firm in Japan and had been with Toshiba for over 60 years. They always issued a clean audit opinion on Toshiba's financial statements without ever suspecting that the financial statements were not true and fair. After the accounting scandal became public, the auditor was described as negligent and incompetent (Rahman and Bremer 2017). The audit firm was fined for not spotting accounting irregularities and was issued two punitive actions by the Financial Service Authority (FSA): firstly, suspension from taking new business contracts for three months starting from January 2016 and secondly, the imposition of a US\$17.4 million fine, which was equivalent to two years of auditing fees received from Toshiba (Uranaka and Wada 2015). Its audit staff failed to detect irregularities for eight consecutive years and did not give any guidance to management for improvement and prevention. The FSA discovered that one of the EY ShinNihon accountants spotted abnormal amounts in Toshiba's computer business yet did not pursue the matter or share the information with other team members. Earley, Hoffman and Joe (2008) warn that the auditors are susceptible to biases when interacting with the client's management. Nonetheless, the IIC report indicates that the investigated issues were intentionally perpetrated and carried out in an institutional matter by using methods that were difficult to detect by the auditor (IIC 2015: 73). In Toshiba's case, in some instances the investigation committee realised that the auditor was not provided with adequate explanations, but they themselves did not corroborate further as required by the auditing standards (see SAS No. 99). Toshiba did not sue its old auditor and the Japanese accounting authorities did not press criminal charges against the old auditor; rather, they imposed administrative procedures and fines.

IV. Uncovering Fraud in Toshiba: Analytical Procedures and Digital Analysis

In respect to fraud detection, Trompeter, *et al.*, (2013) proposes an auditor to adhere with SAS No.99/AU section 316 in his or her audit work. This standard requires the auditor to assess the elements of the fraud motivation triangle (Dorminey, Fleming, Kranacher, *et al.*, 2012) to determine the inherent likelihood of management perpetrating fraud. The effectiveness of the anti-fraud measures such as internal controls should be considered as they would limit the opportunity of the fraud to be successful. Auditors also have to consider all possible fraud schemes and the concealment techniques (COSO/ACFE 2016 ; Albrecht, *et al.*, 2019). By using useful analysis tool (such as trend analysis and digital analysis) for analytical procedures (SAS No. 56), an auditor could be able to indicate possible accounts of abnormalities for substantive testing. Armed with the requirements of SAS No. 99, such as professional skepticism, the auditor could increase the likelihood of detecting accounts and transactions suspicious of fraud.

Thus, in order to demonstrate whether digital analysis would add value in addition to the analytical procedures such as trend analysis, the accounts analyzed by the IIC report also are analyzed using digital analysis and compared with trend analysis for comparison purpose. The analytical procedures and digital analysis are briefly explained below.

Analytical procedures (AP) are audit procedures typically performed by the auditors to examine relationships among financial and non-financial information to identify unusual fluctuations and whether account balances are inconsistent with auditor's expectations and understanding of the audit client. The auditors are compelled under SAS No. 56 to perform analytical procedures at the start and towards the final review stage of the audit work. Therefore, if Toshiba's auditors had performed analytical procedures, they might have been alerted to the potential audit risk and the accounts at risk of material misstatements even at the planning stage.

Trend analysis involves a comparison of account balances over time by selecting a base year and then restating all accounts in subsequent years as a percentage of that base (Leung, Coram, Cooper, *et al.*, 2019). Trend analysis of accounts analyzed by DA are shown in Figures 1 to 5. The section on the annual report to the shareholders by the Chairman and President/CEO also was revisited to provide the context of the business, its environment and thus, their justification and explanation for sudden drop/increase in these account balances and possible pressure elements of the fraud motivation triangle, which could have alerted the auditors to red-flags under SAS No. 56 and No. 99. Since the audit opinions in these annual reports were unqualified, we would assume that the auditors were satisfied with the explanations. A clean unqualified opinion is issued by the auditor when the financial statements are presented in conformity with generally accepted accounting principles (SAS No. 1). SAS No. 99 also states that the auditor has a responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud. Therefore, the context from the IIC report, which raised questionable actions by the auditor in the application of these standards and their findings, also are included in the discussion. Trompeter, *et al.*, (2013: 307) say criticism that the auditors' frequent reliance on simple year-to-year comparison could perhaps open up the possibility for digital analysis to be considered.

Digital Analysis (DA). The DA includes the tests of the first digits, second digits and first two digits (Nigrini 2011). As explained by Nigrini and Mittermaier (1997: 58), "The first digit test is an initial test of reasonableness, to flag abnormal duplications and an audit of all amounts with a specified first digit would result in a large audit sample". As such, first digit test of DA has the potential to help auditors to identify accounts at risk of material misstatements at audit planning stage. Therefore, audit risk can be reduced by concentrating audit effort where the risk of material misstatement is greatest. Mehta and Bhavani (2017) use the first digit test on Toshiba's overall financial statement data. However, Toshiba management's motivation to manipulate accounts might be different, depending on the time preceding to or during the fraud period. Also, the motivation to overstate or understate specific accounts would depend on the nature of the accounts, such as whether they are asset or liability accounts and thus should be analysed separately.

Skousen, Guan and Wetzel (2004) find that first digit of earning numbers is often emphasised by Japanese management. The first digit test also shows the direction of the rounding manipulation, upward or downward, depending on the underlying motivation (Carslaw 1998; Thomas 1989; Kinnunen and Koskela 2003; Skousen, *et al.*, 2004). For instance, the upward manipulation is usually related to overstatement of assets, sales and profitability. In this case, digits 1 and 5 would be used more frequently to make the account balances appear larger than they really are. These account balances would be rounded, for example, up to \$500,000 instead of \$498,000 or \$100,000 instead of \$97,000, an indication of upward manipulation (to a higher amount). In contrast, for other expenses and liabilities balances, in order to show a lower amount of liabilities, a \$500,000 long-term liability might be reported as \$498,000 instead, indicating a downward manipulation (to a lower amount) indicated by frequent use of digit 4 or 9 or both. The extent of the manipulation is indicated by a percentage unit deviation (PUD), which can be statistically significant, positive or negative (Kinnunen and Koskela 2003). A positive PUD shows an actual percentage of a digit frequency is higher than predicted by Benford's Law distribution. Following Thomas (1989) and Skousen, *et al.*, (2004), the magnitudes of the observed PUDs are used for inter-sample comparison, reported along with its associated z-statistic.

The following sections discuss the results of the trend and DA for revenues, expenses and current assets. Relevant information from the annual reports is incorporated to indicate possible pressures (motivation for fraud) and then verified by the findings of the IIC in its report.

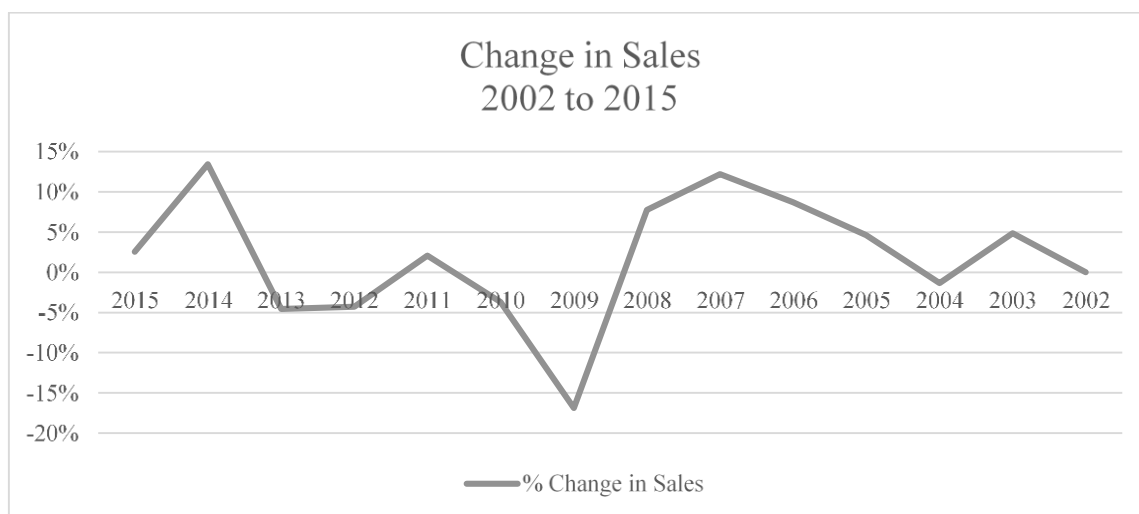
Sales – Trend and Digital Analysis

Pre-Fraud Period

Figure 1 shows that after the sudden drop in 2004, the percentage of change in sales increased significantly thereafter. In its Annual Report 2004 (p.3), the Toshiba's Director, President and Chief Executive Officer (CEO) reports that "the

net sales had declined 1% but the operating income surged by 51% as compared to previous year” (Toshiba Ltd 2004). Figure 2 shows that despite the decline in net sales, the operating income made a massive recovery, an increase by 173% in 2004 after its sharp decline in 2003 by 114%. Mr. Okamura, the CEO, reported that in fiscal year 2004, the deflation in the domestic economy and the impact of the war in Iraq were of concern but he gave assurance that sales would rise approximately 2% year on year (Toshiba Ltd. 2004: 3). This assurance unavoidably created pressure for the top executives to prove their sales performance. In fact, as shown in Figure 1, after the decline in 2004, the sales increased by 4.6% in 2005, 8.7% in 2006 and 12.2% in 2007, which was an increase of more than 4% each year before it fell by 7.8% in 2008.¹ The continuing increasing trend might not have red-flagged the auditors when performing analytical procedures as per SAS No. 56; instead, it could have been treated as ‘business as usual’ but the steady increase in percentage seemed to be too smooth and the constant 4% increase from the forecasted 2% would require further validation. The pressure to achieve what had been set out would have alerted the auditors to the motivation element of the fraud triangle elements (Trompeter, *et al.*, 2013; Albrecht, *et al.*, 2019).

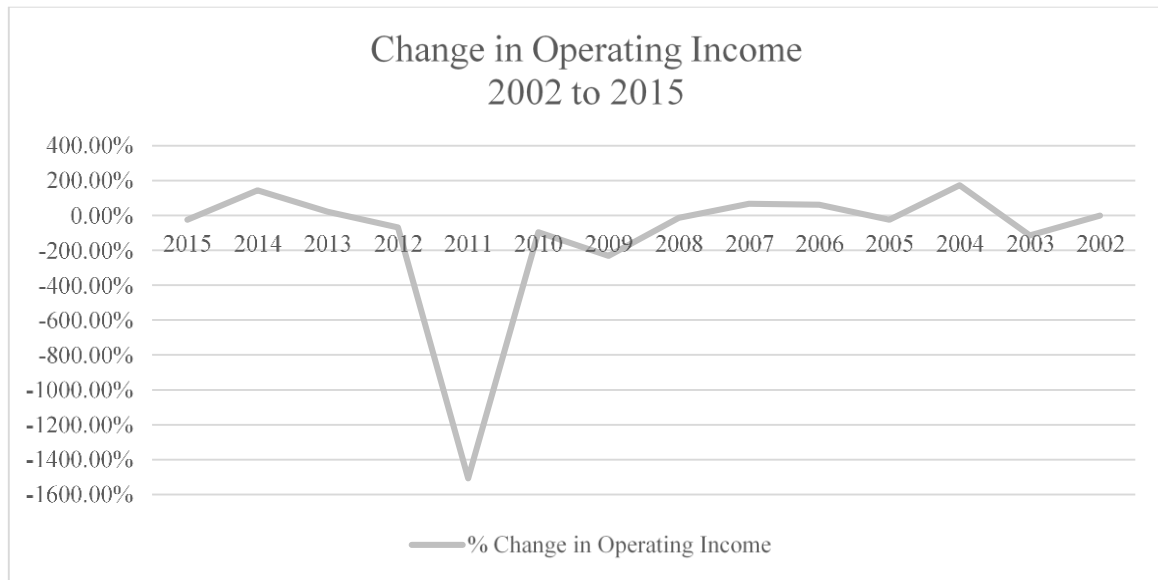
Figure 1 Change in Sales 2002 to 2015



In the 2007 Annual Report, both the Chairman, Mr. Okamura, and Mr. Nishida, the Director, President and CEO at Toshiba jointly reported to the shareholders that they aimed to achieve net sales of 9,500 billion yen and operating income of 480 billion yen by the end of fiscal year 2010 (Toshiba Ltd. 2007). However, in the following year 2008, though the net sales increased by 7.75%, the operating income was reduced by 14.37% (see Figure 1, Figure 2).

¹ Years prior to 2008 were not included in the investigation of the Independent Investigation Committee.

Figure 2 Change in operating income 2002 to 2015



Both Mr. Okamura and Mr. Nishida admitted in their 2008 annual report (p.12) that the consolidated operating income and consolidated net income had decreased by 20 billion yen (Toshiba Ltd. 2008). The top executives also disclosed that, "...Goals for the final year of the plan include achieving consolidated net sales of 10 trillion yen with consolidated operating income of 500 billion yen...". Despite the failure to meet the previous target, this statement revealed even greater targets to be achieved, thus greater pressure. The new targets and the failure in meeting the other targets in the past might have put further pressures on the top executives, and this knowledge would normally caution the auditors when performing audits the next year. SAS No. 99 requires auditors to obtain information to identify risks that may result in a material misstatement by probing the management and others within the entity and considering the results of the analytical procedures.

Since Toshiba admitted they had been committing fraud from 2009, it is assumed that (if really) there would be no fraud during the pre-fraud period, that is, in the absence of any manipulation, the sales numbers² are expected to closely conform to Benford's Law distribution. If this situation were the case, then digits 1 and 5 would not be used more frequently than the other digits to make the account balances to appear bigger than they should be. However, as can be seen from Table 2, digit 5 appears to be used more frequently than expected and is significant at 1% level, deviated by +21% from the Benford's Law prediction. Table 2 also confirms that there is less tendency to use digits 4 and 9, which are typically used to report smaller account balances. The results could have cautioned the auditor that the account balances would require additional inspection as it seemed that the misstatement could have been started much earlier (see Perols and Lougee 2011).

² DA on operating income was not performed because it has less than 20 observations for both pre-fraud and during fraud periods.

Table 2 First digit's PUD and z-statistics for revenue-related income statement items pre- and during-fraud periods

<i>Sales and Other Income</i>				
	Pre-fraud (2002-8)		Fraud Period (2009-15)	
Digit	%	Z	%	z
1	-0.02	0.153	-0.02	0.153
4	-0.05	0.395	-0.10	1.132
5	+0.21	3.101***	+0.02	0.273
9	-0.05	0.481	-0.05	0.481

% = Percentage Unit Deviation; z = z statistic; 1.645 significant at 10%*; 1.96 significant at 5%**; 2.57 significant at 1%***

As revealed by the IIC report (2015: 17 – 18), the total sales and pre-tax income were overstated by 4 and 28.2 billion yen, respectively. Though the trend analysis of 2002 to 2008 showed significant changes as shown in Figure 1 and Figure 2, the auditor could still have been alerted by the constant pressures faced by the top executives, and the continuous assurance that they had to give to the shareholders to convince them that Toshiba would be able to meet the targets as reported in the annual reports. Thus, in this scenario, the DA results show that DA has the potential to indicate possible manipulation even when the trend analysis does not indicate manipulation.

Fraud Period

Figure 1 shows that the sales amounts plunged by 16.89% in 2009. In 2009 Mr. Sasaki succeeded Mr. Nishida as the new President and CEO. On p.3 of the 2009 annual report, the condition of the world economy and the decline in semiconductor prices were blamed for the severe financial results (Toshiba Ltd. 2009). These unavoidable circumstances heightened the pressure to turn the business performance around. The auditor should have been alerted to the signs of management attitudes or rationalisation, which may have provided how important it was to achieve earning targets than to report a representational faithfulness of the results (Leung, *et al.*, 2019). Indeed, the sales amounts made a dramatic improvement in the subsequent year in 2010 but they still did not manage to achieve what they had targeted in 2007. As can be seen in Figure 1, the sales increased by 2.06% in 2011 before they dropped again in 2012 and 2013. The operating income declined by 232% in 2009, further declined by 95% in 2010 and was reduced further by 1,506.95% in 2011.

The auditor is required to have a discussion with the management about significant adverse events or conditions to determine whether they constitute a material uncertainty (Leung, *et al.*, 2019; SAS No. 99). Surely the continuances of decline in financial performance could have been a major concern to the auditor. In the 2012 annual report, it was reported that yen appreciation, economic slowdowns in the United States and Europe, the Great East Japan earthquake and the floods in Thailand had impacted the sale results and there were plans for business structuring and transformation (Toshiba Ltd. 2012 : 3).

Further deterioration of financial performance in 2013 saw the President and the management team being replaced in 2013 (Toshiba Ltd. 2013). A high turnover of key employees, in this case, the top executives, could point to the possibility that fraud may have occurred (Leung, *et al.*, 2019). The pressure then shifted to the new top executives to prove their credibility in making a major overhaul of the business and improve the financial statistics. Interestingly,

soon after they took over the business, the sales and operating income dramatically improved in 2014 by 13.5% and 143.35% respectively (see Figure 1 and Figure 2).

It is observed that during the fraud period, the sales plunged in 2009 and 2012 but the trend analysis showed a growing trend the very next year and made a positive recovery within just two years (see Figure 1). Based on this trend analysis, the auditor might have noticed this symptom more and carried out further audit procedures to confirm its reasonableness. The sales slightly declined in 2015 when the announcement was made that Toshiba had been fraudulently issuing financial statements since 2009.

In terms of DA, during the fraud period, digit 5 still appears more frequently but is not significant (see Table 2). These findings support the notion that management decided to continue altering sales numbers (Henselmann, Scherr and Ditter 2013; Davydov and Swidler 2016) since the pre-fraud period. This situation is more common among Japanese managers as rounding up revenue numbers is perceived as much safer than manipulating the earning numbers, which involves many accrual items (He and Guan 2014). The DA analysis for this fraud period shows a PUD of +36%, which is an increase of 15% from the pre-fraud period PUD. In this situation, both the trend and digital analysis indicate the possibility of sales numbers had been manipulated, which would have been noticed by the auditor.

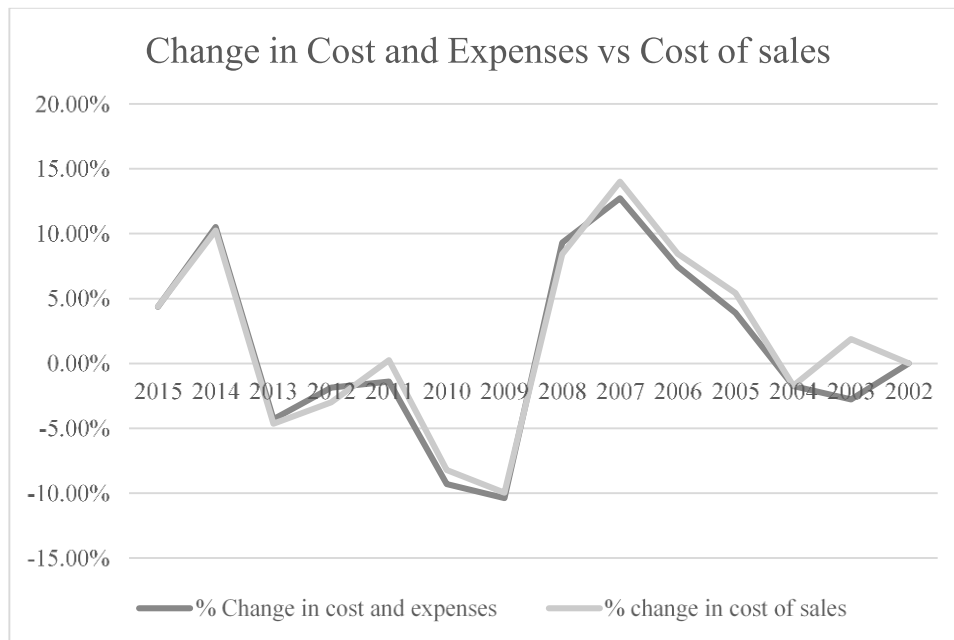
During the fraud period, the IIC report (2015: 8) reveals that Toshiba had overstated its sales by 10.5 billion yen and its pre-tax income by 123.6 billion yen. The trend analysis, the pressure faced by Toshiba in meeting its targets, the replacement of the President and top executives, unfavourable economic conditions and the DA results all indicated that fraud could possibly be perpetrated. Even if the auditor had only previous two years of data available, similar indication would direct the auditor to redesign the audit strategy to allow for more substantive audit procedures to be performed on sales accounts for example, reviewing the reconciliation of the sub-ledger to the general ledger, testing the cutoff of sales etc., by looking at supporting documents before and after year-end, and examine unusual last-minute adjustments that significantly improved the subsequent financial results (Albrecht, *et al.*, 2019). As required by SAS No. 99, “the auditor should ordinarily presume that there is a risk of material misstatement due to fraud relating to revenue recognition”. Thus, both trend and DA results support the revelation made by the IIC.

Expenses – Trend and Digital Analysis

Pre-Fraud Period

Figure 3 shows an upward trend for cost and expenses from 2002 with its peak in 2007 and slight decline by 9.32% in 2008. The pattern mirrored the changes in cost of sales during the same period. The 2008 annual report highlights that the then President explains to the shareholders that the cost incurred in withdrawing from the HD DVD business and costs resulting from the change in accounting for estimation of salvage value caused the negative impact on Toshiba’s performance (Toshiba Ltd. 2008 : 14). The complex nature of the transactions and the implications thereof could be an indicator for misstatement due to fraud or error (Leung, *et al.*, 2019; Albrecht, *et al.*, 2019) and therefore could be of concern to the auditor.

Figure 3 Change in cost and expenses



In terms of DA of expenses, digits 4 and 9 are expected to be used more frequently to indicate smaller amounts of expenses (e.g., 199,999) instead of 200,000. However, Table 3 shows that digits 1 and 5 were used more frequently as the first digits during the pre-fraud period although this result is not statistically significant, similar to Archambault and Archambault (2011). This fact means that contradictory to prediction, Toshiba kept on using the numbers to report larger account balances even for expenses. The rationale for this decision could provide a starting point for an inquiry with the management team. The results from the trend analysis and the knowledge on the complex nature of the change in accounting could have prompted the auditor to increase their substantive testings to confirm and validate audit assertions in relation to cost and expenses. As asserted by Perols and Lougee (2011), fraud firms are more likely to have managed earnings in previous years, as in the pre-fraud period, so as to be consistent with the manipulated sales numbers.

Table 3 First digit's PUD and z-statistics for expenses-related income statement items pre- and during the fraud periods

Digit	<i>Expenses</i>			
	Pre-fraud (2002-8)		Fraud period (2009-15)	
	%	Z	%	Z
1	+0.02	0.029	+0.20	2.089**
4	+0.08	1.141	+0.12	1.780
5	+0.06	0.898	-0.04	0.502
9	+0.03	0.198	-0.05	0.707

% = Percentage Unit Deviation; z = z statistic; 1.645 significant at 10%*; 1.96 significant at 5%**; 2.57 significant at 1%***

Fraud Period

In 2009, the President was replaced and in its report to the shareholders, both the Chairman and the new President and CEO announced a new “Action Programs to improve Profitability... transforming Toshiba Group into a Group with a strong profitable business structure, one that can generate profit in FY 2009 even if the level of sales is not expanding...” (Toshiba Ltd. 2009 : 3). This statement alone could have prompted the auditor, prior to signing the audit report, to have a discussion with the new management team on how the Group planned to generate profits without relying on sales. Based on the auditor’s knowledge on the client’s business, SAS No. 99 requires him or her to identify risks that may result in a material misstatement due to fraud as one possible mechanism would be to reduce the costs significantly. Indeed, Figure 3 shows a significant decline of expenses in 2009. Since then, the costs on average kept on increasing, especially in 2014, before reducing by 4.36% and 4.38% in 2015.

Amiram, *et al.*, (2015) offer one possible explanation for the increasing trend. They note that a firm is likely to adjust the cost of goods sold and tax expense as a result of manipulating and sales numbers to be consistent with the misleading representation (Johnson, Grazioli and Jamal 1993: 472). This adjustment is also consistent with the DA results. Table 3 shows that during the fraud period, the PUD of digit 1 is significant at 5% level and is 20% higher than expected. Both trend and DA results might prompt the auditor to make further inquiry into operating expenses such as interview of the client personnel and look for supporting documents. The auditor must be alerted to symptoms such as unauthorized cost of goods sold-related transactions, missing documents, and unusual discrepancies between the entity’s cost of goods sold records and corroborative evidence (Albrecht, *et al.*, 2019). The auditor also needs to determine the extent of time to be spent on testing the client’s related internal controls and conducting detailed testing of the related transactions and the account balances.

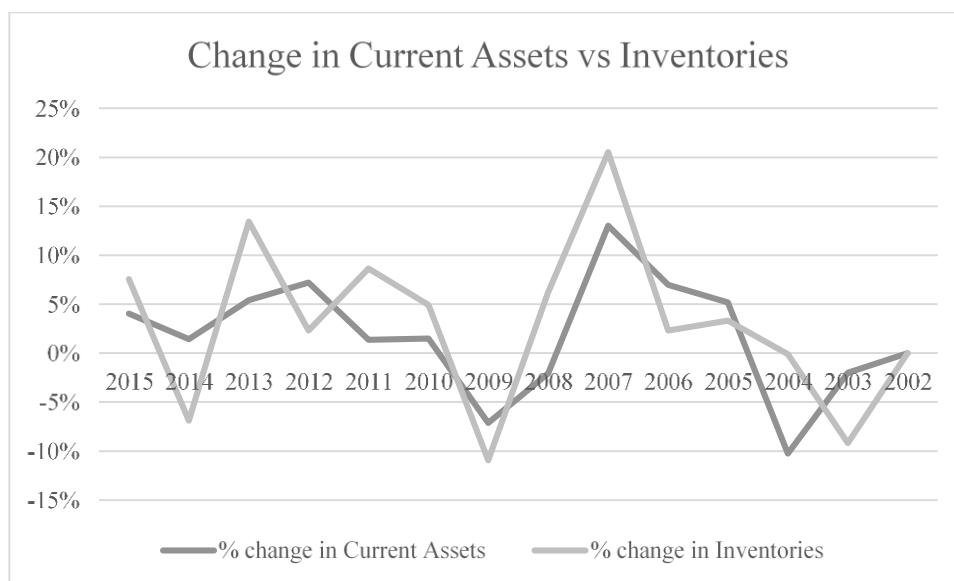
The IIC report (2015, p.18) reveals that the operating expenses were overstated by 10.9 billion yen in total. This overstatement is a cumulated effect of various fraudulent methods used by Toshiba, including the early recording of cost reduction, but delayed the timing of recording of the operating expenses (IIC, 2015, p.43–44). Thus, the results from the trend and digital analysis are supported by the findings of the Independent Investigation Committee.

Current Assets – Trend and Digital Analysis

In general, the trends of current assets and inventories show similar patterns for both periods: pre-fraud and during the fraud period (see Figure 4). There are no obvious unusual movements and variations if compared with the current assets.

Thus, it cannot be inferred whether the inventories (one of the items subjected to investigation) were overstated or not from the trend analysis alone.

Figure 4 Change in Current Assets vs Inventories



In terms of DA, Table 4 shows that during the pre-fraud period, digit 5 PUD is significant at the 5% level, and during the fraud period, digit 1 was used 17% more than expected and is significant. Both usages of digits 1 and 5 indicate the tendency of Toshiba to make the inventories amounts to appear larger than they should be, in both pre-fraud and during the fraud periods.

Table 4 First digit's PUD and z-statistics for current assets pre-fraud and during the fraud periods

Digit	Total Current Assets			
	Pre-fraud (2002-8)		Fraud period (2009-15)	
	%	z	%	Z
1	+0.03	0.331	+0.17	2.413**
4	-0.10	2.026**	+0.03	0.363
5	-0.08	1.764**	-0.06	1.259
9	+0.02	0.210	-0.03	0.507

% = Percentage Unit Deviation; z = z statistic; 1.645 significant at 10%*; 1.96 significant at 5%**; 2.57 significant at 1%***

Though the trend analysis does not indicate any sign that the inventories had been overstated or otherwise, the DA results are able to indicate to the auditor that the inventories should be examined. The two key assertions for inventory are existence, and valuation and allocation. It is critical to determine that slow-moving, damaged or obsolete items are not included. Since the DA results red-flag the possibility of overstatement, the auditor had to consider all possible frauds in relation to inventory, which include channel stuffing, related-party transactions and bill-and-hold sales (COSO/ACFE 2016). The common audit procedures include obtaining cutoff information, including the number of the last shipping and receiving documents on the date of the physical inventory count, and examining a sample of receiving and shipping documents several days before and after year-end (Leung, *et al.*, 2019; Albrecht, *et al.*, 2019). According to Albrecht, *et al.*, (2019), auditors must look for symptoms such as reported inventory balances that appear too high or are increasing too fast, unsupported or unauthorised inventory transactions, and missing documents that are related to inventory. The IIC report (2015: 17–18) reveals that Toshiba had indeed overstated its semi-conductor inventory by 36 billion yen by using various fraudulent methods, including channel stuffing and overstating its low-moving semi-conductor inventory.

Summary. Based on the simple analysis above, both trend and digital analysis have the potential to complement each other if performed as part of the analytical procedures during planning stage to red-flag the auditor to accounts that are potentially at risk of material misstatement due to fraud (SAS No. 99), supported by his or her knowledge of the client's business, fraud motivation triangle and possible concealment. The process, which is aimed to reduce the audit risk to an acceptable level, involves the application of professional judgement on the types of risk that may exist, the significance of the risk (magnitude), the likelihood of the risk to result in a material misstatement of the financial statements, and pervasiveness of the risk (COSO/ACFE 2016; SAS No. 99; Leung, *et al.*, 2019).

V. Key Fraud Schemes

In planning a deception, the management, as decision-maker, would have been strategic in deciding what is to be hidden and what is to be shown in the financial statements (Trompeter, *et al.*, 2013). Albrecht, *et al.*, (2019) have introduced the fraud element triangle in addition to the fraud motivation triangle. The former focuses on perceived pressures, perceived opportunities or rationalisations, while the latter emphasises investigative methods of theft act, concealment

and conversion. According to SAS No. 99, fraud can be difficult to detect because it often involves concealment through falsification of documents or collusion among management, employees or third parties.

Concealment involves finding methods to hide the fraud from auditors (Trompeter, *et al.*, 2013: 302). In assessing the risk of fraudulent financial reporting, COSO/ACFE (2016) suggests the risks that should be considered include inappropriately reported revenues, expenses, balance sheet amounts, and inappropriately exaggerated or omitted disclosures. Based on the trend analysis and DA results (discussed previously), this section focuses on the fraud schemes and how they were concealed from the auditor as reported by the IIC in its report, in relation to revenues, expenses and current assets balances. The discussion also relates to other similar fraud cases.

Revenue Fraud Schemes – Fictitious Revenues and Premature Recognition of Revenues

Revenues are one of the accounts that are most commonly manipulated (Crumbly, *et al.*, 2019; COSO 2010; Brennan and McGrath 2008; COSO 1999). For example, when ZZZZ Best collapsed in 1987, investigators found that most of the purported revenues were fictitious (Clikeman 2020: 7). In McKesson HBOC, the revenues were overstated by \$327 million through side letters, backdating and advanced recognition of future sales. In Toshiba, the trend and digital analysis give some indication that sales had been on increasing trends and, if declined, were quick to recover in the next couple of years (see Figure 1, Figure 2, Table 2). The IIC revealed that Toshiba had in fact overstated its sales near to 15 billion yen through schemes such as fictitious revenues and premature recognition of revenues (IIC, 2015).

According to COSO (2010: 4), improper revenue recognition is among the most common techniques used to fraudulently misstate financial statements. There are many instances, as revealed by the IIC, as to how Toshiba managed to inflate its revenues. For example, during the pre-fraud period the sales managers of Power Systems Company (a Toshiba subsidiary), did not record an increase in material costs so as not to reduce the selling price of a contract worth 54.5 billion yen (IIC 2015: 28). In total, this subsidiary's sales were overstated by 40 billion yen (IIC 2015: 18).

Another method of inflating its revenues is through the channel stuffing of its personal computer business, estimated to be 14.3 billion yen, to overstate profits in 2008 (p. 55). Channel stuffing is a practice that suppliers use to encourage customers to buy the extra inventory to increase current period sales (Albrecht, *et al.*, 2019: 396). Another way of overstating sales was done through an unusual method known as 'carry-over' (C/O) to close the gap between the targeted and actual sales so that the actual sales were equivalent to the targeted sales. This technique was an attempt to conceal the failure of meeting top executives' expectations through the usual sales initiatives, to the extent that sometimes the monthly profits even exceeded the sales for that month (IIC 2015: 55, 68).

Another method was the creation of false contract incomes (IIC 2015: 30, 36) by reclassifying the contract losses as cost reduction measures to report profits instead. In this way, instead of recording the contract losses, the amount was used to reduce the contract costs so that profits could be recorded. Many of the accounting irregularities were recorded prior to closing the financial statement to report on monthly, quarterly, or annual financial performance (Hass, *et al.*, 2018).

In terms of fraud risk indicators, COSO (2009; 2010) reports that top senior executives were frequently involved. The IIC reports that the excessive pressures were created by those charged with governance, corporate culture to conform to the top executives' instructions, and 'challenge' policy where the employees were challenged to meet the overstated budget in excess of corporate capability (IIC 2015: 29, 77). For example, the corporate office threatened a subsidiary, Visual Products Company, with withdrawal from its business unless they met the 'challenges' – the mandated profits and losses.

According to IIC (2015), the corporate culture was such that the employees could not act contrary to the intent of their superiors (p.68). For example, when the sales managers for the Thermal Power Plant Division suggested the recording of a provision for contract losses with the Company President, it was not approved (IIC 2015: 29). The correction to the overstated profit was only allowed by the CEO when there was 'actual' profit being made, thus the subsidiary CFP, Finance and Accounting Division, was unable to exercise its function effectively and continued to tolerate the situation (IIC 2015: 57). Even when one of the audit committee members asked Mr. Shimaoka for a thorough examination of any inappropriate accounting treatment, it was not fulfilled. It was not confirmed whether the auditor requested Toshiba further in this regard. Systematic and institutional involvement of various people, units and departments steered by the top executives made it highly likely that fraud was possible in this account. Thus, the blessing of the top executives seemed to take superiority over the proper recording of accounting treatment. This type of culture was also the driving force for fraud in Sunbeam Corporation subsequent to the appointment of a new CEO known as "Chainsaw" with his known reputation as a ruthless executive (Albrecht, *et al.*, 2019: 392).

This excessive pressure ingrained in Toshiba also was due to overly optimistic messages made by the Chairman and President to the shareholders in the annual reports (e.g., 2009 Annual Report) even after unfavourable financial

performance was reported, especially in 2009. This excessive pressure then passed on to the operating personnel to meet sales targets (COSO 1999; COSO 2010; SAS No. 99; COSO/ACFE 2016). Toshiba had to prove to the shareholders that it was able to sail through difficult and turbulent times imposed by the local and global economic environment. They then had to resort to conceal the deteriorating financial conditions (see COSO 2010: 3). Bristol-Myers also inflated its sales and earnings through channel stuffing to create the false appearance that it had met or exceeded its internal sales and earnings target (SEC 2004). Similar reasons can be identified in the case of Sunbeam Corp in 2001 when it induced its customers to place orders they could cancel (Clikeman 2020; Crumbley, et al., 2019: 3-9). In Cendant Corporation, what started as a small fraud quickly grew into a large fraud (Albrecht, et al., 2019: 392). Therefore, in view of the analysis and fraud risk indicators, it could be assumed that the likelihood of fraud was quite significant (COSO/ACFE 2016; COSO 1999; 2010).

Expenses

Expenses were typically understated in fraudulent financial statements. For example, in 1998, Waste Management Inc. restated its 1992 to 1997 earnings by \$1.7 billion by pushing down and foregoing expenses. When revenues were not increasing as fast as they should have been, the management avoided recording depreciation expenses by assigning and inflating salvage values and extending the useful lives of the garbage trucks they owned. In the Worldcom case, line cost of \$3.8 billion had been capitalised instead of recording the costs as operating expenses (Clikeman 2020: 9).

In Toshiba's case, the IIC reported that Toshiba requested its vendors to delay the issuance of invoices until the next quarter (IIC 2015: 437). By delaying the recording of payables, this fraud scheme was intended to misrepresent current period expenses but would only be possible with collusion with third parties. In Japanese subsidiaries alone, 800 million yen were misstated in relation to deferred invoices, the recording of operating expenses using amounts under negotiation. A further 100 million yen were due to unrecorded operating expenses due to delayed arrival of invoices (IIC 2015: 60).

Management failure to correct known significant deficiency on a timely basis and promoting inappropriate means are detrimental to the truth and fairness of the financial statements. According to Trompeter, et al., (2013: 297), unethical management are not likely to reform; in fact, they become repeat offenders. The top executives' position and the practice of the 'culture to conform' made it easier for the internal controls to be circumvented.

The IIC report (2015: 67) mentions that the inappropriate accounting treatment was carried out continuously and systematically in several companies simultaneously, so correcting such situation was practically impossible. Another way of reducing the expenses is using the costs of manufactured goods. They were reported to have been reduced on the final day of the quarter, causing it to become negative and produce a larger gross profit number (IIC 2015: 58). Mathematically speaking, the subtraction of the negative Cost of goods manufactured (COGM) from the gross profit would improve the profit instead of reducing it. This fraud schemes are quite uncommon. Nonetheless, it is a deliberate intention to elicit a misrepresentation of the gross profit to be consistent with the inflated sales. As a result of the transaction, the balance of buy-sell profit recorded was estimated to reach 65.4 billion yen when Mr. Sasaki, the President, resigned as CEO and continued even after Mr. Tanaka took over (IIC 2015: 55).

Expenses and liabilities are typically understated (COSO 1999; COSO 2010) by not recording them at all, under-recording them or recording them too late (Albrecht, et al., 2019) but would become large in later periods. Retrospective review of similar judgements and assumptions applied in any prior period might imply the reasonableness of current period estimates (SAS No. 99; SAS No. 56; Leung, et al., 2019).

In terms of expenses, altogether, the economic conditions, collusion with the third party and domineering top executives in Toshiba cause the internal control components to become weak and ineffective and thus, the likelihood of fraud occurrence was very high (COSO/ACFE 2016; SAS No. 99).

Current Assets (Inventories)

Overstating asset is a common method to misstate financial statements (COSO 1999; COSO 2010; Albrecht, et al., 2019; Crumbley, et al., 2019). COSO (2010: 17) reports that "51% of the 347 fraud companies overstated assets primarily by overvaluing existing assets or capitalizing items that should have been expensed". Such fraud was perpetrated by McKesson and Robbins, Phar-Mor and Rite Aid Corporation. In the case of McKesson and Robbins, \$87 million of reported assets included \$10 million of non-existent inventory and \$9 million of fictitious receivables by forging sales invoices, shipping documents and inventory records (Clikeman 2020). In 2003, Parmalat admitted to overstating its cash balance by £3.95 billion in 2003 and in 2015, Satyam overstated 94% of its cash balances amounting to nearly \$1 billion (Clikeman 2020).

As compared to revenue fraud, it is much more difficult to stop inventory fraud because the overstatement of ending inventory in one period would make the beginning inventory in the next period overstated and the net income to be

understated (Albrecht, *et al.*, 2019). In 2014 (fraud period), the IIC reports that the pre-tax income had been overstated by 360 billion yen due to its semiconductor inventory. For instance, one subsidiary did not devalue its slow-moving manufacturing inventory, which had no prospects to be sold (IIC 2015: 62). This real-activities manipulation involves physical assets (Tang, Eller and Wier 2016) and the aim is to inconclusively point to fraud manipulation of the revenues (Johnson, *et al.*, 1993). In this case, physical assets also were used as apparatus to create an impression that Toshiba was selling well and would continue to do so, judging from the availability of the assets to meet the customers' demand. The inventory valuation had misstated the pre-tax income by 360 million yen in total (IIC 2015: 17).

VI. The Discovery of Fraud – Post Investigation

For the deception to succeed, the financial statement information must be harmoniously consistent, and this consistency would require a cautious strategic planning of the part of the management on its 'theatrical ability.'

This tend to continue for multiple periods out of desperation to improve the net income results. In Toshiba's case, officially the fraud lasted for more than seven years, which is longer than the average length of period reported in COSO (2010), 31.4 months and 23.7 months in COSO (1999). Both trend and DA indicate that the fraud could have been much earlier and longer than expected. As emphasised by Hass, *et al.*, (2018: 268), once a company starts to misstate its financial statements it is difficult to stop, especially when the misstatement grows bigger. According to ACFE report to the Nation (2018), frauds that lasted over 60 months are more than 20 times as costly as those that are caught in the first six months. As suggested by Perols and Lougee (2011: 39), firms that manipulate financial statement over multiple years become increasingly likely to use fraud rather than earnings management.

The Securities and Exchange Surveillance Commission of Japan made a recommendation for an administrative monetary penalty payment to be borne by Toshiba for its conduct (Hass, *et al.*, 2018). Toshiba has since had a new Board of Directors and management. However, it would be difficult for Toshiba to reform quickly though the new management have made significant efforts to improve its internal controls and corporate governance structure.

In June 2016, PWC Aarata took over the audit of Toshiba's accounts, but its relationship with PWC also became frosty in 2017 as earnings results were delayed twice without an endorsement from PWC. PWC refused to sign off Toshiba's third-quarter financial statements due to dispute with Toshiba's executive pertaining to \$6.3 billion write-down of its U.S. nuclear business (Westinghouse Electric Company bankruptcy). The Chief Executive, Satoshi Tsunakawa, said there were irreconciled differences with PWC and decided to replace it with a new auditor (Reuters 2017). PWC then issued a qualified opinion on Toshiba's financial results for the year ended March 2017 and an adverse opinion on the firm's internal controls. PWC also issued the same opinion in 2018 but notably, the audit report indicates that the auditor is of the opinion that the internal control's report fairly represents the results of assessment of internal control over financial reporting. The audit reports had saved Toshiba from being delisted.

VII. Summary, Conclusion, and Limitations

This article analyses Toshiba's 14 years of financial statements, from 2002 to 2015, using both digital and trend analysis on sales, expenses and current assets. The aim is to examine whether DA is a useful tool and provides insight into how DA may have been used in an audit context to help detect fraud. Both analyses revealed irregularities in these accounts, even during the pre-fraud period, and DA was able to indicate accounts for further inspection even when the trend analysis showed otherwise.

In terms of motivation, the contexts derived from the annual reports and independent investigation report (2015) indicate that Toshiba's continued emphasis on profitability and assurance to the shareholders of improved financial performance, even when the domestic and global economic environment were unfavourable, had caused immense pressures across the corporation. The domineering top executives persistently demanded the subsidiaries' management to achieve what had been targeted for revenues and profits, known as 'challenges.' These demands were mostly going beyond the subsidiaries' capability, so they had to resort to unusual fraud schemes such as negative cost of goods manufactured to make the gross profit became positive. The top executives were aware of the inappropriate accounting treatments and financial statements misstatements but neither stopped nor gave approval for (correct) adjustments, thus permitting the fraudulent schemes to be perpetrated collectively, simultaneously and systematically by subsidiaries and corporate office. In terms of opportunity, the senior top executives' 'blessing' allowed for the internal control systems to be overridden, making it ineffective.

The fraudulent schemes ranged widely but mainly focused on inflating revenues, inventories and net incomes, the most common accounts to be manipulated in the financial statements. They were all skilfully concealed from the auditor. SAS No. 99 requires auditors to maintain a questioning mind and critically assess the responses from the reporting entity's management and other evidence examined, to determine the risk or existence of fraudulent misstatements that the auditor

should never accept less-than-persuasive evidence based on the assumption that management is honest. Nonetheless, for more than 60 years the same auditor seemed to be satisfied with management's explanation without further corroboration, and unqualified opinion was issued in the audit reports throughout the pre-fraud and during the fraud periods.

Unlike COSO (1999), which suggests that financial statement fraud possibly involved knowledgeable senior executives of financial reporting requirements, Toshiba top management was reported to be otherwise. Specifically, the IIC report states that "the persons who actually carried out the accounting treatment, their business division heads, or company presidents who were the top of the companies did not have sufficient knowledge of accounting standards that are generally accepted as fair and appropriate" (IIC 2015: 69). This problem is reflected in their refusal to approve the recording of provision for contract losses or when making conditions that the adjustment to the overstated profits could only be made if the business had actually made profits.

The IIC recommended the senior management maintain a strict compliance attitude, and have self-awareness of the importance of undertaking appropriate financial reporting, the understanding of the implications for such actions to the credibility, and the reputation of the corporate values formulate a strict corporate ethic as corporate philosophy and reform corporate culture, among other recommendations.

The responsibility of the auditor is to maintain his or her skepticism but, as emphasized by Trompeter, *et al.*, (2013), collusion and management override may mitigate the effectiveness of the fraud triangle assessment. However, SAS No. 99 cautions that "even if specific risks of material misstatement due to fraud are not identified by the auditor, there is a possibility that management override of controls could occur". There are many instances in which the auditor could have been alerted but Hass, *et al.*, (2018) claim that the auditors failed to take notice.

In conclusion, DA has the potential to be included as part of the analytical procedures per SAS No. 56 at the audit planning stage. In this way, abnormal duplications and irregularities could be identified for further scrutiny, especially in cases where trend analysis does not show any irregularities. Consistent with COSO findings, previous research and fraud cases, the motives, opportunity and rationalisation aspects of Toshiba fraud are not surprising. However, the magnitude of the fraud and its systematic and collaborative nature were pervasive. The Toshiba case also highlighted the importance of the 'tone at the top' in directing the moral compass of its employees.

This study is not without its limitations. Firstly, only selected accounts were analysed to be consistent with the aspects covered by the IIC report. Secondly, the selected context incorporated in the analysis might not give the comprehensive review of the circumstances experienced by Toshiba during the period studied. Further, DA can only red-flag and cannot give a specific indication of fraudulent schemes, so the inference derived from the IIC report is at best indirect but not conclusive. Fourthly, the case study nature of the research limits further generalisation to possible fraud in other companies or in other countries. Lastly, the IIC report is limited by scope, which does not allow the study to fully disentangle various factors and fraudulent schemes at play for other accounts to be analysed from an audit perspective. Nonetheless, it is hoped that this study might be able to answer at least two of the questions raised by the public when Toshiba's financial scandal was announced seven years after it was found to have committed fraud: How was the fraud perpetrated? Why was it not detected earlier?

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