

The effect of the lead time for providing financial statements on profitability in Japan

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Abstract

Japanese companies have reduced the number of days between the date of closing accounting period and the date of releasing annual financial statements. Information technology largely contributes to the reduction of the number of days to prepare and release financial statements. Advocates of prompt preparation of financial statements insist that managers could enjoy significant benefits from it: the timeliness of providing financial outcomes for a certain period enables managers to take a quicker action for the next period in a rotation of the Plan-Do-Check-Act cycle. Acceleration of processing accounting information with information technologies, however, may incur additional costs associated with hardware, software, and staff. Using the data of Japanese firms, this paper examines whether providing financial statements in a timely manner results in better financial performance. The findings of this paper indicate that providing financial statements in a timely manner improves firms' financial performance.

Keywords: providing financial statements, lead time, financial performance, empirical research, number of days

1. Introduction

Japanese firms have reduced the number of calendar days between the date of closing accounting period and the date of announcing annual financial statements such as balance sheets and income statements. For instance, it took Japanese firms 53.9 days on average to announce their financial statements after the closing date in 2000; however, it took 40.6 days in 2015, indicating that Japanese firms had improved the timeliness of providing annual earnings reports. Information technology largely contributes to the reduction of the number of days to prepare and release financial statements. During these years, accounting practices have been highly computerized. For example, financial statements of parent companies and those of subsidiaries are consolidated with an accounting software that enables firms not only to release consolidated financial statements in a timely manner but also to manage their businesses promptly.

Advocates of prompt preparation of financial statements insist that firms could enjoy significant benefits from it. From the managerial decision-making point of view, the timeliness of providing financial outcomes enables managers "to make decisions based on up-to-date information and leads to improvements in the use of resources."¹⁾ From the management control point of view, firms that receive their financial outcomes more

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1) Wales Audit Office. <http://www.audit.wales/good-practice/finance/timely-financial-reporting>

promptly can take a quicker action in a rotation of the PDCA (Plan-Do-Check-Act) cycle. In the context of budgetary control, the periodical, say, monthly or quarterly, variance analysis of the budget provides managers with information on the difference between the *ex ante* budgetary targets and the corresponding actual results. Especially when managers are faced with unfavorable variance, managers who receive such information earlier can take remedial actions more quickly so that they can prevent unfavorable variance in the future periods.

Additionally, some companies implement a rolling budget: a budget is continually updated as the most recent budget period is completed (Hansen et al. 2003; Hansen 2011; Henttu-Aho and Järvinen 2013). Adachi and Shinohara (2016) report one of the variations of the rolling budget implemented in Japanese companies: budgetary targets for a month were revised and updated monthly during the fiscal year with targets for the year fixed. According to Adachi and Shinohara (2016), companies implementing this type of rolling budget can periodically revise and update their action plan in response to the recent outcomes of the operation, aiming at achieving the fixed financial targets for the year.²⁾ Managers require variance between the budgetary targets and the actual performances in the rolling budget. Without such information, managers can neither review the financial performance of the past month nor assess the possibility to achieve the monthly targets for the rest of the year. Moreover, managers who receive the variance information in a timely manner can quickly update the monthly operating plans and enhance the possibility to attain the financial targets for the year. It can be expected, therefore, that firms with a shorter lead time for conducting a variance analysis can attain higher financial performance. Shortening the lead time for processing accounting information with information technologies, however, may incur additional costs associated with hardware, software, and staff. These costs incurred should never exceed the benefits.

It remains an open question whether costs associated with information technologies exceed the benefits. Using the Japanese firms' data, I approach this open question by investigating the effect of timeliness of providing financial statements on financial performance such as return on assets, return on sales, and asset turnover.

The rest of this paper is organized as follows. Section 2 develops the regression models to investigate the effect of timeliness of providing financial statements on financial performance. Section 3 explains the institutional background in Japan and the sample for estimating the regression models. Section 4 presents the results of the estimation of regression models. Section 5 shows the robustness of the empirical findings. Section 6 concludes.

2. Empirical model

If providing financial statements in a timely manner exceeds costs for doing it, it can be expected that financial performance will improve. The purpose of this study is to examine the effect of the timeliness of providing financial statements on financial performance. In order to investigate the effect, I develop the following regression models.

$$ROA_{i,t} = \beta_0 + \beta_1 NDAYS_{i,t} + \beta_2 ROA_{i,t-1} + FIRM_i + YEAR_t + \varepsilon_{i,t} \quad (1)$$

2) For instance, Kyocera, a Japanese company, adopts a twelve-month planning horizon from April to March. Financial targets throughout the twelve-month planning horizon or the fiscal year are set to each department in the company. These targets remain unchanged throughout the fiscal year. After a month passes, say, the April period is over, departments have an eleven-month planning horizon that ends March and update the action plan for those eleven months to achieve the fixed financial targets for the fiscal year. A reference is available upon request.

where $ROA_{i,t}$ is return on assets calculated as operating income (OI) divided by total assets at the beginning of fiscal year t . The reason why this paper focuses OI is that it reflects operating activities performed in the PDCA cycle but does not reflect interest that stems from financial activities and taxes. $NDAYS_{i,t}$ is the number of days that firm i takes to issue financial statements of fiscal year t after the date of closing the account period t ; $FIRM_i$ is a firm fixed effect; $YEAR_t$ is a year effect; and $\varepsilon_{i,t}$ is an error term.

I incorporate the lagged dependent variable, namely, $ROA_{i,t-1}$, into this model because incorporating lagged dependent variables mitigates omitted variable problems (Wooldridge, 2013). Additionally, Obinata (2013) reports that earnings persistence is observed in Japanese companies, suggesting the validity of incorporating the lagged dependent variable.³⁾

As is well known, ROA can be decomposed into two factors: one is return on sales (ROS), and the other is asset turnover (ATO).

$$ROA = \frac{OI}{Assets} = \frac{OI}{Sales} \times \frac{Sales}{Assets} = ROS \times ATO$$

Shedding light on both ROS and ATO, I develop Model (2) and Model (3) as follows so that I can examine how the number of days firms take to prepare their financial statements affects firms' ROA. These two models are expected to reveal the reason why ROA fluctuates.

$$ROS_{i,t} = \beta_0 + \beta_1 NDAYS_{i,t} + \beta_2 ROS_{i,t-1} + FIRM_i + YEAR_t + \varepsilon_{i,t} \quad (2)$$

$$ATO_{i,t} = \beta_0 + \beta_1 NDAYS_{i,t} + \beta_2 ATO_{i,t-1} + FIRM_i + YEAR_t + \varepsilon_{i,t} \quad (3)$$

3. Institutional background and sample

Financial reporting practices of listed firms in Japan are governed by both the Stock Exchange Act and the Timely Disclosure Rules.⁴⁾ The Timely Disclosure Rules are built as private rules by the Tokyo Stock Exchange (TSE); on the other hand, the Stock Exchange Act is legislation.⁵⁾ The purpose of the Timely Disclosure Rules is encouraging the listed firms in TSE to disclose the summary of financial outcomes in a timely manner. Although the financial statements made based on the Timely Disclosure Rules are not audited, I collect and use the number of days that listed firms in Japan take to issue their financial statements following the Timely Disclosure Rules. These data are suitable for this study since listed firms in Japan are required to release the financial statements in a timely manner.

I collected data necessary for estimating the regression models from the Nikkei NEEDS FinancialQUEST 2.0 database. The sample consists of all Japanese firms that are listed on any Japanese stock exchange. Listed firms in Japan can follow either Japanese accounting standards, US Generally Accepted Accounting Principles (US GAAP), or International Financial Reporting Standards (IFRS). In order to facilitate comparison, I removed firms following either US GAAP or IFRS from the sample. I did not lose many firm-year observations because the large majority of listed firms followed Japanese accounting standards; for instance, only 72 firms followed either US GAAP or IFRS in 2015. I also excluded banks, insurance firms, and securities firms since they

3) This book is written in Japanese. Reference of this citation is available upon request.

4) For more details, see Kato et al. (2009) and Ota (2006).

5) The Stock Exchange Act requires Listed firms to submit an annual securities report to the Prime Minister within three months after the end of the fiscal year.

followed a different method to recognize revenue. All variables are winsorized at the top and bottom 1% level.

Our sample period begins from 2000 through 2015. In order to estimate the regression models, we require financial data to be available in the current and previous years. The resulting sample for the analyses consists of 32,242 firm-year observations. Table 1 shows the average number of days firms take to issue financial statements by year, and Figure 1 is a graphic representation of Table 1. Table 2 shows the descriptive statistics for the variables with which I estimate the regression models.

Table 1. The average number of days firms take to issue financial statements by year

Fiscal year	mean	S.D.	N
2000	53.9	11.6	1,487
2001	51.9	9.7	1,687
2002	50.1	9.0	1,772
2003	48.9	15.1	1,834
2004	46.7	16.9	1,894
2005	45.8	10.8	1,938
2006	45.2	13.5	2,011
2007	43.7	11.9	2,081
2008	41.3	7.2	2,107
2009	42.2	14.8	2,118
2010	41.4	13.6	2,174
2011	41.9	15.6	2,181
2012	39.6	15.1	2,250
2013	41.3	20.3	2,309
2014	41.3	19.4	2,334
2015	40.6	12.2	2,065
Total	44.3	14.8	32,242

S.D. represents standard deviation.

Table 2. Descriptive statistics of variables

	mean	S.D.	min	max	N
ROA (%)	4.92	5.05	-11.11	23.38	32,242
ROS (%)	5.14	6.19	-16.73	29.10	32,242
ATO	1.135	0.597	0.229	3.552	32,242

All variables in this table are winsorized at the top and bottom 1% level. S.D. represents standard deviation.

4. Empirical results

Table 3 indicates the result of the estimation of Model (1) through Model (3). This table reports the estimation of each model both with and without a control variable, namely, previous year's financial performance. T-statistics reported in Table 3 are based on heteroskedasticity robust standard errors. The coefficient of interest is β_1 . Estimation of Model (1) indicates that β_1 is negative and significant, suggesting that timeliness of providing financial statements improves ROA. ROA can be decomposed into ROS and ATO. Model (2) and Model (3) are the regression models to examine the impact of the timeliness of providing financial statements on ROS and ATO, respectively. Estimation of Model (2) for ROS indicates that β_1 is negative and significant, whereas estimation of Model (3) indicates that β_1 is negative but not significant. I can insist that the timeliness of providing financial statements improves ROS but cannot insist that it improves ATO. These findings imply that the timeliness of providing financial statements heightens ROS and, consequently, ROA improves.

Table 3. Estimation of regression models

	Model (1) ROA		Model (2) ROS		Model (3) ATO	
$\beta_1 NDAYS_{i,t}$	-0.00026*** (-8.54)	-0.00014*** (-5.86)	-0.00032*** (-6.97)	-0.00017*** (-5.26)	-0.00045** (-3.08)	-0.00015 (-1.12)
$\beta_2 ROA_{i,t-1}$		0.49576*** (53.73)				
$\beta_2 ROS_{i,t-1}$				0.48544*** (40.85)		
$\beta_2 ATO_{i,t-1}$						0.58343*** (31.84)
Observations	32,242	32,242	32,248	32,248	32,242	32,242
Firm Dummy	YES	YES	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.058	0.296	0.059	0.284	0.050	0.395

*, **, *** denote significance at $p < 0.05$, < 0.01 , and < 0.001 , respectively.
t-statistics based on heteroskedasticity robust standard errors are in parentheses.

5. Robustness check

As Figure 1 illustrates, the average number of days firms take to issue financial statements had declined significantly until 2008; however, after 2008 it did not decline as much as before. For robustness check, I divided the full sample into two subsamples based on the fiscal year of the observations: one consists of the firm-year observations from 2000-2008, and the other consists of the firm-year observations from 2009-2015. I estimated three models separately for each subsample. Table 4 indicates the result of the estimation of Model (1) through Model (3) by subsample. β_1 is negative and significant for Model (1) for ROA and Model (2) for ROS, whereas β_1 is negative but not significant for Model (3) for ATO. The conclusion of this study holds.

Figure 1. The trend of the average number of days firms take to issue financial statements by year

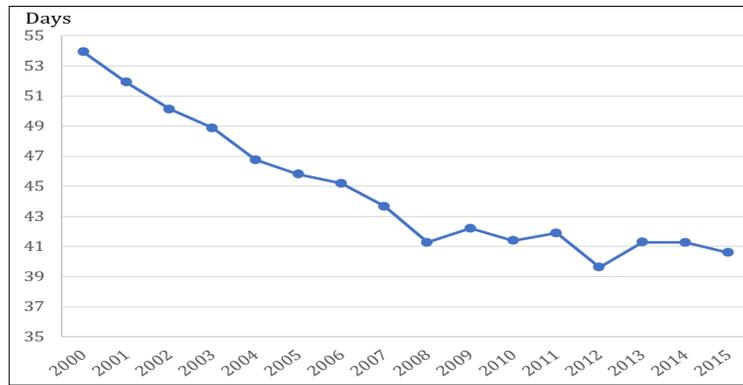


Table 4. Estimation of regression models by subsample

$$ROA_{i,t} = \beta_0 + \beta_1 NDAYS_{i,t} + \beta_2 ROA_{i,t-1} + FIRM_i + YEAR_t + \varepsilon_{i,t} \quad (1)$$

$$ROS_{i,t} = \beta_0 + \beta_1 NDAYS_{i,t} + \beta_2 ROS_{i,t-1} + FIRM_i + YEAR_t + \varepsilon_{i,t} \quad (2)$$

$$ATO_{i,t} = \beta_0 + \beta_1 NDAYS_{i,t} + \beta_2 ATO_{i,t-1} + FIRM_i + YEAR_t + \varepsilon_{i,t} \quad (3)$$

where $ROA_{i,t}$ is return on asset calculated as operating income (OI) divided by total assets at the beginning of fiscal year t ; $NDAYS_{i,t}$ is the number of days that the company i takes to issue financial statements of fiscal year t ; $FIRM_i$ is a firm fixed effect; $YEAR_t$ is a year effect. $ROS_{i,t}$ and $ATO_{i,t}$ is return on sales and asset turnover, respectively.

	Model (1)		Model (2)		Model (3)	
	2000-2008	2009-2015	2000-2008	2009-2015	2000-2008	2009-2015
$\beta_1 NDAYS_{i,t}$	-0.00013*** (-3.76)	-0.00012*** (-3.34)	-0.00012** (-3.25)	-0.00016*** (-3.43)	-0.00004 (-0.24)	-0.00014 (-0.71)
$\beta_2 ROA_{i,t-1}$	0.45767*** (33.74)	0.29001*** (18.71)				
$\beta_2 ROS_{i,t-1}$			0.42393*** (22.74)	0.27360*** (14.53)		
$\beta_2 ATO_{i,t-1}$					0.48519*** (20.36)	0.27505*** (8.09)

	Model (1)		Model (2)		Model (3)	
	2000-2008	2009-2015	2000-2008	2009-2015	2000-2008	2009-2015
Observations	16,811	15,431	16,813	15,435	16,811	15,431
Firm Dummy	YES	YES	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.243	0.142	0.212	0.144	0.310	0.136

*, **, *** denote significance at $p < 0.05$, < 0.01 , and < 0.001 , respectively.
t-statistics based on heteroskedasticity robust standard errors are in parentheses.

6. Conclusion

It can be expected that firms with information technologies can take a quick action in a rotation of the PDCA cycle based on the timely budgetary variance information and also achieve superior financial performance; however, developing and maintaining information technologies gives rise to associated costs. In a setting where firms are required to disclose the summary of financial outcomes in a timely manner, I examined the effect of the timeliness of providing financial statements on financial performance. The findings of this study indicate that the benefits of providing financial statements in a timely manner exceed the costs of them, resulting in superior financial performance. This finding can be interpreted as that firms with information technologies can receive a financial benefit from generating the budgetary variance information in a timely manner than those without them.

It seems, however, that the effect of $NDAYS_{i,t}$ on firm performance is small: Table 2 indicates that the average of ROA and ROS is 4.92% and 5.14%, respectively, and Table 3 shows that when the number of days to issue financial statements decreases by one day, ROA and ROS increases by 0.014% and 0.017%, respectively. Even though the impact of providing financial statements in a timely manner on firm performance is small, managers should not ignore it. Shortening the lead time for providing financial statements is one of the ways to increase firm's profitability. Making small changes for the better is the heart of "Kaizen", continuous improvement, on which Japanese companies have developed their competitive advantage.

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