Beyond Numbers: The Role of Data Quality on Lean Accounting Implementation

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Abstract

This research explores the role of data quality on lean accounting implementation among Thai manufacturing companies. Through the utilization of a survey-based method, this research collected from 315 accounting executives. The results underscore the intricate relationship between data quality and the implications for lean accounting implementation, emphasizing the essential role of a solid foundation of data attributes for the successful integration of lean principles. In summary, this research elucidates the inherent significance of data quality in augmenting the efficiency and effectiveness of lean accounting implementation within the distinctive operational context of manufacturing firms in Thailand.

Keywords: Cost Accounting, Financial Reporting, Quality of Data, Manufacturing Firms

Introduction

In the modern corporate landscape, accounting information plays a pivotal role in informed decision-making (Mowen, Hansen, and Heitger, 2017). Intense competition demands a sophisticated approach to management accounting in contemporary manufacturing settings. According to Blocher, Stout, Juras, and Smith (2015), Lean accounting is indispensable for providing and analyzing high-quality management data, crucial for effectively overseeing the business process. Cescon, Costantini, and Grassetti (2016) highlight the criticality of accurate accounting information for successful management in such a fiercely competitive environment, emphasizing the need for precision in financial data.

The Thai manufacturing sector has been selected as the country's stimulating industry to enhance enterprise efficiency in a highly competitive environment (Dhanani & Scholtes, 2002). As Thailand's principal industry, the manufacturing sector continues to play a critical role in the country's economy (International Monetary Fund, 2019). Kiattikulwattana (2012) reports that Lean accounting implementation is widely embraced by Thai enterprises. As economies become increasingly interconnected, understanding the quality of accounting data in different regions, including Thailand, is crucial. International researchers can provide

insights into how accounting practices and data quality in Thai manufacturing companies align with global standards, facilitating cross-border economic activities. Therefore, understanding how costs are managed in Thailand's industrial environment not only benefits developing nations but also the rest of the world.

The purpose of this research is to examine the role of accounting data quality on the implementation of lean accounting in Thai manufacturing companies. The insights gained from such studies have implications for investors, policymakers, and academics worldwide.

Objective

1. To study marketing mix factors that affect decision making. Apply for the Doctor of Philosophy degree program. Master's degree program universities in Bangkok
2. To study the comparison of decision making. Apply for the Doctor of Philosophy degree program. Master's degree program Universities in Bangkok Classified according to personal factors

Literature Review

The significance of data quality in planning and controlling for the identification and implementation of organizational goals has been underlined by Blocher et al. (2015). The authors stress that data quality of adequate quality enables management accountants to implement effective planning and control systems, comprehend their cost structure, and understand the activities that power their operations. Moreover, the International Accounting Standard Board (2015) defines data quality as characteristics that assist stakeholders in making investment, credit, and other choices. The qualities of data quality include relevance, faithful representation, comparability, understandability, timeliness, and verifiability (International Accounting Standard Board, 2015).

Relevance refers to the capacity of information to influence decisions by helping users in predicting or confirming past, present, or future events. It is ensuring that financial information presented is pertinent to the needs of users for decision-making.

Faithful representation is that the financial information accurately represents the economic substance of the transactions and events it purports to represent. This quality aligns with the principle of faithful representation, a key concept in accounting standards that emphasizes a reliable and accurate depiction of financial information.

Comparability refers to the ability of users to identify and understand similarities and differences among items in the financial statements over different periods or between different entities. Accounting standards promote comparability to ensure that financial statements are presented in a consistent manner, facilitating meaningful comparisons between different reporting entities or across different time periods.

Understandability indicates the clarity and ease with which users can comprehend the meaning of financial information presented in the financial statements. Accounting standards stress the importance of presenting financial information in a clear and understandable manner to meet the needs of various users, including investors, creditors, and other stakeholders.

Timeliness signifies the importance of providing financial information in a prompt manner, allowing users to make timely decisions based on current and relevant data. Accounting standards emphasize the need for timely reporting to ensure that financial

information is relevant and useful for decision-making. Timeliness enhances the value of financial statements.

Verifiability refers to the ability to confirm the accuracy of reported financial information through independent and unbiased third-party verification or auditing. It aligns with the reliability principle in accounting standards, emphasizing the importance of providing information that can be verified by external parties, enhancing the credibility and trustworthiness of financial statements.

Accordingly, data quality is integral to the successful implementation of cost management strategies. Organizations rely on accurate, timely, and reliable cost data to make informed decisions, meet regulatory requirements, and drive continuous improvement. Accurate data is fundamental to determining and allocating costs effectively. If data quality is compromised, the cost information derived from it may be inaccurate, leading to misguided decisions in cost management.

The influence of contingencies on Lean accounting implementation has been reviewed by Gliaubicas and Kanapickiene (2015), highlighting the significance of business characteristics and competitiveness in Lean accounting implementation. Improved coordination of preparation and monitoring in cross-functional departments might result in Lean accounting implementation, which is also known as SMA. The emerging trend in Lean accounting implementation, as asserted by Blocher et al. (2015), is value creation, which includes cost reduction through resource efficiency. The most well-known Lean accounting implementation, according to Kelety (2006), offers the conceptual framework for Lean accounting implementation, emphasizing the significance of competition and company characteristics in influencing management decisions.

Cost management approaches for identifying value-added operations that meet customer needs include value chain analysis, as outlined by Blocher et al. (2015), and target pricing, which is a strategy technique for responding to consumer requests that require reprocessing before the final product meets customer criteria (Ghafeer et al., 2014). The concurrent process of designing, pricing, costing, and value engineering is impacted by the ferocious market, resulting in strong consumer expectation pressure.

Lean accounting implementation is a best practice of accounting methods that goes beyond traditional approaches by meticulously identifying and quantifying value-added activities within an organization. Coined by Arbula-Lopez and Fortuny-Santos (2010), this methodology transcends mere financial reporting and delves into the intricate processes that contribute meaningfully to overall value creation. It involves a systematic and dynamic approach that not only monitors but actively reports on the ongoing evolution of value within an operational framework.

By placing a heightened emphasis on efficiency and waste reduction, Lean accounting implementation serves as a strategic compass for businesses, aligning financial processes with the overarching goal of value maximization (Blocher et al., 2015). This methodology is not confined to a static representation of financial data but rather operates as a real-time feedback mechanism, providing timely and relevant information crucial for informed decision-making.

In essence, Lean accounting implementation is a transformative paradigm that encourages organizations to adapt their accounting practices to the principles of Lean thinking. As an integral component of Lean management philosophy, Lean accounting implementation not only captures the essence of financial metrics but also embraces a broader perspective that aligns financial strategies with the operational realities of a dynamic business environment. This study utilized Kelety's (2006) conceptual framework, which developed the conceptual framework for this research as follows:

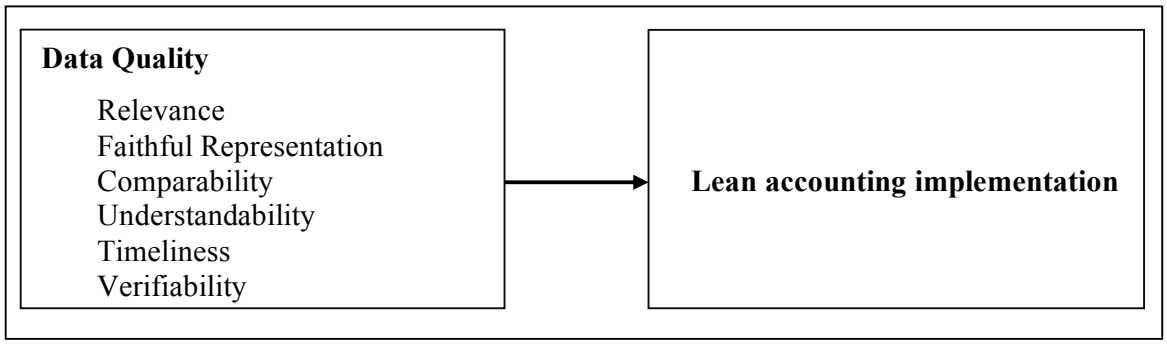

Figure 1: Conceptual framework

Drawing from the principles of Lean Accounting, we hypothesize that the relevance of accounting data is a key determinant of successful Lean accounting implementation. As organizations strive for efficiency and waste reduction, the timely availability of relevant financial information enables better decision-making and strategic alignment with Lean principles. Therefore, we predict a positive correlation between the relevance of accounting data and the effective adoption of Lean Accounting practices.

H1.1: Relevance is positively effect on lean accounting implementation

We posit that faithful representation, characterized by the accurate portrayal of financial information, plays a crucial role in Lean accounting implementation. Lean practices necessitate a high degree of accuracy in financial reporting to ensure a true reflection of value streams and operational efficiency. Thus, we hypothesize a positive relationship between faithful representation of accounting data and the successful implementation of Lean Accounting principles.

H1.2: Faithful representation is positively effect on lean accounting implementation

In the context of Lean Accounting, where benchmarking and continuous improvement are paramount, we propose that comparability of accounting data across various periods and entities positively influences the implementation of Lean practices. A standardized and comparable financial reporting system is anticipated to facilitate the identification of inefficiencies and support the continuous improvement efforts inherent in Lean principles. Consequently, we hypothesize a positive association between comparability of accounting data and the effective implementation of Lean Accounting.

H1.3: Comparability is positively effect on lean accounting implementation

Understanding the financial information is fundamental for making informed decisions in a Lean environment. Therefore, we hypothesize that the degree of understandability of accounting data positively affects the implementation of Lean Accounting. Clear and comprehensible financial information is expected to enhance communication, foster transparency, and contribute to a shared understanding of the organization's financial performance in alignment with Lean principles.

H1.4: Understandability is positively effect on lean accounting implementation Timeliness is a critical factor in the dynamic context of Lean practices, where real-time decision-making is essential. We hypothesize that the timely availability of accounting data positively influences the implementation of Lean Accounting. Swift access to financial information is expected to support proactive decision-making, aid in identifying bottlenecks, and facilitate the agile response required by Lean principles.

H1.5: Timeliness is positively effect on lean accounting implementation

In the pursuit of operational excellence and continuous improvement inherent in Lean Accounting, we posit that verifiability of accounting data is essential. We hypothesize that a higher degree of verifiability positively affects the successful implementation of Lean practices. Verifiable financial information is anticipated to enhance the credibility of data, instilling confidence in decision-makers and reinforcing the reliability of information crucial for Lean Accounting processes.

H1.6: Verifiability is positively effect on lean accounting implementation

Research Methodology

This research adopted mail survey method by collecting data from accounting executives of manufacturing establishments in Thailand. The population of this study was 69,420 manufacturing establishments in Thailand. This research adopted Krejcie and Morgan's (1970) sample size calculation, which result of 385 respondents are required. This research posted mail, and follow up with the manufacturing establishments as final result received 315 accounting executives responded.

The survey questionnaire consisted of four distinct components. The first section gathered basic information about the executive and the organization. The second section collected data on the quality of management accounting. The third section collected data on business planning, while the fourth section gathered information on Lean accounting implementation. The data were evaluated using item-total correlation, with a range of scores between 0.938 and 0.941. The results of a reliability test on accounting-related data consistency varied from 0.657 to 0.872.

Descriptive statistics, including frequency, percentage, means, and standard deviation, were utilized to describe the data's characteristics. Finally, a multiple regression analysis was conducted to examine the relationships between data quality and lean accounting implementation. This study draws from the existing literature by proposing following equation.

$$LEAN = \alpha + \beta_1 RELE + \beta_2 FAIT + \beta_3 CPAR + \beta_4 UNDE + \beta_5 TIME + \beta_6 VERI + \varepsilon \quad .....(1)$$

Where LEAN refers to lean accounting implementation
RELE refers to relevance
FAIT refers to faithful presentation
CPAR refers to comparability
UNDE refers to understandability
TIME refers to timeliness
VERI refers to verifiability

Research Finding

The descriptive statistics of the respondents reveal notable patterns. The majority of accounting executives are female, constituting 54.92% of the sample. In terms of age distribution, most accounting executives fall within the 36–40 age range, accounting for 28.57% of the participants. Furthermore, a significant proportion of respondents work for partnerships organisation (107 persons, 33.96%) and limited liability companies (83 persons, 26.34%). Regarding the financial scale, the majority of enterprises have total asset ranging from 201 to 400 million Thai baht, encompassing 56.50% of the sample. Lastly, concerning

the workforce size, a substantial percentage of the enterprises employ more than 600 staff members, representing 30.79% of the respondents.

Descriptive statistics of data quality and lean accounting implementation in the view of 315 accounting executives can be reported as follows:

Table 1: Descriptive summary of the quality of data quality on lean accounting implementation.

Elements	Mean	S.D.	Level of perception	Rank
Relevance	3.710	0.575	Agree	6
Faithful presentation	3.742	0.551	Agree	5
Comparability	3.760	0.588	Agree	4
Understandability	3.786	0.57	Agree	3
Timeliness	3.795	0.615	Agree	2
Verifiability	3.821	0.656	Agree	1
Lean accounting implementation	3.878	0.599	Agree	-

The table presented in the study provides insight into the attitudes of 315 accounting executives toward various dimensions of data quality, including relevance, faithful presentation, comparability, understandability, timeliness, and verifiability. The results reveal that verifiability, which refers to the extent to which information can be reproduced given the same facts and assumptions, is the primary concern regarding data quality, with a mean score of 3.821. Following closely are Timeliness and Understandability, with mean scores of 3.795 and 3.786, respectively. These dimensions are crucial in management accounting as they focus on providing useful information for internal use. Moreover, the study found that lean accounting implementation, with a mean score of 3.878, which suggests that modern management accounting practices are well-adopted by Thai manufacturing firms. Overall, the results of the study provide valuable insights into the attitudes of accounting executives and the current state of management accounting practices in the Thai manufacturing industry.

Regarding to Lean accounting implementation, respond indicates that lean accounting implementation plays an important role in Lean accounting implementation features ($\bar{x}$ = 3.511). The firm is not only able to perform meritoriously cost analysis ($\bar{x}$ = 3.901), but it also focuses on readable and appropriate report for users ($\bar{x}$ = 3.896), so the firm is able to discover the actual cost-effectiveness ($\bar{x}$ = 3.623).

Next section provides correlation matrix among the independent variables in the study is presented in Table 2, with correlation coefficients ranging from 0.461 to 0.662 and a maximum value of 0.80, as reported by Hair et al. (2010) as details followed.

Table 2: Correlation matrix

	1	2	3	4	5	6	7
1) Relevance	1						
2) Faithful presentation	0.636	1					
3) Comparability	0.628	0.601	1				
4) Understandability	0.499	0.561	0.551	1			
5) Timeliness	0.620	0.607	0.654	0.641	1		
6) Verifiability	0.526	0.549	0.592	0.558	0.703	1	
7) Lean accounting implementation	0.417	0.368	0.414	0.439	0.487	0.512	1

This information provides important insights into the relationships among the independent variables in the study and highlights the need to consider these correlations when conducting further analyses. Specifically, the high degree of intercorrelation among these dependent variables suggests that they may be closely related and that they may jointly impact the outcome variable of interest. Therefore, it will be important to assess the unique contributions of each of these variables to the outcome variable while controlling for the effects of the other variables. By doing so, the study will be better equipped to draw accurate and meaningful conclusions regarding the factors that contribute to the outcome of interest.

Using multiple regression among the quality of data quality and lean accounting implementation, the details reveals are as follows:

Table 3: The role of data quality on lean accounting implementation

	Co-efficient	**S.D.**	***t Stat***
Intercept	0.923	0.296	3.12***
Relevance	0.132	0.087	1.506
Faithful presentation	-0.048	0.091	-0.522
Comparability	0.035	0.088	0.395
Understandability	0.154	0.084	1.846*
Timeliness	0.117	0.095	1.230
Verifiability	0.259	0.078	3.333***
$F = 16.043$ Adj $R^2 = 0.299$			

*** significant level at 0.01 *significant level at 0.10

This table presents the effect of data quality on lean accounting implementation with significant estimation at level of 0.05 (F = 16.043) where adjusted R^2 is shown at 0.299. The finding indicates that verifiability has significant impact on lean accounting implementation at significant level of 0.05. Thus, it should not reject H6 that verifiability has significant impact on Lean accounting implementation. However, it should reject H1-H5 that quality of Data Quality has distinctive significant impact on lean accounting implementation.

The results support the previous evidence, lean accounting implementation is also widely used in Thailand's industrial firms (Kiattikulwattana, 2012). The verifiability is the only element expected to play a crucial role in lean accounting implementation (Ward and Graves, 2004). This element of Data Quality has often been questioned during major accounting scandals. The situation could lead to a rethinking of accounting information quality and the advancement of block chain technology. Previously-unheard-of alignment inside and between organizations is now possible thanks to technology. On the other hand, this finding is among the first examples of technical disruption in management accounting literature. The application of block chain to accounting, according to Dai and Vasarhelyi (2017), is still under-explored. As a result, companies should keep in mind that cost management is a necessary survival strategy for the establishment of a proper data quality system.

Discussion/Conclusion

This research suggest that accounting executives have recognized the importance of data quality in their operations. It claims that the Lean accounting implementation practices are essential for business formulation and implementation in the current Thai manufacturing context. Overall, the quality of data quality has a positive impact on the lean accounting implementation of the Thai manufacturing industry; in this regard, it shows that cost management is a feasible approach based on a proper accounting system. Finding a balance between the three constraints of work demands, response time, and expense was the most challenging part of this report. Despite these drawbacks, the work was successfully concluded.

Based on the findings of this research, the following recommendations are made for management accountants and other stakeholders: all data consistency in accounting should be promoted, where the exercise of value, understandability, timeliness, and verifiability can be fruitful. In addition, the effectiveness of accounting systems and procedures is vital to business operation. Therefore, this research not only puts forward academic understanding of the implementation of lean accounting implementation but is also beneficial to industrial practice among lean accounting implementation firms.

Reference

Arbula-Lopez, P. R. A. & Fortuny-Santos, J. (2010). An Accounting System to Support Process Improvements: Transition to Lean accounting implementation. Journal of Industrial Engineering & Management, *3*(3), 576-602.

Blocher, E. J., Stout, D. E., Juras, P. E., & Cokins, G. (2015). Cost Management: A Strategic Emphasis, 6th Ed, Singapore: McGraw-Hill.

Cescon, F., Costantini, A., & Grassetti, L. (2016). Strategic Perspective in Management accounting: Field-Based Evidence. University degli Studi di Udine, Controllo.

Dai, J., & Vasarhelyi, M. A. (2017). Toward Blockchain-Based Accounting & Assurance. Journal of Information Systems, *31*(3), 5-21.

Dhanani, S., & Scholtes, P. (2002). Thailand's Manufacturing Competitiveness: Promoting Technology, Productivity & Linkages. Available online at https://www.unido.org/sites/default/files/2009-04/Thailands_manufacturing_competitiveness_promoting_technology_productivity_and_linkages_01_0.pdf

Ghafeer, N. D., Rahman, A. A., & Mazahrih, B. J. (2014). The relationship between Target Cost Method to Strengthen the Competitiveness of Industrial Companies. International Journal of Business & Social Science, *5*(2), 250-263.

Gliaubicas, D., & Kanapickiene, R. (2015). Contingencies Impact on Lean accounting Usage in Lithuanian Companies. Procedia - Social & Behavioral Sciences. *2*(3). 254-260.

Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). Multivariate Data Analysis. 7th ed. NJ: Prentice Hall.

International Accounting Standard Board (2015) the Conceptual Framework for Financial Reporting, available online at https: / / www. ifrs. org/ issued- standards/ list- of-standards/conceptual-framework/

International Monetary Fund. (2019). Report for Selected Countries and Subjects, available online at https://www.imf.org/external/pubs/ft/weo/2013/01/weodata/weorept.aspx?sy=2011&ey=2018&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=89&pr1.y=15&c=548%2C924%2C576%2C528%2C532%2C578%2C158%2C542&s=NGDPDPC%2CPPPGDP%2CPPPPC&grp=0&a=

Kelety, I. A. E. M. (2006). Towards a Conceptual Framework for Lean accounting implementation: The Concept, Objectives, & Instruments. PhD-Dissertation: Chemnitz University of Technology.

Kiattikulwattana, P. (2012). The Use of Cost Management Technique & Data Quality for Management in Thailand, KKU Research Journal, *11*(2), 141-153.

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities, Educational & Psychological Measurement, *30*(3), 607-610.

Mowen, M. M., Hansen, D. R., & Heitger, D. L. (2017). Cornerstones of Managerial Accounting, Thailand: Cengage.

Ward, Y., & Graves, A. (2004). A New Cost Management & Accounting Approach for Lean Enterprises, Proceeding at the Irish Academy of Management Meeting Annual conference, Ireland.