Does a leading indicator improve a firm's profit?

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Abstract

Research question: The choice of performance indicator is critical in designing a performance evaluation in a company. In management accounting, performance evaluation of managers and not just internal employees is important, as the former are also noticed in proxy statements. A proxy statement does not only reveal the performance indicators and the weight placed on each but also discloses the achievement of goals and compensations of managers. For example, Coca-Cola Ltd., utilizes both a short-term performance indicator (net operating revenue and operating income) and long-term incentive plan (net operating revenue, earnings per share, free cash flow, and total shareowner return modifier) to evaluate managers[1]. From the example of Coca-Cola Ltd., it is evident that owners of companies attempt to control managers' behavior by using performance indicator.

In management accounting, the balance of short- and long-term decisions must be carefully considered. When the company achieves stable long-term profit, the value and reputation of the company will improve in the long term. This can help the company last long.

In these cases, a leading indicator is frequently adopted to monitor long-term performance. The importance of these nonfinancial performance indicators about customers/consumers is suggested by empirical management accounting research. For example, Ittner and Larcker (1998) find that customer satisfaction is not only an indicator of the future profit at the business-unit level but also at firm level. In addition, Banker, Potter, and Srinivasan (2000) find the same evidence from the hospitality firm's archival time-series data.

Ittner and Larcker (1998) have a significant finding about the choice of managers' performance indicators. If performance indicators about the customer/consumer are useful for estimating the future profit at the firm level, setting a customer-related indicator as a manager's performance indicator helps predict a firm's future profit and is useful for reducing managers' myopic behavior. Therefore, customer-related indicators are effective for controlling the behavior of a firm's manager by encouraging a long-term decision.

Prior management accounting research demonstrates improvement of future profit by considering a customer-related indicator empirically. Therefore, prior literature finds that customer-related indicators estimates future short-term profit and does not focus on the firm's long-term total profit. Shareholders prefer that the firm achieves stable profit to maximize the total profit among holding stocks. Therefore, this study focuses on a firm's total profit for the long-term and analyzes the usefulness of a leading indicator. From the above discussion, this study considers the following research question (RQ):

RQ: Does a nonfinancial leading indicator theoretically improve the total profit of the firm with product market competition?

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[1] I obtain this information from Coca Cola's Proxy Statement for 2019, p.11:
https://www.sec.gov/Archives/edgar/data/21344/000120677419000735/ko_courtesy-pdf.pdf

Methodology: This study analyzes this RQ through a game theoretical approach, assuming quantity competition in a product market. Prior literature analyzes the performance evaluation of managers, assuming product market competition. For example, relative performance evaluation is analyzed in this area (e.g., Aggarwal and Samwick 1999; Hamamura and Hayakawa 2019). In relative performance evaluation research, prior studies explore the optimal performance evaluation system to include competitor's profit in a manager's objective function.

In addition, Hamamura (2019) considers the competitor's profit as an additional performance indicator. Hamamura (2019) explores the behavior of a manager evaluated through a long-term perspective.

Moreover, some studies analyze objective function, which includes consumer surplus different from relative performance evaluation research. This study examines the contract of the manager with the owner, which uses consumer surplus as a leading indicator by comparing the non-leading indicator case, assuming the use of a performance indicator in Arya, Mittendorf, and Ramanan (2019).

Findings: In equilibrium, my model demonstrates that each firm includes consumer surplus to objective function as a leading indicator in a specific economic condition. However, this equilibrium is not Pareto optimal in a specific economic environment. Because the adoption of a leading indicator enhances demand-enhancing investment in the first term which remains in effect in the second term, the profit on the second term will improve. However, the profit on first term will decline as the manager has incentive for storing excess supply by emphasizing consumer surplus. Because the balance of these trade-off effects is altered by exogenous variables, the total profits of each of the firms for the two periods decline in a specific economic environment. When this result arises, the combination of payoff is like the prisoner's dilemma.

Implications: This result suggests important implications in designing a performance evaluation in management accounting research. It is obvious that future profit is improved by a leading indicator, as supported by Ittner and Larcker (1998) or Banker et al. (2000). However, excess competition may arise by the adoption of a leading indicator in the first term. As a result, the profit in the first term will decline via the leading indicator. Hence, owners must adopt a leading indicator by carefully considering the economic environment.

It is important that excess supply arises not as a result of excess cost. Certainly, while excess supply increases the total cost of production and investment, the resulting cut in price has serious effects on a firm's profit in my model. Hence, the adoption of a leading indicator impacts product market competition in this research, and the owner can choose the performance indicator by considering competition. While managers ordinarily perform customer-friendly management to improve customer-related performance indicators with costly investments, my result is obtained from the impact of excess supply.

References

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