# THE VALUE RELEVANCE OF THE MANDATED SERVICE QUALITY REPORTS IN THE AIRLINE INDUSTRY

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## ABSTRACT

This study seeks to better understand the usefulness of non-financial performance measures in the airline industry in the United States. The US Department of Transportation (DOT) mandated that operating measures such as on-time arrivals, flight delay, mishandled baggage, complaints etc. be made available to the public on a monthly basis. Specifically, this research examines the forward-looking properties of these non-financial performance measures in terms of the moderating effects of service quality (e.g., on-time arrivals, flight delay, mishandled baggage, and complaints) on aircraft productivity of the firms' future performance as measured in terms of ROA (return on assets) and ROS (return on sales). Overall, results from this study show that negative factors such as higher complaints and higher mishandled baggage interact with aircraft productivity to further reduce one-quarter ahead ROA and ROS.

#### **INTRODUCTION**

To enhance traditional financial reporting, policymakers have suggested that financial statement users be provided with non-financial performance information that may increase users' ability to evaluate and predict financial performance [1] [6] [5] [12] [13]. In particular, non-financial performance measures with forward-looking properties are desirable because these performance measures should lead to a more efficient allocation of resources for decision makers and stakeholders, both internal and external to a firm. Although there are numerous research papers that examined the value relevance of non-financial performance measures, these papers tend to examine leading indicators in isolation [4] [10] [2] [14]. As Christensen and Demski [3] observed, the importance of an information signal may be less evident if the measure is evaluated in isolation. Thus, this research examines the forward-looking properties of non-financial performance variables, in particular, it investigates the moderating effects of service quality on aircraft productivity on the firm's future performance in the airline industry. It is likely that the precision of information signal of service quality for the airline industry is higher than that for non-service related industries. Accordingly, there is value in conducting industry specific studies to better understand the usefulness of non-financial measures such as service quality as mandated by the U.S. Department of Transportation (DOT).

#### LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

After deregulation in 1978, major airlines have focused on increasing operating efficiency and decreasing costs as primary business strategies to increase their profit. Also, effective utilization of capacity and price elasticity have often been cited as important determinants. The Federal Aviation Administration (FAA) predicts that passenger demand or customer service will be an increasing important determinant of growth of large airlines.

When comparing performance among airlines, financial analysts, regulators and the media often use operating measures (e.g. number of complaints, on time arrival, mishandled baggage... etc.) gathered by

the Department of Transportation (DOT). This suggests the importance of these service-related measures in the airline industry. It is expected that higher service quality should lead to higher customer satisfaction and higher passenger demand, and hence higher revenue. Indeed, the accounting literature argues that customer satisfaction is a useful supplement to financial performance measures because it captures elements of value not reflected in historical accounting-based measures [12] [13]. Thus it is expected that service quality such as on time arrivals, flight delay, mishandled baggage and complaints should exhibit properties of "leading indicators" on future airline performance.

Aircraft productivity is a measure of capacity utilization. Although aircraft productivity (asset utilization) is related to how flights are scheduled, it is greatly influenced by the extent to which employees cooperate, coordinate and exert discretionary effort in getting planes loaded and turned around quickly [8] [9]. Accordingly, there is a strong interdependence in the factors contributing to on-time arrivals, flight delay or mishandled baggage, and subsequently passengers' complaints. This implies that both aircraft productivity and service quality (on-time arrivals, flight delay, mishandled baggage or complaints) are greatly influenced by the extent to which employees cooperate, coordinate and exert discretionary effort in getting planes loaded and turned around quickly and be at their destinations on-time. Service quality and aircraft productivity affect a firm's performance independently [2] [14] [7]. These studies, however, did not examine their interactive effects on the firms' performance. It follows that when both service quality and aircraft productivity are high, the synergistic effect should further elevate a firm's performance. Accordingly, the following hypothesis is formulated:

H1: Service quality (on-time arrivals, flight delay, mishandled baggage, and complaints) and aircraft productivity interact significantly to affect a firm's future profitability.

The research model is represented as:  $PERF_{i, t+1} = \beta_0 + \beta_1 aircraft productivity_i + \beta_2 service quality_i + \beta_3 aircraft productivity_i^* service quality_i + <controls> + \epsilon_I$ 

Where: PERF<sub>i, t+1</sub> is one-quarter-ahead Return on Assets (ROA) or Return on Sales (ROS) for firm *i*, while service quality has 4 attributes, namely on-time arrivals, flight delay, mishandled baggage, and complaints. Finally, control variables include  $ROA_{i, t}$  or  $ROS_{i, t}$ .

# **RESEARCH METHODS AND FINDINGS**

To investigate the interaction effects between aircraft productivity and service quality (as measured by on time arrivals, flight delay, mishandled baggage and complaints), decision trees are constructed on the sample data. In particular, the recursive partitioning algorithm using Chi-square Automatic Interaction Detection (CHAID) is employed.Overall, results from this study show that negative factors such as more complaints and more mishandled baggage interact with aircraft productivity to further reduce one-quarter-ahead ROA and ROS. For example, where aircraft productivity is high and current ROA is moderate, one-quarter-ahead ROA is positively associated with fewer complaints and a lower rate of mishandled baggage. Additionally, where aircraft productivity is low and current ROA/ROS is low, a lower future ROA/ROS is associated with more complaints Finally, where aircraft productivity is low and current ROA is moderate, one-quarter-ahead ROS is positively associated with lower mishandled baggage. On the other hand, our results did not provide support for the interaction between on-time arrivals and aircraft productivity. Specifically, on-time arrivals do not associated with the bottomline of the major air carriers. Instead, there appears to be an inconsistency in that a higher on-time arrivals is associated with lower future ROS.

This study makes several contributions. Firstly, while prior studies have examined the value relevance of some operating measures in the airline industry, those leading indicators were evaluated in isolation.

This study adds to the extant literature by investigating the moderating effects of service quality on aircraft productivity. Secondly, by focusing on the performance measures reported by *ATCR*, this study found evidence of value relevance of these performance measures, in particular, complaints and mishandled baggage. Results from this study suggest that those mandated reports have added value. Finally, despite weak findings on on-time arrivals, results on complaints and mishandled baggage should send a message that negative publicity should not be ignored. For example, many airlines have included on-time performance in their compensation contract to promote positive behavior; yet findings from this study indicated that "unhappy passengers" could have a negative impact on financial performance as measured in ROA and ROS one-quarter-ahead.

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