



IT and the Performance of Healthcare Through the Transaction Cost Mechanism During Turbulence Conditions

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Abstract. This article aims to investigate the connection between hospital performance under challenging circumstances and information technology. This study used a quantitative approach with an online survey. A structural equation model (SEM) with Smart PLS was used for data analysis. The findings of this study demonstrate that using IT can lower transaction costs. The performance of hospitals can then be enhanced through low transaction costs. Conditions related to turbulence have no impact on the connection between transaction costs and hospital performance. This research's findings help shape a theory on transaction costs in hospitals and contribute to practitioners regarding IT to improve hospital performance.

Keywords: transaction cost · information technology · hospital · turbulence

1 Introduction

The use of information technology (IT) is increasing in all aspects and organization types [1], including in hospitals [2]. The increase in the use of IT occurred very rapidly when the condition was turbulent such as the digital transformation era, the economic transformation era, and also the Covid-19 pandemic [2]. The use of IT is intended to improve hospital performance [3]. IT has been viewed in recent years as a means of overcoming obstacles and enhancing the performance of the healthcare sector [4]. It improves patient satisfaction, financial performance, healthcare performance, and healthcare quality [5]. Information systems and information technology can develop the health industry in terms of operations, and reducing transaction costs can effectively improve organizational performance [6]. Meanwhile, transaction theory describes the governance framework as the basis for the influence of internal and external coordination to seek, monitor and solve problems within the organization [6]. In this study, we investigate the role of IT in improving organizational performance from a financial perspective with a transaction cost mechanism in hospitals considering the turbulence condition to know the stability of hospital performance.

2 Literature Review

2.1 Information Technology (IT)

IT is applied in a company's operational and strategic activities, which is what is meant by the term "use of IT" [7]. Information technology is a computer program used in the healthcare sector for both clinical and administrative tasks [8]. Nowadays, IT comprises electronic medical records (EMR), medical databases, emergency department dashboards, and other forms of digitalization utilized in hospitals. Using information technology (IT), which has been defined as "an information system that includes all computer-based components used by healthcare professionals or patients to process patient-related data, information, or knowledge in an inpatient or outpatient setting," has become more common in recent years [4]. IT is viewed as a solution to get around these obstacles and boost overall effectiveness in the healthcare industry [9].

2.2 Transaction Cost

Transaction Cost Theory (TCT) places the idea of a "transaction" or unit of exchange as the focal point of the theory. [10] introduced markets and hierarchies (or firms) as alternative methods for completing a series of transactions. An organization is seen as a government structure instead of a production function. The basic premise of TCT is that, under certain conditions, the costs of doing transactions (i.e., the costs of economic exchange) can be too high. TCT is defined by two main assumptions [11], rationality and opportunism. Under conditions of uncertainty, TCT treats limited rationality as a problem. In summary, TCT's concepts of limited rationality and opportunism are very different aspects, and together they can construct transaction costs [6].

2.3 Healthcare Performance

Performance measurements are targets and parameters set from goals and set as priorities by the organization [12]. Performance measurement is divided into two, namely financial and non-financial performance. This is relevant for non-profit institutions because they still have to maintain liquidity and cash flow for operational costs [13].

2.4 IT Use and Transaction Cost

IT implementation can enable businesses to reduce transaction costs such as discovery, monitoring, maintenance and development. Previous research [14] argues that IT affects the cost structure of organizations, specifically by transaction costs such as processing orders, interacting with other departments, making decisions with other doctors, making decisions among managers, etc. In addition, IT eliminates the additional costs of planning, such as reporting, correspondence, and decision-making, by providing more effective communication and information processing [15]. IT can minimize many transaction costs such as development, monitoring, problem-solving, and decision-making in all activities in the hospital [6]. In this case, we expect that the greater impact of using IT will lower transaction costs. So, we propose H1:

H1: Higher use of IT will lead to lower transaction costs

2.5 Transaction Costs and Healthcare Performance

Transaction costs are the specificity and uncertainty of assets directly (both behavioral and environmental) [6]. The objective measurement of transaction costs is stated in the cost of coordination and transaction risk management [16] can be reduced to increase performance. While [6] found that reducing transaction costs improves organizational performance. The basis of financial performance is that in a non-profit institution, it is necessary to maintain liquidity and cash flow so that financial performance is still relevant to be used [13]. In uncertain conditions, an organization will find it difficult to maintain performance because the condition is unpredictable, so hypotheses 2 and 3 are as follows:

H2: Lower transaction costs will result in higher organizational performance

H3: Lower transaction costs will result in higher organizational performance, weakened under conditions of turbulence

2.6 IT Use and Healthcare Performance

Previous research shows how big outsourcing announcements affect a company's productivity and profitability, and they discovered that outsourcing is linked to higher levels of both productivity and profitability [17]. Another study showed no association between Florida hospitals' firm-level financial performance and the amount of IT outsourcing, indicating that outsourcing is a cost-neutral method of supplying organizational IT skills [18]. Meanwhile, according to some experts, IT use in business earnings has a favorable effect on financial performance in terms of productivity and firm size [19]. Hypothesis 4 proposed is as follows:

H4: IT has a positive effect on financial performance in health institutions.

3 Method

This study used quantitative research with descriptive analysis. Purposive sampling was employed in the data collection process. Online surveys were used for data collecting, and Google Forms were distributed through social media platforms like WhatsApp, Facebook, Instagram, and Line to conduct online surveys; because so many Asian users utilize the platform, it was chosen [20]. The respondents were physicists and administrative personnel in the healthcare sector from various nations and all types of hospitals, such as class A to D hospitals.

Regarding measurement variables, the financial performance of healthcare facilities was adopted from Grigoroudis et al. [13] with 5 measurements, the use of TI from Iyengar et al. [21] with 3 measurement items, and transaction costs from Hajli et al. [6] with 8 measurements. A Likert scale of 1 to 5 was used for measurements, with 1 denoting strong disagreement and 5 denoting strong agreement.

187 people responded, making a total of 232 valid responses. After the data had been cleaned, 45 outliers were removed for a variety of reasons. The analysis for this type of research was conducted using structural equation modeling (SEM) with smart PLS version 4.0, SEM is used to evaluate the relationship between variables.

4 Results and Discussion

Table 1 displays the reliability and validity findings. The accepted load threshold value is 0.60 [22]. The indicator for external load must be more than 0.6. A minimum AVE of 0.50 Model dependability is measured using the CR indicator, which should be higher than 0.70 [22]. According to Table 1, all of the constructs for both groups had CR values above 0.70, demonstrating the reliability of the constructs. Finally, convergence validity is evaluated using the AVE value.

The results show that all the hypotheses in this study are supported significant. Hypothesis 1 shows a significant negative result with Beta -0.190. Hypothesis 2 also shows a significant negative result Beta -0.192. While hypothesis 3 shows insignificant with beta 0,097. Last hypothesis 4 shows a positive significant result with a Beta of 0.185 and a significance level of 0.05 (Fig. 1). The results of the study show that “the use of IT” can improve healthcare performance by reducing transaction costs, shown in hypothesis 1 and hypothesis 4. H1 shows that the use of IT has a negative impact on transaction costs, which means the use of IT can decrease transaction costs. H4 is a

Table 1. The Results of Validity and Reliability Tests

Construct	Item	Factor loading	CR	AVE	Cronbach's Alpha	Rho_A
Information technology	IT1	0.857	0.894	0.738	0.824	0.862
	IT2	0.908				
	IT3	0.809				
Transaction cost	TC1	Deleted	0.885	0.607	0.841	0.859
	TC2	0.758				
	TC3	Deleted				
	TC4	Deleted				
	TC5	0.783				
	TC6	0.770				
	TC7	0.764				
	TC8	0.820				
Healthcare Performance	HP1	0.858	0.936	0.747	0.918	0.977
	HP2	0.838				
	HP3	0.889				
	HP4	0.877				
	HP5	0.857				
Turbulence	T1	0.902	0.950	0.826	0.932	1.031
	T2	0.886				
	T3	0.942				
	T4	0.904				

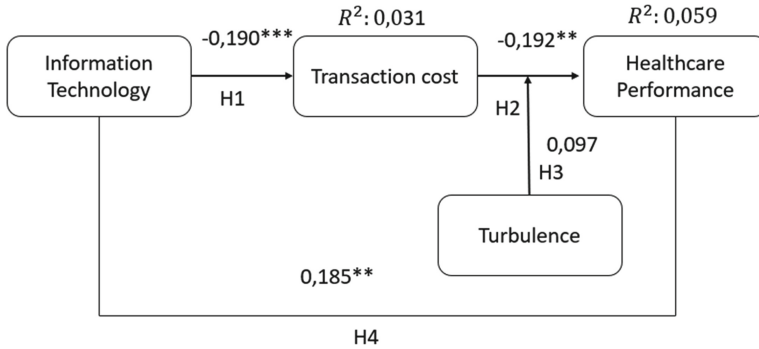


Fig. 1. Results of hypothesis testing (Description: ***: sig 0.001; ** sig: 0.05; * sig: 01)

direct relationship that the use of IT can increase healthcare performance. In Hypothesis 2, the relationship between transaction cost and healthcare performance has a negative influence. It means that the lower the transaction cost, the higher performance. It can be concluded that the use of IT can reduce transaction costs, whereas lower transaction costs can improve hospital performance. While hypothesis 3 is moderating effect, the relationship between transaction cost and healthcare hospital during turbulence conditions. The result shows no relationship between transaction cost and healthcare performance in turbulent conditions. This supports M.F. Thouins et al. [17]. This shows that by using IT, health institutions can reduce transaction costs which can impact increased performance [17]. This is because using IT replaces some transactions; besides that, IT has storage, dissemination, and absorptive functions [21], reducing the transaction costs that arise. As a result of reduced transaction costs, health institutions can improve financial performance, including cash flow and liquidity.

5 Conclusion

This study investigates how the transaction cost mechanism might be used to enhance the performance of healthcare organizations. The results show that using IT can lower transaction costs, and reduced transaction costs can improve institutions' financial performance. While using IT can indirectly increase financial performance, it can also directly boost financial performance. This supports previous research conducted by M.F. Thouins et al. [17]. This research provides novelty regarding the analysis of the use of IT in the mechanism of reducing transaction costs in non-profit institutions such as health institutions. For this reason, this research contributes to the theory by increasing literacy to provide an in-depth understanding of the influence of IT in efforts to improve financial performance by adopting transaction cost theory in the context of non-profit organizations. While the practical contribution is to provide an overview to financial managers, especially to consider the use of IT to reduce transaction costs and improve financial performance.

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