IT Governance and its Impact on the Usefulness of Accounting Information Reported in Financial Statements

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Abstract

This study aimed to investigate the direct effects of information technology (IT) governance; i.e., value delivery and strategic alignment, risk management, resource management, and performance measurement, on the usefulness of accounting information provided by financial statements as well as indirect effects via its effect on the accounting information system (AIS). To attain these objectives, a questionnaire was developed and distributed to a sample of financial managers, IT managers, and internal auditors in the Jordanian industrial companies listed on the Amman Financial Market. Path analysis was used to test the research model and hypotheses. The results showed that IT governance affects significantly and directly the usefulness of accounting information and AIS. However, this usefulness is significantly influenced by the AIS. It was also found that IT governance affects significantly and indirectly the usefulness of accounting information through its direct effects on the AIS.

Keywords: IT Governance, Usefulness, Accounting Information, System, Effects.

1. Introduction

In recent years, a series of business collapse and accounting scandals have occurred such as Enron, WorldCom, and others. In response to these scandals and problems, the U.S. Congress passed the Sarbanes-Oxley Act (SOX) in 2002 to enhance the usefulness of information reported in the financial statements, provide protection to investors and other stakeholders, strengthen the internal controls, and prevent financial statement fraud. Thus, organizations should ultimately concern with the production of useful accounting information. IT governance has increased considerably with the passage the SOX and several sections of this act directly affect the IT governance as it is considered as an integral part of overall enterprise governance. Also, due to its significant role that plays in the security and stability of AIS computer-based and enhancing the usefulness of accounting information that is provided to financial statement users.

So, the current study attempts to answer the following questions: (a) does IT governance (value delivery and strategic alignment, risk management, resource management, and performance measurement) affect the usefulness of accounting information provided by financial statements?, (b) does IT governance affect the AIS?, (c) does IT governance affect the usefulness of accounting information presented in financial statements through its effects on the AIS?

The main purpose of this study is to measure the direct effects of IT governance on the usefulness of accounting information provided by the financial statements of Jordanian industrial companies listed on the Amman Financial Market. It also aims to investigate the indirect effect of IT governance on this usefulness via its direct effects on the AIS. Besides, the paper seeks to shed light on the role of IT governance in improving the usefulness of accounting information.

The importance of this study emerged from its originality where it is the first study addressed this issue in the Jordanian environment. It will also provide an insight into relationships among IT governance, AIS, and the usefulness of accounting information reported in the financial statements. Further, the result of this study can contribute to understanding the impact of IT governance on the usefulness of this information.

The remainder of this paper is organized as follows: The next section provides the theoretical background and prior research relevant to the study. The third section presents a research model and hypotheses development. The fourth section describes the methodology. The fifth section presents the results of the study and discussion. Finally, the last section concludes with a summary of study findings and future research avenues.

2. Theoretical Background and Literature Review

2.1 IT Governance

Information Technology Governance Institute (ITGI) (2003) defined IT Governance as "it is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure the organization's IT sustains and extends the organization's strategies and objectives". IT governance is a senior management concern (Johnson, 2005; Read, 2004; Hardy, 2002), and describes who make decisions about obtaining and deployment of IT resources and competencies (Brown & Nasuti, 2005). IT governance includes IT processes, IT resources, information, business and legal issues, and all interested parties such as stockholders, top management, auditors, lenders, and suppliers. IT governance offers a framework for evaluating processes and technologies to provide the appropriate levels of access and exclusion (Lurie, 2004). Fundamentally, IT governance is concerned about two things: IT's delivery of value to the business and mitigation of IT risks. The first is driven by strategic alignment of IT with the business. The second is driven by embedding accountability into the enterprise. Both need to be supported by adequate resources and measured to ensure that the results are obtained (ITGI, 2003). So there are four domains* for IT governance: value delivery and strategic alignment, risk management, resource management, and performance measurement.

Over the past few years, several frameworks have been offered to guide the implementation of IT governance for an entity. The major frameworks are:

a- COSO's Internal Control framework is developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) to manage and reduce risks. It encompasses five interrelated components; i.e., control environment, control activities, risk assessment, information and communication, and monitoring (Romney & Steinbart, 2006, 196).

b- Control Objectives for Information and related Technologies framework (COBIT) is developed by The Information Systems Audit and Control Foundation (ISACF). It is a generally accepted framework (Chan, 2004), and addressed the issue of control from three dimensions; i.e., business objectives, IT resources, and IT processes. The control objectives of COBIT related IT processes are grouped into four main domains: planning and organization, acquisition and implementation, delivery and support, and monitoring (Symons, 2005).

c- IT Infrastructure Library framework (ITIL) is initially developed in the UK by the Office of Government Commerce. ITIL is established to assist enterprises in managing IT service by providing them with consistent and comprehensive documentation of best practice for IT Service Management (ITIL, 2009). It is very useful in improving the infrastructure to provide ongoing services through service management (Brown & Nasuti, 2005).

d- Information Systems Audit and Control Association (ISACA) and ITGI have developed IT Value Delivery framework (Val IT) based on the COBIT framework. Val IT is including generally accepted guiding principles and supporting processes related to the evaluation and selection of IT-enabled business investments, and benefit realization and delivery of value from those investments. It is a complete collection of proven governance and management practices and techniques for investment in IT-enabled business change and innovation and supporting publications addressing the governance of IT-enabled business investments (ISACA, 2009 "a").

*According to ITGI, there are five domains for IT governance: value delivery, risk management, strategic alignment, resource management, and performance measurement, but the value delivery and strategic alignment are often combined in professional and academic literature (ITGI, 2003). In this study we consider the value delivery and strategic alignment as one domain.

e- Risk IT framework is developed by ISACA and ITGI. It complements COBIT and Val IT and saves time, cost and effort by providing enterprises with a way to focus effectively on IT-related business risk areas, including risks related to late project delivery, compliance, misalignment, obsolete IT architecture and IT service delivery problems. Risk IT provides the guidance to help executives and management ask the key questions, makes better risk-adjusted decisions and guide their enterprises so that risk is managed more effectively. Risk IT helps the professionals detect warning signs earlier to better protect their business and revenue (ISACA, 2009 "b").

Issues related to the IT governance are subject to many researches in general. Tallon (2007) examined the process of the focus on strategic alignment. He emphasized that the firm should apply the correct set of this process when strategy is chosen. Another study conducted by Shpilberg, Berez, Puryear & Shah (2007) investigated the problems with IT Alignment processes and suggested solution by providing good IT people and software. De Haes & Van Grembergen (2009) aimed to analyze the relationship between implementations of IT governance in organizations and business/IT alignment. They explored that business/IT alignment maturity is higher when organizations are applying a mix of mature IT governance practices.

Lainhart (2000) explained the role of COBIT in managing information and IT risks. In addition, Symons (2005) discussed IT governance framework. He stated that good IT governance isn't rocket science, but it requires discipline and commitment. Governance needs to adapt to the organizational structures, culture, and overall strategy of the company. Also, Raghupathi (2007) developed a framework for corporate governance of information technology. He stressed that IT governance should be expanded beyond focusing on ensuring return on investment and compliance with accounting procedures. Oppliger (2007) discussed IT security and the need for information security management. In the same vein, Johnston & Hale (2009) described how to reach IT security through security governance and demonstrated the ways of improving this security. Tarn, Raymond, Razi & Han (2009) investigated security compliance in IT governance focusing on information security management via a case study of a multinational company and showed how the company can achieve security compliance in its IT governance.

Kobelsky, Hunter & Richardson (2008) evaluated the factors related to IT investment and the impact of this investment on the future earnings risk. Jeffery & Leliveld (2004) demonstrated the best ways to manage IT investment. He states that there is a need to balance return and risk. Xue, Liang & Boulton (2008) identified governance patterns for IT investment decision processes and showed the impact of organizations' investment characteristics on the shaping of those patterns. Rivard, Raymond & Verreault (2006) carried out a study on the contribution of IT in business performance. The study found out that the IT can achieve competitive advantage when it is used to leverage capability. Lin & Pervan (2003) illustrated management of IT benefits in large firms and reported that most firms had informal methods to evaluate managing IT and its benefits. In addition, Wang & Alam (2007) addressed IT intangible Value. They pointed out that IT capability adds to a firm's market valuation and it related to increased variability of future earnings.

On the other hand, De Haes, Gemke, Thorp & Van Grembergen (2011) described the choices made by the Dutch airline KLM to more fully engage its business managers in the governance of IT. Lin, Arshad, Haron, Wah, Yusoff, & Mohamed, (2010) determined the awareness and practices of IT governance in Malaysian businesses by using senior management as sample, findings showed that Malaysian businesses are aware of the concept of IT governance, but they practiced IT governance partially. Similarly, Nastase & Unchiasu (2012) assessed the IT governance perception within the Romanian firms and determined the most frequently used frameworks for IT governance implementation in these firms.

2.2 AIS and the Usefulness of Accounting Information

In Statement of Financial Accounting Concepts No. 2, the Financial Accounting Standards Board (FASB) defined accounting as being an information system and the primary objective of accounting is to provide information useful to decision makers (FASB, 1980). AIS is one part of the management information system (MIS), which gathers, classifies, processes, analyzes, and provides financial information to external parties and management for decision making (Moscove & Simkin, 1982, 6). AIS is the core system of organization and involved data from every department and functions in the entity (Gordon & Seller, 1984) and its output is considered the primary source of necessary information in the decision making process.

AIS is a system that collects, records, stores, and processes data to produce information for decision makers (FASB, 1980). In today's complex and dynamic business environment, information technology (IT) is used to support AIS to produce beneficial information for decision making. IT is currently important for the AIS to satisfy the information requirements of the decision makers. Accordingly, there are six interrelated components of the AIS: people, procedures and instructions, data, software, information technology infrastructure, and internal controls and security measures (Romney & Steinbart, 2006, 6-7). AIS provides information for internal and external users. One of the most important categories of financial information produced by AIS is the financial statements that provide external users with the information needed to make decisions. To make the reported financial information useful, the AIS must provide meaningful information to inform financial statement users in making rational decisions. According to FASB Concepts Statement 2, "the qualities that distinguished better (more useful) information from inferior information (less useful) are primarily the qualities of relevance and reliability, with some other characteristics that those qualities imply" (FASB, 1980).

The FASB has identified the qualitative characteristics of accounting information to ensure that information reported in the financial statements is of adequate quality to assist users make decisions. These qualitative characteristics were revised in 2010 by the International Accounting Standards Board (IASB) and FASB (FASB 2010; IASB 2010). As a result, it is now a hierarchy of qualitative characteristics: fundamental and enhancing. To be useful for decision making, information must have both the two fundamental characteristics. The enhancing characteristics are not essential, but can improve the usefulness of the information (Rankin, Stanton, McGowan, Kimberly & Tilling, 2012, 35). Under the new conceptual framework the two fundamental qualitative characteristics are relevance and faithful representation (previously referred to as reliable). Relevance addresses the pertinence of an economic construct (e.g., fair value, historical cost) to a user's decision (Kadous, Koonce & Thayer, 2012). To be relevant, accounting information must be capable of making a difference in the decisions made by the capital providers as users of financial information. Information is capable of making a difference, if has predictive value, confirmatory value or both (FASB 2010; IASB 2010). Faithful representation, the second qualitative characteristic, addresses how well that economic construct, or phenomenon, is depicted or measured (Kadous, Koonce & Thayer, 2012). It is attained when the depiction of an economic phenomenon is complete, neutral, and free from material error. The framework has also identified enhancing qualitative characteristics of accounting information that are complementary to the fundamental characteristics. These characteristics are: comparability, verifiability, timeliness, and understandability (FASB 2010; IASB 2010).

Based on a comprehensive and intensive literature review, we do not find studies that have examined the relationship between the usefulness of accounting information and IT governance. On the other hand, there have been many studies that handled the relationship between the AIS and usefulness of accounting information. Nicolaou (2000) showed that the quality of accounting information systems has an impact on the quality of accounting information. This result also is supported by the study of Komala (2012) that stressed the relationship between the AIS and the quality of accounting information. Sumritsakun (2012) indicated that the effectiveness of an accounting information system can help firm to maintain the accounting information's usefulness and make effective decisions. In addition, Chalatharawat & Ussahawanitchakit (2009) asserted a positive relationship between the AIS and the usefulness of accounting information for the performance evaluation. On the same track, some studies focused on the association between the management accounting information system and the information quality. They demonstrated that the degree of management accounting information system effectiveness is positively associated with the quality of information (O' Donnell & David, 2000; Konthong & Ussahawanitchakit, 2009).

3. Research Model and Hypotheses

Based on the research objectives and literature review, this paper has developed a model to be tested in the Jordanian industrial companies listed on the Amman Financial Market. As shown in Figure 1, the proposed model illustrates that the usefulness of accounting information (Y) as endogenous variable is directly affected by the AIS (X5), as well as by each of IT governance domains, namely, value delivery and strategic alignment (X1), risk management (X2), resource management (X3), and performance measurement (X4), as exogenous independent variables. In addition, each of IT governance domains (X1, X2, X3, and X4) affects directly the AIS (X5) as endogenous variable, and affects indirectly the usefulness of accounting information (Y) via its direct effect on the AIS (X5). From here, it can be hypothesized that:

H1: IT governance (value delivery and strategic alignment, risk management, resource management, and performance measurement) has a significant influence on the usefulness of accounting information.

This main Hypothesis (H1) has the following sub-hypotheses:

H1a: IT governance (value delivery and strategic alignment, risk management, resource management, and performance measurement) has a significant influence on the AIS.
H1b: AIS has a significant influence on the usefulness of accounting information.

4. Research Methodology

4.1 Research Population and Sample

The research population includes the Jordanian industrial companies that are listed on the Amman Financial Market. The companies chosen in this research have been used AIS computer-based and implementing IT governance. The participants of the study were financial managers, IT managers, and internal auditors. One hundred questionnaires were distributed to the members of the sample, 90 questionnaires were returned and used in the statistical analysis, which means that the response rate was 90%. Total of distributed questionnaires (sample size) is shown in table (1).

4.2 Data Collection

The research depended on gathering primary and secondary data. Secondary sources of data were relevant literature such as journals, books, and internet. The instrument used for the collection of the primary data was a questionnaire. The questionnaire included 6 dimensions, which are: value delivery and strategic alignment, risk management, resource management, Performance measurement, AIS, and usefulness of accounting information.

A Likert five-point scale ranges from "strongly disagree" to "strongly agree" was used to examine participants' responses to questionnaire statements. The questionnaire was piloted with a similar sample of respondents selected from Jordanian industrial companies. The aim was to assess the applicability of the questionnaire and the readability of its items. Also, 5 academics reviewed the primary-questionnaire to assure its face validity. The internal consistency reliability of each of the dimensions was assessed by Cronbach's alpha test (table 2). The alpha values for all dimensions vary from 0.83 to 0.93, which are considered acceptable. (Sekaran, 2003).

4.3 Data Analysis Method

To examine the suggested model of this study, path analysis has been applied by configuring the proposed causal models and then used Stepwise Regression method for a sample estimator for each proposed model using the SPSS (Statistical Program for Social Sciences). Also, the program AMOS (Analysis of Moment Structure) was used to find the direct, indirect, and total effects for the estimated models and to assess the relative magnitude of each exogenous variable in explaining the total variation in the endogenous variable.

5. Results and Discussion

5.1 The Effect of IT governance on AIS

To determine the effects of IT governance on the AIS, by using path analyses, the equation (1) was formulated as follows:

$$X_5 = P_{51} X_1 + P_{52} X_2 + P_{53} X_3 + P_{54} X_4 + P_{5u} U \quad \ldots (1)$$

Where:
X_5 = AIS
X_1 = value delivery and strategic alignment
X_2 = risk management
X_3 = resource management
X_4 = performance measurement
U = residuals
And the substitution in equation (1) yields the following:

$$X_5 = 0.568320\ X_1 + 0.58471\ X_2 + 0.47781\ X_3 + 0.45262\ X_4 + 0.43193\ U$$

The significant of the above equation and path coefficients were tested and the results showed that they were significant with the level of (0.05).

This equation illustrates the direct effects of the IT governance domains on the AIS. Since the path coefficients allow to compare the relative magnitude of the effects of different explanatory variables in the path model. The effects of these variables according to their relative magnitude, as shown in table (3), are as follows: risk management, value delivery and strategic alignment, resource management, and performance measurement. This means that risk management has a positive direct effect on the AIS with a value of (0.58471), followed by the effect of value delivery and strategic alignment with a value of (0.568320), then the effect of resource management with a value of (0.47781), and finally the effect of performance measurement with a value of (0.45262). Residuals, which are the exogenous independent variables that are not addressed in this study plus any error due to measurement, have a positive effect on the AIS with a value of (0. 43193).

Also, the correlation coefficients presented in Table (3) show a positive correlation between each of IT governance domains and AIS. However, the path coefficients of exogenous variables in the equation represent the direct and total effects at the same time as they are perfect exogenous variables. It should also be noted that there is a difference between simple correlation and the total effect of each variable. These differences are referred to as unanalyzed effects and they are due to the correlation between exogenous variables that are shown in figure (2). Also, figure (2) shows a weak correlation between exogenous variables. Consequently, the previous results provide support for the first sub-hypothesis (H1a). This means that the AIS is affected by the IT governance.

5.2 The Effect of IT governance and AIS on the Usefulness of Accounting Information

The model of the present study, as illustrated earlier, showed that the AIS directly affects the usefulness of accounting information, as well as the IT governance directly affects the usefulness of accounting information and indirectly via its direct effects on the AIS. To determine these effects, the equation (2) was formulated as follows:

$$Y = PY_1 X_1 + PY_2 X_2 + PY_3 X_3 + PY_4 X_4 + PY_5 X_5 + PY_Z Z \quad \ldots (2)$$

Where:

Y = usefulness of accounting information

X_1 = value delivery and strategic alignment

X_2 = risk management

X_3 = resource management

X_4 = performance measurement

X_5 = AIS

Z = residuals

And the substitution in equation (2) yields the following:

$$Y = 0.46341\ X_1 + 0.48361 X_2 + 0.43759\ X_3 + 0.41352\ X_4 + 0.51201\ X_5 + 0.50063 Z$$

The substitution in formula (2) demonstrates the direct effects of exogenous variables (X_1, X_2, X_3, X_4, and X_5) on the usefulness of accounting information (Y) according to their relative magnitude, which are as follows: AIS, risk management, value delivery and strategic alignment, resource management, and performance measurement.

The indirect effects of IT governance on the usefulness of accounting information through AIS (X_5) obtained by substituting equation (1) in the equation (2):

$$Y = PY_1 X_1 + PY_2 X_2 + PY_3 X_3 + PY_4 X_4 + PY_5 (P_{51} X_1 + P_{52} X_2 + P_{53} X_3 + P_{54} X_4 + P_5u\ U) + PY_Z Z$$

$$Y = PY_1 X_1 + PY_2 X_2 + PY_3 X_3 + PY_4 X_4 + PY_5 P_{51} X_1 + PY_5 P_{52} X_2 + PY_5 P_{53} X_3 + PY_5 P_{54} X_4 + PY_Z Z^1$$

Where:

$$PY_Z Z^1 = PY_5 P_5u\ U + PY_Z Z$$

Substitution of the path coefficients values yields:

$$Y = 0.46341\ X_1 + 0.48361\ X_2 + 0.46341\ X_3 + 0.41352\ X_4 + 0.29098\ X_1 + 0.29938\ X_2 + 0.24464\ X_3 + 0.23174\ X_4 + 0.72178\ Z^1$$

The significant of the above equation and path coefficients were tested and the results indicated that they were significant with the level of (0.05). Table (4) shows that the AIS has a positive direct and total effect on the usefulness of accounting information with a value of (0.51201), followed by the direct effect of risk management with a value of (0.48361) and positive indirect effect via AIS with a value of (0.29938) therefore the total effect has reach (0.78299). Then the direct effect of value delivery and strategic alignment with a value of (0.46341) and indirect effect through AIS with a value of (0.29098), hence, the total effect has become (0.75439), then the direct effect of resource management with a value of (0.43759) and indirect effect through AIS with a value of (0.24464) so the value of total effect has amounted to (0.68223).

And finally the direct effect of performance measurement with a value of (0.41352) and indirect effect via AIS with a value of (0.23174) which resulted in the total effect value of (0.64526).

Further, the usefulness of accounting information had a positive correlation with each of IT governance domains and AIS. It should also be noted that the total effects of risk management, value delivery and strategic alignment, and resource management were greater than their simple correlations with the usefulness of accounting information, but the total effects of the AIS and performance measurement were smaller than their simple correlations with this usefulness. This is due to the correlations between exogenous variables, as displayed by figure (3), which are considered unanalyzed effects. It is clear from the above results that the second sub-hypothesis (H1b) was supported. This means that the usefulness of accounting information is affected by the AIS. Also, these results prove that the usefulness of accounting information is influenced by the IT governance. Hence, the main hypothesis (H1) was accepted as well.

6. Conclusion

The main objective of this study was to investigate the direct effects of IT governance; i.e., value delivery and strategic alignment, risk management, resource management, and performance measurement, on the usefulness of accounting information presented in the financial statements of Jordanian industrial companies listed in the Amman Financial Market, as well as indirect effects via the AIS as mediator.

Using the path analysis, the findings of the study pointed that the IT governance and IAS affect the usefulness of accounting information as follows:

- Value delivery and strategic alignment: direct effect (0.46341), indirect effect (0.29098), and total effect (0.75439).
- Risk management: direct effect (0.48361), indirect effect (0.29938), and total effect (0.78299).
- Resource management: direct effect (0.43759), indirect effect (0.24464), and total effect (0.68223).
- Performance measurement: direct effect (0.41352), indirect effect (0.23174), and total effect (0.64526).
- AIS: direct and total effect (0.51201).

This result can be especially important to senior management as it provides valuable insights into the role of IT governance in enhancing the usefulness of accounting information, which is presented in the financial statements, and improving the ability of the AIS to produce high quality information. Such insights suggest that the top management should be adhered to the proper implementation of IT governance and focus on all its domains due to their significant impact on increasing the usefulness of accounting information that is provided to external users, as well as keep pace with inventions concerning the IT governance. Additionally, the Jordanian industrial companies should take a great and deep interest in developing a governance corporate guide that emphasizes on IT governance.

The findings of the research provide an empirical evidence for the relationship between IT governance and the usefulness of accounting information. Therefore, avenues for further research could be held to cover other variables related to the IT governance that might have a significant influence on this usefulness.

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Table 1: Distribution of the Sample

Participants	No. of Distributed Questionnaires	No. of Returned Questionnaires
Financial managers	38	32
IT managers	32	30
Internal auditors	30	28
Total	100	90

Table 2: Cranach's Alpha for the Scale

Variable	Cranach's Alpha
Value delivery and strategic alignment	0.93
Risk management	0.90
Resource management	0.88
Performance measurement	0.86
Accounting information system (AIS)	0.83
Usefulness of accounting information	0.83

Table (3): The Direct and Total Effects of IT Governance on the AIS

Endogenous Variable	Exogenous Variable	Direct and Total Effects	Simple Correlations
AIS (*X5*)	Risk management (*X2*)	0.58471	0.68687
	Value delivery and strategic alignment (*X1*)	0.56832	0.66588
	Resource management (*X3*)	0.47781	0.56297
	Performance measurement (*X4*)	0.45262	0.53018

Table 4: The Direct, Indirect, and Total Effects of IT Governance and AIS on the Usefulness of Accounting Information

Endogenous Variable	Exogenous Variable	Direct Effects	Indirect Effects through AIS (X5)	Total Effects	Simple Correlations
Usefulness of accounting information (y)	AIS (*X5*)	0.51201	-	0.51201	0.61072
	Risk management (*X2*)	0.48361	0.29938	0.78299	0.69135
	Value delivery and strategic alignment (*X1*)	0.46341	0.29098	0.75439	0.66196
	Resource management (*X3*)	0.43759	0.24464	0.68223	0.55288
	Performance measurement (*X4*)	0.41352	0.23174	0.64526	0.68153

Governance

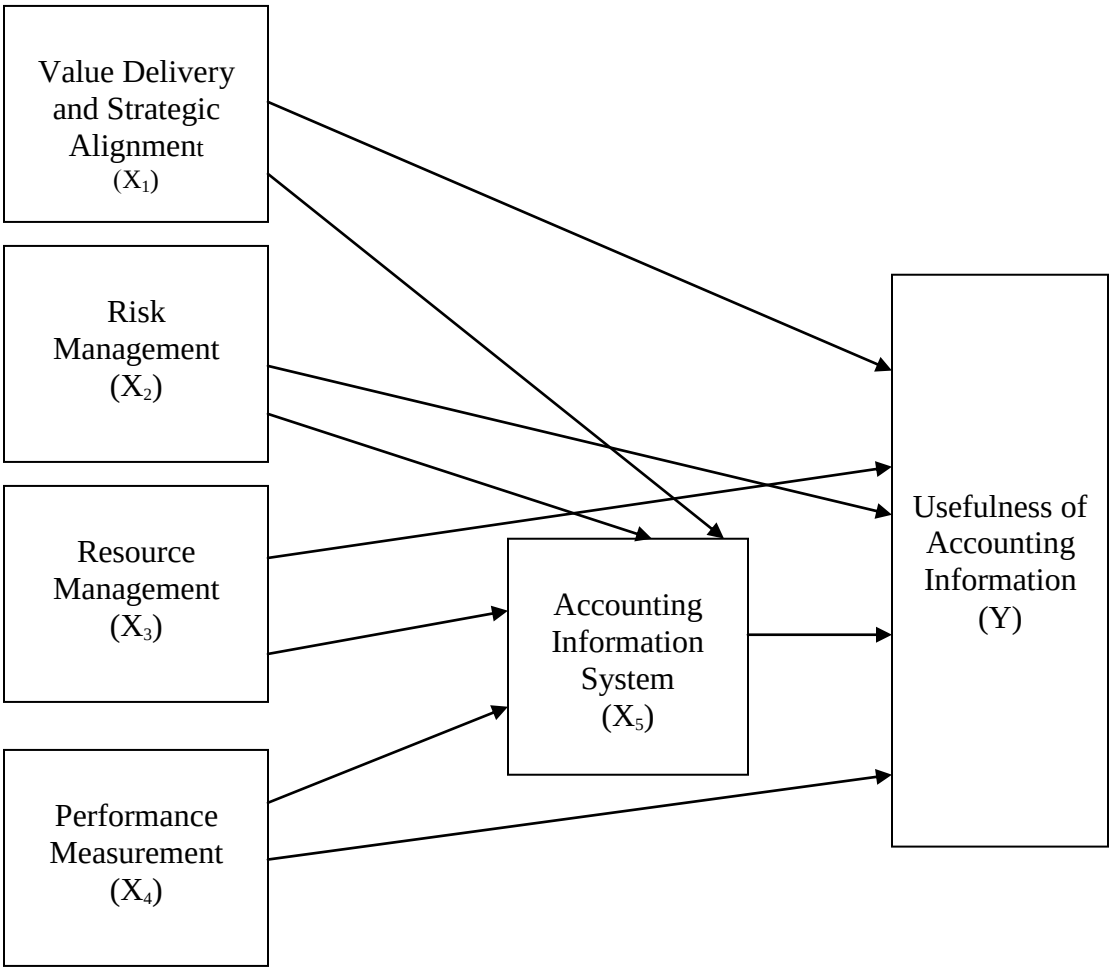

Figure 1: Research Model

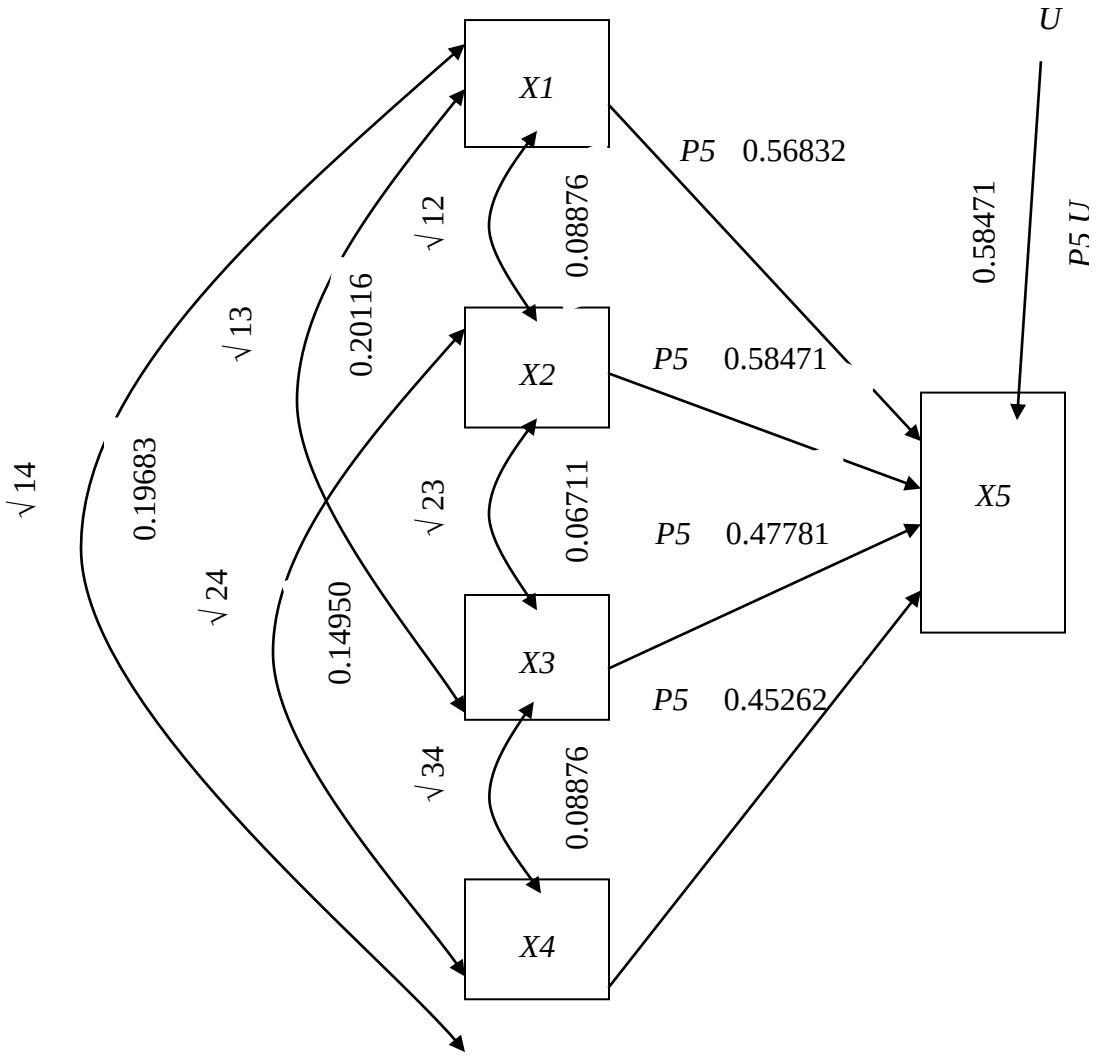

Figure 2: Path Diagram for the Direct and Total Effects of IT Governance on the AIS

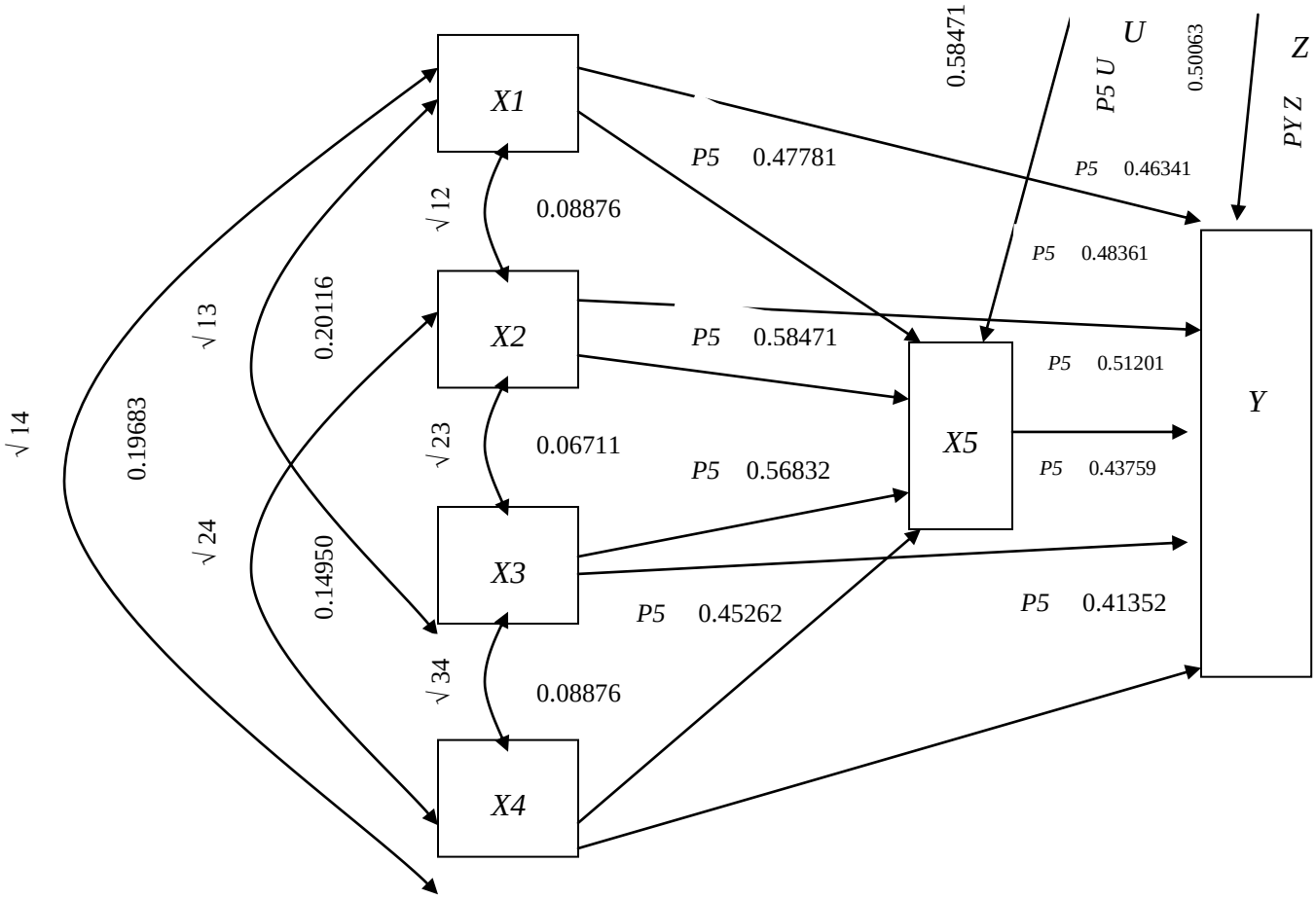

Figure 3: Path Diagram for the Direct, Indirect, and Total Effects of IT Governance and AIS on the Usefulness of Accounting Information