التوجه نحو استخدام محاسبة التكاليف في التحقيق في عمليات الاحتيال في العراق

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المستخلص :

تهدف الدراسة الى التعرف الى اي مدى يمكن ان تستخدم محاسبة التكاليف في التحقيق في عمليات الاحتيال في العراق. ولتحقيق هذا الهدف فقد تطوير استبيان عبر الانترنت لجمع البيانات اللازمة. وقد تم اختبار فرضيات الدراسة وتحليل النتائج فقد تم استخدام بعض الاساليب الاحصائية المتطورة structural equation modelling كما تم استخدام برنامج حديث وهو Smart PLS 4.0 في تحليل النتائج. وقد توصلت الدراسة الى مجموعة من النتائج اهما ان كل من المنفعة المتوقعة لاستخدام محاسبة التكاليف وسهولة الاستخدام ليس لها تاثير كبير ذو دلالة احصائية في جذب محققي عمليات الاحتيال على استخدام محاسبة التكاليف بالرغم من وجود نية بين المحققين على استخدام محاسبة التكاليف في التحقيق في عمليات الاحتيال.

الكلمات المفتاحية: الاحتيال, محاسبة التكاليف, سهولة الاستخدام, المنفعة, السلوك

Toward Using Cost Accounting in Fraud Investigation: Evidence From Iraq

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Abstract :

The purpose of this study is to examine the acceptance level of cost accounting by fraud investigators in Iraq. To do so, an online-questionnaire is developed to gather the data. The data is gathered from 99 accounting academics working in different Iraqi universities. This research employs a structural equation modelling using Smart PLS 4.0 to interpret the findings. The results assert that perceived usefulness, perceived ease of use, and trialability have no influence on the behaviour of fraud investigators to actual usage of cost accounting. Only compatibility, attitude, and intention to use have a significant influence. This is the first empirical examination that explores the behavior of fraud investigators toward the actual use of cost accounting in Iraq.

Keywords Fraud, cost accounting, usefulness, easy to use, attitude

1. Introduction

Fraud remains a hot research area for accounting academics (Davis & Pesch, 2013). It has seen one of the prevalent problems facing business in the worldwide (Gullkvist & Jokipii, 2013) because it is costly (Afriyie, Akomeah, Amoakohene, Ampimah, Ocloo, & Kyei, 2022). Each year, the global economy losses US$5.127tn due to fraudulent practices (Sarikhani & Ebrahimi, 2022). The fraud also leads to lose confidence in business, destabilize economies, and increase cost of people living (West & Bhattacharya, 2016). (Ametepe, Banwo, & Arilesere, 2023; Demetriades & Owusu-Agyei, 2022; Okpako & Atube, 2013). This means fraud is a considerable matter for investors, regulators, external auditors, shareholders, professionals (Demetriades & Owusu-Agyei, 2022; Ehioghiren & Atu, 2016; Kassem, 2014; Kaur, Sood, & Grima, 2023). That is, many organizations are spending a big part of their resources to fraud investigation (Khersiat, 2018; Pourhabibi, Ong, Kam, & Boo, 2020). Indeed, fraud examination remains hard even for the big accounting firms (Agyemang, Ohalehi, Mgbame, & Alo, 2023; Jaswadi, Purnomo, & Sumiadji, 2022). Fraud is seen in different forms but the most prevalent form is fraudulent financial reporting (Dalnial, Kamaluddin, Sanusi, & Khairuddin, 2014; Demetriades & Owusu-Agyei, 2022; Kaminski, Sterling Wetzel, & Guan, 2004; Ravisankar, Ravi, Rao, & Bose, 2011; Tan, Liu, & Ye, 2023; Zainudin & Hashim, 2016). Fraudulent financial reporting involves doctoring financial statements to appear the organization more profitable (West & Bhattacharya, 2016).

The corruption in the developing economics is prevalent (Ozili, 2023) and fraudulent practices are more complex (Kaur, Sood, & Grima, 2022). In the meantime, the accounting literature pays insufficient attention to the fraud issues. For example, in a recent quantitative research conducted in Saudi Arabia by (Alzahrane, 2023) found that the most academic institutions offer no accounting courses to deal with fraudulent practices. The research suggests, therefore, for both programs, undergraduate and postgraduate, the accounting curriculum needs to include the fraudulent practices (Alzahrane, 2023). 'Profiting from destruction' is the title of a research conducted in Iraq which discusses the level of the fraud and corruption (Chwastiak, 2013). The research states that many organizations working in Iraq reach huge profits through malfeasance and fraudulent activities (Chwastiak, 2013). Another precious study conducted in Iraq by (Cooper & Catchpowle, 2009) who say billions of Iraqi oil revenues are viable to fraudulent practices (Cooper & Catchpowle, 2009). Despite the raising of fraudulent practices in Iraq, proper accounting and auditing procedures are not existed yet (Chwastiak, 2013; Cooper & Catchpowle,

2009) and the Iraqi fraud investigators have poor knowledge to deal with these illegal actions (Kaur et al., 2022).

Cost accounting has been broadly used in fraud and corruption investigations (Blocher, Stout, Juras, & Smith, 2019; Cooper, Dacin, & Palmer, 2013; DiGabriele, Heitger, & Riley Jr, 2020). Cost accounting is uniquely able to provide what cost accounting information is reliable and pertinent to the fraud situation (Coller, Harrison, & Spiller Jr, 2004; Hansen, Mowen, & Heitger, 2022). It also assists to precisely establish fraudulent activities (Blocher et al., 2019). It limits the reliance on perception, intuition, and presumption that increase the uncertainty (Dalnial et al., 2014). However, the fraud investigators' perception, in Iraq, toward the use of cost accounting has not neither theoretically discussed nor empirically investigated yet. This study, therefore, investigates the acceptance of cost accounting in fraud investigation in Iraq. To reach our goal, the technology acceptance model adopts to understand the level of the acceptance of cost accounting by fraud examiners in Iraq.

This research creates some major contributions. Firstly, no single study has explored the fraud investigators' perceptions toward using cost accounting. Secondly, many fraud themes have not been addressed in the accounting literature (Cooper et al., 2013). Our study has a contribution in this regard.

The rest of this paper is organized as follows. Section 2 outlines the literature. Section 3 presents the research methodology. Section 4 provides research results and discussion. The study concludes with Section 5.

2. Literature review

2.1 Fraud investigation

Fraud is simply an untruth representation (Okpako & Atube, 2013). This is seen through falsifying cost records and analysis or represent them incorrectly (Okpako & Atube, 2013; Skalak, Golden, Clayton, & Pill, 2011). Some fraudulent activities are misappropriation and manipulation of financial leverage, liquidity, asset composition, capital turnover, and profitability (Kanapickienė & Grundienė, 2015; Okoye, 2009; Zainudin & Hashim, 2016).

Fraud investigation is a broad terminology (Okoye, 2009) and a risky job (Prabowo, 2013; Sarikhani & Ebrahimi, 2022). It “is like searching for missing pieces of a puzzle and piecing it all together to form a complete picture” (Prabowo, 2013, p. 364). Fraud investigation and forensic accounting are interchangeable but they are not accurately identical (Kranacher & Riley, 2019; Prabowo, 2013). Forensic accounting examines not only fraud but bankruptcy, disputes, and other litigation support services while

fraud investigation only deals with fraud issues (Prabowo, 2013). Forensic investigations are conducted only accountants, however, fraud investigations are conducted by accountants, law enforcements officials, private detectives, and corporate security specialists (Manning, 2010; Prabowo, 2013). Notably, accountants are the main contributors in any fraud examination because they realize the accounting systems and their weaknesses (Silverstone, Sheetz, Pedneault, & Rudewicz, 2012).

2.2 Cost accounting and fraud investigation

Cost manipulation is the core of fraud (Cooper et al., 2013; Voinea & Dimitriu, 2014). Cost manipulation is mainly seen in cost-allocation or cost-calculation (Voinea & Dimitriu, 2014). To inflate revenues, for example, accountants may overstate cost of ending inventory (Skalak et al., 2011) or they choose not to record the obsolete inventory (Somayyeh, 2015). Another fraud way is that fraudsters may incorrectly classify costs to manipulate the financial statements (Edmonds, 2017). Therefore, understanding cost behavior analysis is very important in this regard (Hansen et al., 2022). Investigators of fraud have to carefully look at variable and fixed cost, direct and indirect cost, incremental cost, and, joint cost (DiGabriele et al., 2020). In other fraud cases, organizations may choose inflating revenues by reducing significantly overhead costs (Cooper & Kawada, 2022). In such fraud case, investigators seek to know should overhead costs be included in the damage cost? (DiGabriele et al., 2020). Fraud perpetrators can also use absorption costing instead of variable costing because the absorption method allows them to manipulate in the operating income (Hansen et al., 2022).

Fraud investigators are unable to reach a fair and reasonable fraud case decision without using cost accounting data (Button, Blackbourn, Lewis, & Shepherd, 2015; Coller et al., 2004; Cooper & Kawada, 2022; DiGabriele et al., 2020; Skalak et al., 2011). This is simply because the judge, jury, and attorneys usually are not completely sophisticated in interpreting cost accounting information and how to apply them to fraud examinations (Hansen et al., 2022). Cost accountants are being asked to concisely clarify and justify why they decided to include or exclude overhead costs from the tort cost (DiGabriele et al., 2020). Determining the fraud amount is not the first aim for cost accounting as some people believe (Blocher et al., 2019). Cost accounting enables fraud examiners to differentiate between the action for the sake of the organization or commit and disguise fraud (Blocher et al., 2019). Then, they check the liability of the contractor, if so, the next step is to know the tort cost (Kranacher & Riley, 2019). To do so, the fraud investigator "tests contract costs to verify that costs have been matched with appropriate

contracts and that costs have not been shifted from unprofitable contracts to profitable ones" (Skalak et al., 2011, p. 453).

3. Research model and hypotheses development

A positive user's behaviour is the first step to successfully adopt any accounting system (Permatasari & Prajanti, 2018). Behaviours of fraud examiners are beyond their own volition (Permatasari & Prajanti, 2018). They are defined based on the needs and obligations of fraud circumstances (Permatasari & Prajanti, 2018). Technology acceptance model adopts to define the acceptance of cost accounting by fraud investigators in Iraq (Muchran & Ahmar, 2019; Turner, Kitchenham, Brereton, Charters, & Budgen, 2010). This model demonstrates why cost accounting being accepted or rejected by fraud investigators (Permatasari & Prajanti, 2018). The technology acceptance model was developed by (Davis, 1986). The technology acceptance model suggests some factors which determine the degree of acceptance of cost accounting by fraud investigators. These factors are perceived usefulness, perceived ease of use, compatibility, trialability, attitude and intention to use (Alshurafat, Al Shbail, & Almuiet, 2022; Davis, Bagozzi, & Warshaw, 1989; Kumari & Devi, 2023; Permatasari & Prajanti, 2018; Rogers, 1995; Taylor & Todd, 1995; Turner et al., 2010). Fraud investigators' attitude and fraud investigators' intention are considered both dependent variables and independent variables to predict actual usage of cost accounting. Figure 1 illustrates the technology acceptance model.

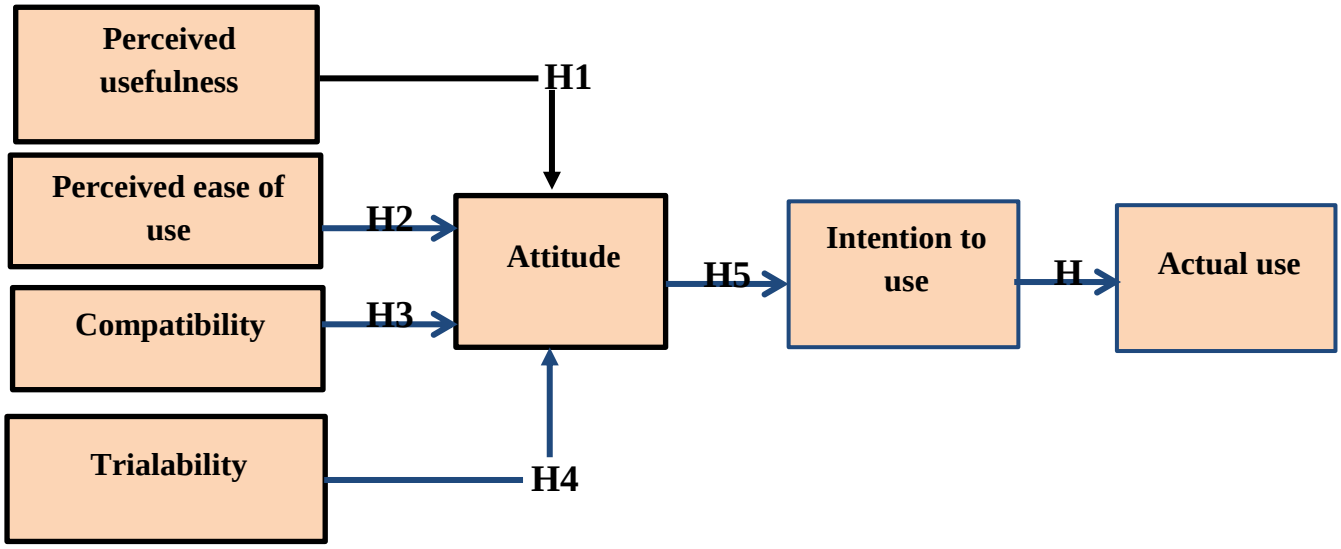

Figure 1. Research model

3.1 Perceived usefulness

Perceived usefulness discusses the extent to which people think that adopting a new tool can enrich their performance (Davis et al., 1989). Fraud investigators may find using cost accounting assists to reach fair decision, finalise examiantion faster, and increase their productivity (Alshurafat, Al Shbail, Masadeh, Dahmash, & Al-Msiedeen, 2021; Bierstaker, Janvrin, & Lowe, 2014; Permatasari & Prajanti, 2018). Then, they are likely to adopt it (Kumari & Devi, 2023). Consequently, the first hypothesis in this study is:

H1. The perceived usefulness of using cost accounting positively influences fraud investigators' attitudes toward it.

3.2 Perceived ease of use

Perceived of ease of use "refers to the degree to which the prospective user expects the target system to be free of effort" (Davis et al., 1989, p. 985). This perceived occurs if the fraud investigators recognize that cost accounting is easy to use, easy to remember, easy to learn, and easy to understand (Barry & Jan, 2018; Permatasari & Prajanti, 2018). Hence, H2 is:

The ease of using cost accounting positively influences fraud investigators' attitudes toward it.

3.3 Compatibility

Cost accounting needs to be consistent with fraud investigators' needs, beliefs, values, and past experiences (Pinho, Franco, & Mendes, 2021). When an accounting system is considered compatible with the organization context, then the organization is most likely to develop it (Alshurafat et al., 2022). Based on this, H3 is:

H3. The compatibility of using cost accounting positively influences fraud investigators' attitudes toward it.

3.4 Trialability

Researchers also acknowledge that trialability is a key aspect in successfully applying new technologies (Pinho et al., 2021). In this research, trialability states the degree to which cost accounting can pilot-test in fraud investigation before deciding to apply it (Alshurafat et al., 2022). Based on this argument, H4 is proposed:

H4. The trialability of using cost accounting positively influences fraud investigators' attitudes toward it.

3.5 Attitude

Attitude evaluates the interest of a person toward adopting a particular accounting system (Afifa, Van, & Van, 2022; Hossain & de Silva, 2009). In this study, attitude refers to a positive or negative fraud investigator's perception regarding to use cost accounting (Kumari & Devi, 2023; Permatasari & Prajanti, 2018). The attitude has a positively influence on users' intention to actually accept application of particular accounting system (Odat, Alshurafat, Al Shbail, Ananzeh, & Al Amosh, 2023). This leads to the following hypothesis:

H5. The fraud investigators' attitude toward acceptance of cost accounting positively influences their behavioural intention to use it.

3.6 Actual use

Intention to use evaluates the desire of an organization to adopt an accounting technique (Uyob, Ku Bahador, & Saad, 2023). The relationship between intention to use and actual use is interchangeable (Alshurafat et al., 2022). Organizations who have greater intention to implement something, are highly expected to actually use it (Uyob et al., 2023). Hereby, the final hypothesis in this research is:

H6. High behavioral intention to use cost accounting in fraud investigation leads to actual usage of it.

4. Research method

Our data were gathered through a questionnaire survey. The survey contains two key sections. The 1 section was dedicated to gather the demographic information on the participants. Section 2 was designed to explore to what extent does cost accounting effect fraud investigation in Iraq. Following the approach of (Afifa et al., 2022), online survey is deemed appropriate for this research. For several reasons, the researchers used Google Form application in this regard. The first reason is that online survey secures the anonymity of the participants (Van Selm & Jankowski, 2006). Second, our participants, academics, are excellent internet users (Van Selm & Jankowski, 2006). Accordingly, online questionnaire increases the response rate from these respondents (Van Selm & Jankowski, 2006). From economic perspective, online surveys are not expensive (Van Selm & Jankowski, 2006). Also, the participants feel more comfortable to share their opinions (Van Selm & Jankowski, 2006).

Fraud investigation is multi-disciplinary in nature (Alshurafat, Al Shbail, & Mansour, 2021; Prabowo, 2013). This means the data required for fraud investigation study can be collected from academics, practitioners, or users of fraud investigation services (Alshurafat, Al Shbail, & Mansour, 2021; Davis, Farrell, & Ogilby, 2010; Digabriele, 2008; Prabowo, 2013; Salleh & Ab Aziz, 2014). Their views, however, are contradictor (Alshurafat, Al Shbail, & Mansour, 2021). To avoid this contradictory, only accounting academicians were chosen for this research. Table 1 outlines all constructs measured in the questionnaire. Arabic is the official language for accounting teaching in Iraqi universities. Therefore, the questionnaire was set in Arabic. The responses then were translated into English. Distinguishing the respondents based on their academic institutions is not necessary (Hashem Alshurafat, Al Shbail, Masadeh, et al., 2021). A five point Likert scale (1 = strongly disagree, and 5 = strongly agree) applied to measure the study constructs.

Table 1. Measurements of constructs

Construct	Code and items	Adopted from
Perceived usefulness	**PU1:** Cost accounting enables us to reach a fair and reasonable fraud case decision.	(Bedard, Jackson, Ettredge, & Johnstone,

	PU2: Cost accounting assists us to accomplish fraud investigations more quickly. **PU3:** Cost accounting improves our effectiveness on the fraud examination case.	2003; Davis et al., 1989)
Perceived ease of use	**PEU1:** Using cost accounting in fraud investigation is ease. **PEU2:** Using cost accounting in fraud examination is understandable. **PEU3:** Using cost accounting to fraud does not require too much mental effort.	(Bedard et al., 2003; Davis et al., 1989)
Trialability	**TR1:** Before deciding to adopt cost accounting in fraud examination or not, it needs to be used for testing purposes. **TR2:** Before deciding to use cost accounting in fraud examination or not, their suitability should be tested. **TR3:** Before deciding to use cost accounting in fraud examination or not, it is necessary to test them for a long time to check their potential.	(Gutierrez, Boukrami, & Lumsden, 2015)
Compatibility	**Com1:** Applying cost accounting to fraud investigation is totally compatible with my work. **Com2:** Using cost accounting to fraud investigation is consistent with our current values and believes **Com3:** Using cost accounting to fraud investigation is consistent with our existing systems.	(Gutierrez et al., 2015; Pinho et al., 2021)
Attitude	**Att1:** I find Using cost accounting in fraud investigation is favourable. **Att2:** I find the application of cost accounting in fraud investigation positive. **Att3:** I find the application of cost accounting in fraud investigation desirable.	(Alshurafat et al., 2022; F. D. Davis et al., 1989)
Intention to use	**IU1:** I intend to apply cost accounting in fraud investigation in the future. **IU2:** The application of cost accounting in fraud investigation is worthy. **IU3:** I would recommend others to apply cost accounting in fraud investigation. **IU4:** I am happy with the benefits that using cost accounting in fraud investigation bring.	(Alshurafat et al., 2022; Davis et al., 1989)
Actual use	**AU1:** We frequently employ cost accounting in fraud examination. **AU2:** I find cost accountants devote a lot of time on fraud investigation. **AU3:** We spend considerable amounts to hire cost accountants to reach a fair and reasonable fraud case decision.	(Alshurafat, Al Shbail, Masadeh, et al., 2021; Averweg, 2008)

5. Results

5.1 Demographic information

Table 1 demonstrates that 65.6% of our respondents are males while 34.4% of the respondents are females. Respondents from 21 to 30 years old make up only11%. There are 35.5% of the respondents

between 31 and 40 years old and respondents older 40 years old are 53.5%. Most of our respondents have more than 10 years of experience (62.7%), while 37.3% of the participants have less than 10 years of experience. Table 1 also shows that master's degree holders, PhD holders, and others are 27.3%, 27.3%, 45.4% respectively.

Table 2. Demographic information

Category	Demographic measures	Percentage
Gender	Male	65.6
	Female	34.4
Age	From 21 to 30 years	11
	From 31 to 40 years	35.5
	Above 40 years	53.5
Experience	Under 10 years	37.3
	From 11 to 20 years	43.5
	Above 20 years	19.2
Education	Master's degree	27.3
	PhD	27.3
	Other	45.4

5.2 Measurement model results

Following the advice of Hair, Hult, Ringle, and Sarstedt (2021), factor loadings, Cronbach's alpha (CA), composite reliability (CR), and average variance extracted (AVE) were used to confirm the convergent validity of the measurement model. The outer loading is essential to check the quality of the items (Hair et al., 2021). According to (Bagozzi, Yi, & Phillips, 1991), items with lower than 0.4 outer loading should be removed. Table 3 outlines that the lowest and highest outer loadings are 0.699 and 0.894 respectively. These outer loadings demonstrate the quality of items. Furthermore, CA and CR used to examine reliability of constructs. While CA may lead to underestimate the reliability (Peterson & Kim, 2013), CR may lead to overestimate the reliability (Hair et al., 2021). Table 3 also demonstrates that all constructs have met the minimum scores of reliability, CA 0.642 (> 0.6) and CR 0.805 (> 0.7) (DeVellis, 2016; Teo, Tan, Ooi, Hew, & Yew, 2015). Finally, table 3 confirms that all scores of AVE are more than 0.5. That is, the model has a convergent validity (Hair et al., 2021).

Table 3. Convergent validity

Construct	Items	Factor loadings	CA	CR	AVE
Actual use	AU1 AU2 AU3	0.815 0.797 0.864	0.773	0.865	0.682
Attitude	Att1 Att2 Att3	0.842 0.791 0.845	0.767	0.866	0.683
Compatibility	Com1 Com2 Com3	0.796 0.894 0.857	0.807	0.886	0.723
Intention to use	IU1 IU2 IU3 IU4	0.843 0.834 0.887 0.825	0.869	0.911	0.718
Perceived ease of use	PEU1 PEU2 PEU3	0.803 0.862 0.699	0.706	0.832	0.625
Perceived usefulness	PU1 PU2 PU3	0.837 0.848 0.825	0.787	0.875	0.700
Trialability	TR1 TR2 TR3	0.587 0.876 0.804	0.642	0.805	0.586

Two criterion, Fornell-Larcker and Heterotrait–monotrait ratio, were employed to investigate the discriminant validity. Results of the HTMT criterion are presented in table 5. Results of Fornell-Larcker criterion are presented in table 4. Table 5 Heterotrait– monotrait ratios are ranged from 0.382 to 0.859 (<0.90) (Teo et al., 2015). Indeed, the above results assert that our measurement model is trustworthy and reliable.

Table 4. Discriminant validity based on Fornell-Larcker criterion

Construct	Actual use	Attitude	Compatibility	Intention to use	Perceived ease of use	Perceived usefulness	Trialability
Actual use	0.826						
Attitude	0.384	0.826					

Compatibility	0.425	0.487	0.850				
Intention to use	0.333	0.702	0.516	0.847			
Perceived ease of use	0.336	0.465	0.556	0.467	0.791		
Perceived usefulness	0.295	0.452	0.378	0.479	0.595	0.837	
Trialability	0.415	0.320	0.297	0.352	0.275	0.294	0.765

Table 5. Discriminant validity based on Heterotrait–monotrait ratio

Construct	Actual use	Attitude	Compatibility	Intention to use	Perceived ease of use	Perceived usefulness	Trialability
Actual use							
Attitude	0.498						
Compatibility	0.542	0.618					
Intention to use	0.388	0.859	0.623				
Perceived ease of use	0.437	0.610	0.737	0.569			
Perceived usefulness	0.382	0.576	0.471	0.582	0.769		
Trialability	0.556	0.445	0.460	0.481	0.421	0.401	

5.3 Structural model results

Results of structural model are outlined in Figure 2 and Table 6. Figure 2 states that R2 values are 0.362 for attitude, 0.492 for intention, and 0.111 for actual use to embrace cost accounting application in fraud investigation. As observed in Table 6, there is no significant connection among perceived usefulness and intention to accept cost accounting in fraud examination (t-value = 1.735, p-value = 0.083). Accordingly, the first hypothesis is rejected. Meanwhile, Table 6 proves that perceived ease of use cost accounting is not significantly associated with intention to use it (t-value = 1.111, p-value = 0.267). Therefore, H2 is also not supported. However, compatibility is significantly associated with behavioural intention (t-value = 2.486, p-value = 0.013). This means H3 is supported. As trialability is not strongly linked with behavioural intention (t-value = 1.340, p-value = 0.180), H4 is not supported. The study also finds that there is a significant connection between attitude and behavioral intention (t-value = 12.454, p-value =

0.000). Similarly, attitude is significantly pertained to actual usage (t-value = 3.109, p-value = 0.002). Consequently, H5 and H6 are supported.

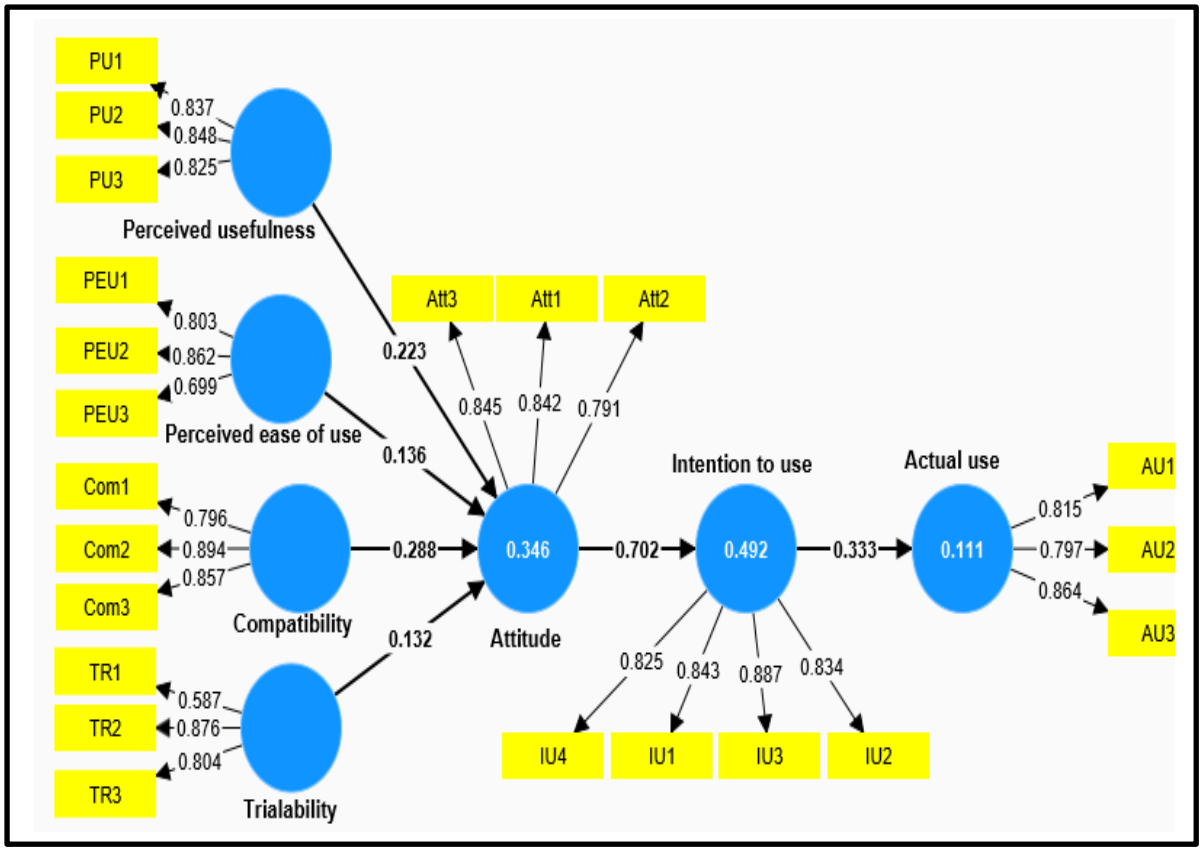

Figure 2. Structural model

Table 6. Results of hypothesis testing

Structural path	Path coefficient	*t*-values	p-values	Conclusion
*H1:*Perceived usefulness --------attitude	0.223	1.735	0.083	Not supported
H2: Perceived ease of use ----attitude	0.136	1.111	0.267	Not supported
H3: Compatibility --- attitude	0.288	2.486	0.013	Supported
H4: Trialability ----- attitude	0.132	1.340	0.180	Not supported
H5: Attitude- intention to use	0.702	12.454	0.000	Supported
H6: Intention to use---- actual use	0.333	3.109	0.002	Supported

6. Discussion and conclusion

The study defined the factors affecting either positively or negatively the use of cost accounting by fraud investigators in Iraq. Interestingly, our empirical results asserted the perceptions of fraud investigators toward the use of cost accounting are not driven by perceived usefulness, perceived ease of use, and trialability. These findings are not consistent with the prior literature (Afifa et al., 2022; Alshurafat et al., 2021; Kumari & Devi, 2023). The intention to use is not affected by compatibility (Afifa et al., 2022). This argument was rebutted by our study. Our study confirms that the compatibility is the most important driver that makes fraud investigators accept using cost accounting. Finaly, the study found that attitude toward use is a central factor that influences the behavioral intention to use (Alshurafat et al., 2021). Meanwhile, the latter influences positively actual usage (Alshurafat et al., 2021).

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