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Attitudes towards e-Bookkeeping in Turkey: Initial Research

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Abstract *Accounting profession has evolved and with the use of computer technology, many concepts related to accounting have emerged. This study considers one of such, e-bookkeeping, and uncovers the attitudes of accounting professionals towards e-bookkeeping practice in Turkey. An important point is that this practice has not gone into effect at the time this study is prepared, thus these attitudes are preliminary. The results yield that accounting professionals' attitudes depend on five factors and these attitudes change solely according to the size of business.*

Key words E-bookkeeping, accounting, attitude, Turkey

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1. Introduction

Accounting has a long history. The literature points out that it dates back to 2000 BCs in the ancient Egypt and evidence proves the use of accounting in the Holy Roman Empire (Nigam, 1986). It is also striking that that the Sumerians, around 5000 BCs, used a recording method that resembles the prominent double-entry system of accounting (Samuelson, 1977). These mentioned roots since the ancient times have led to many variations of accounting today. Many sub-branches have been introduced, starting from more conventional ones such as *financial* (Bushman & Smith, 2001; Holthausen & Watts, 2001) and *management* (Haldma & Lääts, 2002; Scapens, 1994) accounting to interesting topics such as *lean* (Maskell, Baggaley, & Grasso, 2011; Solomon, 2003), and *creative* (de la Torre, 2009) accounting.

Despite these variations, accounting systems are much institutionalized today. There are general accounting systems such as the United States-Generally Accepted Accounting Principles (US-GAAP) and International Financial Reporting Standard (IFRS) (Daske, 2004), with their variations including Indian Accounting Standards (Ind AS) (Perumpral, Evans, Agarwal, & Amenkhienan, 2009) and Turkish Financial Reporting System (TFRS) (Pekdemir, 2011). This institutionalization is not solely limited to accounting systems, but also includes auditing; Standard Audit File for Tax (SAF-T), which is suggested for OECD countries, as an example (Organisation for Economic Co-operation and Development, 2010).

A focal point of this current study is related to the fact that accounting systems used to depend on manual methods before the use of personal computers in businesses widespread. In other words, accounting procedures depended on items such as calculators, typewriters and hardcopy ledgers (Tavakolian, 1995); but the introduction of computer technology, thanks to innovation and computer literacy (Doost, 1999), led to a rapid computerization in accounting area. This computerization, which focuses on business survival (Lohman, 2000), efficiency and speed (Allahverdi, 2012; Hotch, 1992), and the interest to *catch* non-financial information (Brecht & Martin, 1996) gives birth to many related subjects including accounting information system (Stefanou, 2006), digital accounting (e-accounting) (Rajagopalan & Deshmukh, 2005), e-billing (Potapenko, 2010) and e-bookkeeping (Amidu, Effah, & Abor, 2011). One of these subjects, e-bookkeeping, is included in this current study as it is found out to be an interesting subject for several reasons. It is, first of all, much rarely considered in international literature when compared with other subjects that fall into the umbrella of computerized accounting systems. A

noteworthy fact is that this subject is represented even more seldom by very few and current studies in the Turkish context, which generally assume e-bookkeeping to be a part of e-government system (e.g., Oz & Bozdogan, 2012). Another reason, which makes e-bookkeeping interesting, is that it becomes mandatory for some businesses in Turkey as of September 1, 2014 (Directorate General of Legislation Development and Publication, 2012). This necessity forces these businesses to be aware of e-bookkeeping, thus, they become appropriate candidates for a research about their readiness and opinions about e-bookkeeping requirements. To this end, the authors of the current study investigate the attitude of these businesses' accounting managers towards e-bookkeeping, and after figuring out the statistical structure of this attitude, multivariate general linear models are run in order to understand whether this attitude changes according to these people's gender, age, their tenure in accounting profession and the number of workers in their businesses.

Overall, the authors of this current study contend that this study is an occasion to fill in the gap in the relevant Turkish literature and is also a good contribution to the international literature in terms of informing about the situation of the subject in the Turkish context. The study also pioneers the research about e-bookkeeping in Turkey and further research may be conducted after e-bookkeeping is in effect as of September 1, 2014.

2. E-Bookkeeping as a Part of E-Government

As mentioned, e-bookkeeping is perceived as a vital part of a massive e-government project in Turkey (Oz & Bozdogan, 2012). This perception is also expected worldwide, especially when many countries have an appetite for e-government applications. Examples include USA (Carter, Schaupp, & McBride, 2011; Uçkan, 2003); European Union as a whole (Commission of the European Communities, 2001; Torres, Pina, & Acerete 2005; Zaimes, Kalampouka, & Emmanouloudis, 2012); European countries such as Turkey (Giray, 2010; Kerman, Altan, Aktel, & Ozaltin, 2012) and Germany (Winkel, 2007); Asian countries including Singapore (Tan & Pan, 2003; Tan, Pan, & Lim, 2005), Japan (Chatfield, 2009), Iran (Sarboland, 2012) and China (Seifert & Chung, 2009); and African countries with examples Nigeria (Adeyemo, 2011) and Zambia (Bwalya, 2009). This appetite is also evident in some studies that include comparisons for the use of information technology between developing and developed countries (e.g., Ndou, 2004). A noteworthy fact is that e-government is not only studied at national level, but also at local levels including municipalities (Durna & Ozel, 2008; Moon, 2002), states (Melitski, 2003), provinces (Cinar & Guney, 2012; Kerman et al., 2012), and there are multiple comparisons among these levels (Tolbert & Mossberger, 2006).

A brief literature review uncovers that all these examples pinpointing interest towards e-government stem from sound reasons. E-government is considered as an overall system that overarches the sole use of knowledge management technology (Lau, Aboulhoson, Lin, & Atkin, 2008) via producing innovative services and providing these to public for the sake of governance. This system enables the diffusion of relevant information continuously among government, citizens and business environment (Moon & Norris, 2005), thus, it helps to foster transparency (Silcock, 2001), which in turn, leads to a better fight against frauds and corruption (Andersen, 2009; Giray, 2010; Wescott, 2003). The use of electronic devices and telecommunication technology is also an occasion to reduce costs and simplifies the active participations of citizens, political groups and businesses in the public decision-making processes (Pathak, Singh, Belwal, & Smith, 2007). This simplification is even emphasized by the use of mobile telecommunication devices, proxied by the term m-government (Ozturkcan, Kasap, & Eryarsoy, 2012). By and large, these reasons are considered to be beneficial especially for the coordination among government, citizens, businesses and other parties; and this coordination, reinforced with a participative and demographic feedback system, is subject to increase the quality of public services (Ciborra & Navarra, 2005) as well as public services' efficiency (Bakry, 2004).

It is gripping that the literature does not solely relate the pros with technical issues such as quality and efficiency. There are also some psychological issues that need to be noted, trust and confidence, being very prominent. Some scholars (e.g., Kolsaker & Lee-Kelley, 2008; Tolbert & Mossberger, 2006) find out that the use of electronic devices for government services and public decision-making decreases the possibility of malicious human interferences, thus, users of e-government feel safer and think that they are really being listened to when interacting with the government. These findings are also confirmed by some

studies (e.g., Burn & Robins, 2003) claiming that e-government forms a general pattern for government-user interactions and this pattern, acting as an institution, decreases the expectation of possible mixes with the users' businesses with the government. It is, on the other hand, vital that this institution needs to be actively adjusted according to changes in citizens' paradigms (Islam, 2007) and culture (King, 2006).

Though e-government is beneficial for the most, some challenges exist in the development or implementation processes. Generally speaking; these challenges include the necessity of adequate technical infrastructure (Ryder, 2007), the issue of aggregating government services in specific contexts (Ciborra & Navarra, 2005), the need to satisfy the users in terms of accountability and trust (Wong & Welch, 2004), and difficulties in the updating process of e-government applications (King, 2006),

Huge projects such as e-government cannot be applied at once, therefore, e-government may be developed as a process (Bhatnagar, 2004), which makes e-bookkeeping necessary at a certain step. A very interesting fact is faced in the literature at this point. There are many studies that focus on the process of e-government development but they fail to address e-bookkeeping directly. Instead, preparation and use of electronic and formal documents are emphasized, and the use of e-bookkeeping is implied as a method in this sense. An example for such belongs to Bhatnagar (2004), who tells that an overall e-government project matures after four steps and implies the use of e-bookkeeping at the last two stages, when electronic documents are formalized and distributed among the users. Layne & Lee (2001) consider similarly and contend that there are four stages of e-government development. E-bookkeeping may be required when the third step is active – when electronic databases of the local systems (businesses, societies, etc.) are to be linked with the higher level systems. Reddick (2004) shortens the development process to two main steps. The first step requires the accumulation of knowledge electronically, and the second step needs this knowledge to be transacted between the government and the citizens, including businesses. As for the financial knowledge, e-bookkeeping practices may be applied at both steps. The United Nations, which forms an overall index to measure the depth of e-government adoption in more than 190 countries, depends on the combination of three dimensions: networking, telecommunication infrastructure and human resources indexes (Basar & Bolukbas, 2010). The emphasis on the use and distribution of electronic documents, evident in the United Nations 2014 e-government survey (Andreasson, 2012), may also be considered as an implication for the need of e-bookkeeping.

All the facts given as of this point reveal that e-bookkeeping should be considered within, or at least, connected with an e-government project. As the Turkish context is in question, the formal definition of e-bookkeeping may be given at this stage. According to section 2-I of the reiterated article no. 242 in the Turkish Tax Procedure Law, e-bookkeeping is an aggregation of all electronic records, which must include all the necessary information that the mandatory books mentioned in the Turkish Tax Procedure Law have to contain.

3. The Legal Situation of E-Bookkeeping in Turkey

E-bookkeeping can be perceived as an important means for a further institutionalization of both accounting and audit systems, which also acts as an agent for Turkish accounting profession to approach international standards (Dogan, 2010). Turkish literature posits that the use of e-bookkeeping, depending on its Extensible Business Reporting Language (XBRL), is considered as an obligation to overarch the limits of current computer software and is a vital source to fight with corruptions (Erkuş, 2008). In other words, Turkish literature considers e-bookkeeping as an opportunity to unite with the rest of the world in terms of modern and effective accounting, and as a reason to get rid of most of the possible illegalities.

This positivity can be considered as the basis of the need for e-bookkeeping in Turkey and this need is to be satisfied and regulated by a bunch of legislations. The technical issues about e-bookkeeping is determined by the Revenue Administration under the control of Turkish Ministry of Finance as a part of Turkish e-government project and the ultimate goal is to arrive at a model of an automated general electronic tax office (Dogan, 2012). To this end, the Revenue Administration has introduced many concepts such as e-proclamation, e-payment, e-seizure, e-tax registration certificate, e-invoice, e-audit, e-precept, e-archive, e-risk analysis, e-registration record, and e-bookkeeping (Dogan, 2012).

The first legal arrangement for e-bookkeeping is made in 2001. Official Gazette no. 24626 at December 30, 2001 includes the omnibus bill no. 4731, which brings a change to the section 2 of the

reiterated article no. 242 of the Turkish Tax Procedure Law (Directorate General of Legislation Development and Publication, 2001). The formal definitions of e-book, e-document, and e-record are first made with this change.

Next step is the Electronic Signature Law no. 5070, which goes into effect with the Official Gazette no. 25355 as of January 23, 2004 (Directorate General of Legislation Development and Publication, 2004a). This law regulates the legal structure of electronic signature, and the issue and use of electronic signatures. Another milestone in 2004 is that the omnibus bill no. 5228 is published in Official Gazette no. 25539 at July, 31 2004 (Directorate General of Legislation Development and Publication, 2004b). This bill adds an article to reiterated article no. 257 of the Turkish Tax Procedure Law and gives authority to the Turkish ministry of finance in order to allow or compel to provide tax proclamations and declarations, along with passwords, electronic signatures and other security items via every electronic medium including the Internet. The ministry is also authorized to benefit from other legal entities and real people to electronically distribute these proclamations and declarations.

In the next year, 2005, Turkish State Planning Office prepares "E-transformation Turkey Project 2005 Action Plan" and the 50. Action is determined to prepare for recording, acknowledging, keeping, and auditing accounting entries and books in electronic medium. This plan is present in Official Gazette no. 25773, issued at April 1, 2005, and also calls for joint projects with participants such as Turkish Ministry of Finance, Turkish Ministry of Justice, The Union of Chambers of Certified Public Accountants and Sworn-in Certified Public Accountants of Turkey, as well as universities, and the Notaries Union of Turkey (Directorate General of Legislation Development and Publication, 2005). This step is reinforced in 2006 by the Turkish state planning office's "Information Society Strategy 2006-2010 Action Plan", which not only emphasizes the use of electronic medium, but also calls for online applications to enable all commercial transactions to be submitted to government authorities (Republic of Turkey Prime Ministry State Planning Organization, 2006).

All these preparations lead to the first legal bulletin, which is directed towards e-bookkeeping, in 2006. Turkish Ministry of Finance issues general communiqué no. 361 within Official Gazette no. 26225, dated July 11, 2006 (Directorate General of Legislation Development and Publication, 2006). This general communiqué sets up the basic principles and implementations regarding the use of electronic medium when forming, saving, transferring, and submitting all the accounting documents and books. An important point is that e-bookkeeping is still optional at this stage.

Turkish Ministry of Finance gains full control to legally regulate the issue of e-bookkeeping via the omnibus bill no. 5766 that is issued in reiterated Official Gazette no. 26898 in June 6, 2008 (Directorate General of Legislation Development and Publication, 2008). With this means, the ministry prepares the general communiqué no. 397 in Official Gazette no. 27512 as of March 5, 2010 (Directorate General of Legislation Development and Publication, 2010). This communiqué sets up the principles for e-billing and e-fiscal seal, which are the two essential elements for formal e-bookkeeping.

All these legal regulations necessitate an update in the Turkish Trade Law and the first step is the Law no. 6215, issued in the Official Gazette no. 27903 in April 12, 2011 (Directorate General of Legislation Development and Publication, 2011a). This law makes an addition to the former Turkish Trade Law no. 6762 and states that general journals, ledgers, inventory registers, and operating ledgers may be formed and kept in electronic medium (Directorate General of Legislation Development and Publication, 1956). Turkish Trade Law is later reformed and the new Turkish Trade Law no. 6102 is issued in Official Gazette no. 27846 in February 14, 2011 (Directorate General of Legislation Development and Publication, 2011b). This new trade law includes e-bookkeeping but states that the relevant procedures are jointly regulated by Turkish Ministry of Finance and Turkish Ministry of Customs and Trade. This joint struggle ends with Electronic Book General Communiqué which is issued in Official Gazette no. 28141, and is effective as of December 13, 2011 (Directorate General of Legislation Development and Publication, 2011c).

The latest step regarding e-bookkeeping is the issue of Tax Procedure Law General Communiqué no. 421 in Official Gazette no. 28497 in December 14, 2012 (Directorate General of Legislation Development and Publication, 2012). This communiqué states the legal entities, which are obliged to use e-bookkeeping. These obligators are divided into two groups:

- The legal entities, which have lube oil license according to Oil Market Law no. 5015, and the entities that purchase goods from these license holders in 2011, are stated to be the candidates of obligators. Strikingly, these candidates become actual obligators if only they have minimum gross sales revenue of 25 million Turkish Liras (TL) as of December 31, 2011.
- The legal entities, which produce, build, or import goods that are in the third list of Private Consumption Tax Law no. 4760 dated June 6, 2002, are again candidates of obligators. Likewise, the entities that purchase from these candidates also become candidates of obligators. All these candidates become actual obligators if their gross sales revenue is equal to or greater than 10 million TL as of December 31, 2011. When the Law no. 4760 is explicated, it is seen that the third list shows the products of tobacco, alcohol, and soft drinks.

The same communiqué requires that the actual obligators have to switch to e-bill in 2013, with the deadline September 1, 2013. The deadline for e-bookkeeping is September 1, 2014.

4. Methodology of research

As explained, e-bookkeeping becomes mandatory in tobacco and alcohol, and petroleum and mineral oil sectors as of 2014 in Turkey. It is, however, important that this obligation is only valid for the businesses that meet the mentioned criteria of annual gross income. By paying attention to this matter, the authors obtain the lists of appropriate companies in these two sectors from Energy Market Regulatory Authority (Republic of Turkey Energy Market Regulatory Authority, 2012), and Tobacco and Alcohol Regulatory Authority (Republic of Turkey *Tobacco and Alcohol Market Regulatory Authority*, 2011). Because of time and cost limitations, the suitable businesses in Istanbul are selected to gather data. The authors focus on the ideas of only one person from each selected business. That person has to be a professional in the accounting profession and should also have the potential of using e-bookkeeping for own business. In this sense, the accounting manager of each appropriate business is selected as the participant. Alternatively, the participant can also be an accounting specialist of that business in case the accounting manager is unavailable. These explanations regarding the targeted businesses and the participants enable the denotion of the research aim. This research has two aims. The first one is to find out the factors that make up the accounting managers' or specialists' attitudes towards the issue of e-bookkeeping in the businesses of the energy, and tobacco and alcohol sectors in Turkey, for which e-bookkeeping will eventually become mandatory. The second aim is to understand whether these attitudes vary according to some demographic features of the participants.

The authors prefer to facilitate from the items of two instruments in order to investigate the attitudes towards e-bookkeeping. One of these, developed by Jackson, Chow & Leitch (1997), is originally used to measure the behavioral intention to use an information system; and the other (Lu, Huang, & Lo, 2010) is considered to measure the acceptance of online tax-filling. The authors reword and summarize these instruments' items for the Turkish language and intend to make further corrections to catch the attitudes towards e-bookkeeping. A reason behind the use of these items is that the literature fails to point out an instrument, which is specific to measure the attitudes towards e-bookkeeping. Another reason is a gap about the consideration of attitudes towards bookkeeping in accounting profession. In this sense, it is decided to get inspirations from similar instruments and the best chance is the facilitation from the ones that subject intentions towards information systems and online tax issue.

The questionnaires, prepared by the authors, are applied by a professional consulting firm, accompanied by the list of the businesses and the care about the identities of participants. After the filled questionnaires are given to the authors, the authors phone each business in the list and confirm that the questionnaires were really applied.

5. Results

5.1. Statistical structure and reliability of the attitudes towards e-bookkeeping

The authors apply an exploratory factor analysis on the data collected in order to see the statistical structure formed. As there is no validated instrument, dedicated to the attitudes towards e-bookkeeping in the literature, this analysis is also appropriate in statistical terms.

As for the results, the Kaiser-Meyer-Olkin (KMO) value is 0.833 and Bartlett's test value is statistically significant, indicating that the data are suitable to be factorized. The analysis leaves five factors that aggregately explain 71.384 % of the total variance. These factors and their respective items, with their factor loadings, are presented in Table 1; along with the reliability analyses results for each factor extracted. The overall Cronbach's alpha value (0.900) suggests that the data have excellent reliability.

Table 1. Results of the exploratory factor and reliability analyses of the data about attitudes towards e-bookkeeping

	Easiness	**Effectiveness**	**Eagerness**	**Error Avoidance**	**Ethical Values**
Variance explained by the factor	16.735%	15.589%	14.154%	12.473%	12.433%
Factor's Cronbach's alpha values	0.826	0.858	0.744	0.829	0.805
Overall Cronbach's alpha value	0.900				
I think that e-bookkeeping method will provide me versatility and easiness in accounting process.	.777 Mean: 4.1071				
I think that I will be able to reach all accounting records of my business via e-bookkeeping method.	.764 Mean: 4.3810				
I think that I will be able to specialize in e-bookkeeping method easily.	.727 Mean: 4.1310				
I think that I will be able to apply e-bookkeeping method easily.	.599 Mean: 4.2619				
E-bookkeeping will be effective in reducing tax fraud in my country.		.872 Mean: 4.2381			
E-bookkeeping will be effective in reducing tax fraud in my sector.		.861 Mean: 4.3214			
I think that e-bookkeeping method will simplify the accounting process of my business.		.638 Mean: 3.9048			
The effectiveness of the accounting process will increase via e-bookkeeping method.		.618 Mean: 4.0952			
I think that e-bookkeeping method is reasonable.			.800 Mean: 4.4167		
I liked the idea of e-bookkeeping.			.646 Mean: 4.2381		
I am eager to prioritize e-bookkeeping method instead of my accustomed methods in accounting process.			.623 Mean: 4.0714		
I am eager to learn the necessary computer programs for e-bookkeeping.			.600 Mean: 4.7857		
My business will demand me to use e-bookkeeping method in order to avoid accounting-related problems.				.877 Mean: 3.8214	
It will be appropriate to switch to e-bookkeeping method in order to avoid accounting-related problems in my business.				.863 Mean: 3.8810	
I intend to make a proposal to my business in order to switch to e-bookkeeping method in the future.				.575 Mean: 3.7619	
I will feel uncomfortable if I do not report the technical problems that may appear in e-bookkeeping process to my business.					.863 Mean: 4.6905

If I pinpoint a situation that is disadvantageous to my business but advantageous to me, I always act in favor of my business while using e-bookkeeping.					.818 Mean: 4.5595
I will feel uncomfortable if I do not report a fraud I find in e-bookkeeping process to my business.					.798 Mean: 4.8214

These five factors can be summarized as:

Easiness: The thoughts of the participants that e-bookkeeping will provide easiness in the form of versatility, reaching accounting records, specializing, and application.

Effectiveness: The thoughts that e-bookkeeping will be effective in reducing tax frauds, and increasing the simplification and general effectiveness of the accounting process.

Eagerness: How eager the participant is in terms of liking the idea of e-bookkeeping, and prioritizing and learning e-bookkeeping method.

Error avoidance: The thoughts of the participants that e-bookkeeping will decrease accounting-related problems.

Ethical values: How much the participant is adhered to ethical values while facilitating from e-bookkeeping.

As these five factors are the products of an exploratory factor analysis and are posited to be integrated within the attitudes towards e-bookkeeping, the authors are curious to see whether this integration is possible in statistical terms. To this end, the authors continue with structural equation modeling (SEM). This model includes attitudes towards e-bookkeeping as a second-level latent variable, which is to be made of these five factors. Figure 1 presents this model and also indicates t-values. The t-values point out that all the relationships are statistically significant at 5% (two-tailed).

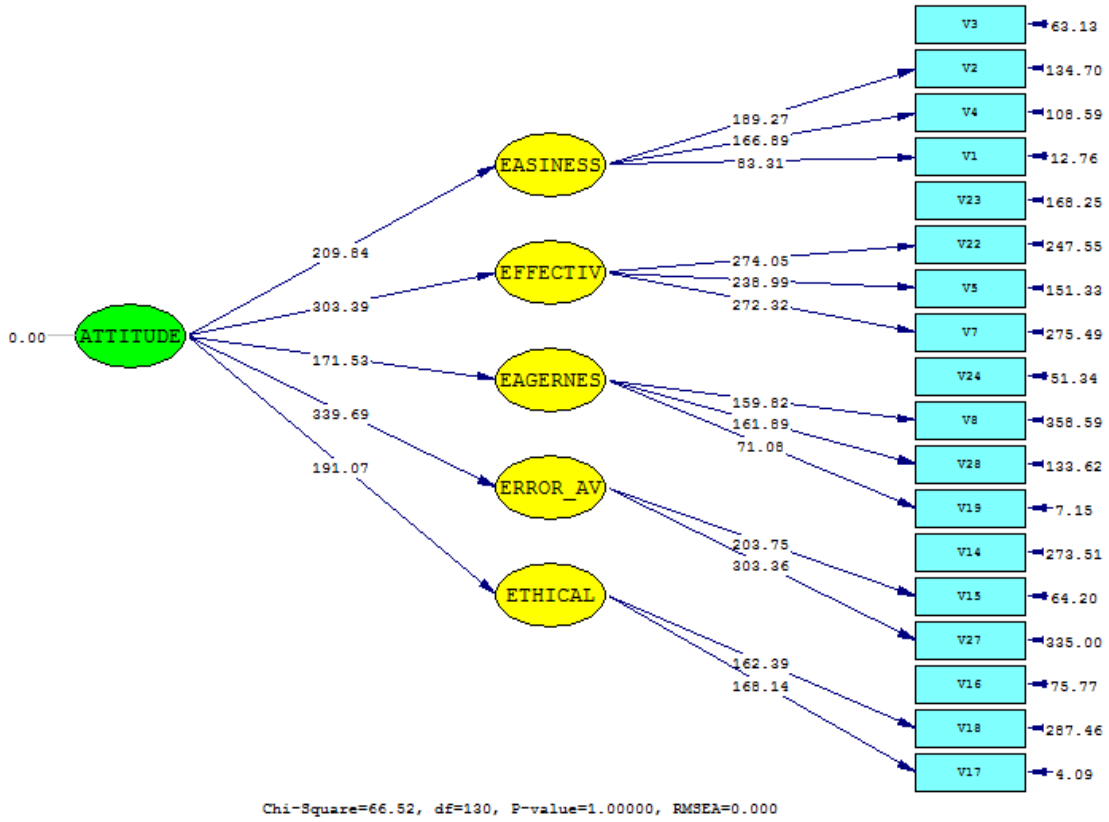

Figure 1. Second-level factor model of the attitudes towards e-bookkeeping

ATTITUDE: Attitude towards e-bookkeeping; **EASINESS:** Easiness; **EFFECTIV:** Effectiveness; **EAGERNES:** Eagerness; **ERROR_AV:** Error Avoidance; **ETHICAL:** Ethical Values. The variables are noted

according to their order in the questionnaire. Due to the nature of SEM, the first variable in each factor is fixed, thus, each first variable's relationship with its respective factor does not have a t-value.

The next step is to check for the statistical health of the model. Table 2 shows that the model's foremost fit indices adhere to the limits suggested by the literature (e.g., Hooper et al., 2008; Iacobucci, 2010; Yuan, 2005). According to the results in Table 2, the model is valid and realistic in statistical terms.

Table 2. Fit indices of the second-level factor model compared with the limits suggested in the literature

Fit Indices	Good Fit	Acceptable Fit	Model's Fit Indices
Root Mean Square Error of Approximation (RMSEA)	RMSEA < 0.05	0.05 ≤ RMSEA ≤ 0.08	0.0 (Perfect fit)
Goodness of Fit Index (GFI)	0.95 ≤ GFI ≤ 1.00	0.9 < GFI < 0.95	0.980 (Good fit)
Adjusted Goodness of Fit Index (AGFI)	0.90 ≤ AGFI ≤ 1.00	0.85 < AGFI < 0.9	0.974 (Good fit)
Comparative Fit Index (CFI)	0.95 ≤ CFI ≤ 1.00	0.9 < CFI < 0.95	1.00 (Perfect fit)
Normed Fit Index (NFI)	0.90 ≤ NFI ≤ 1.00	0.85 < NFI < 0.9	0.912 (Good fit)
Standardized Root Mean Square Residual (SRMR)	SRMR < 0.05	0.05 ≤ SRMR ≤ 0.1	0.0582 (Acceptable fit)

The distribution of the model's standardized residuals also reveals that the model is healthy. Figure 2 shows that the standardized residuals overall present a normal distribution and the Q–plot indicates an overall symmetric distribution nearby the diagonal.

Figure 2. Stemleaf and Q-plot of the second-level model's standardized residuals

Table 3 shows the structural equations of the model in Figure 1. This table reveals that the participants' attitude about e-bookkeeping is most strongly built upon their thoughts that e-bookkeeping will provide easiness, followed by their expectations that switching to e-bookkeeping will be useful to avoid errors. It is also striking that their care for ethical values is the most weakly related aspect of their attitudes about e-bookkeeping.

Table 3. Structural equations of the second-level factor model

Easiness = 0.858*Attitude, Error variance = 0.264, R^2 = 0.736		
St. Error	(0.00409)	(0.00747)
Z-values	209.839	35.389
P-values	0.000	0.000
Effectiveness = 0.700*Attitude, Error variance = 0.510, R^2 = 0.490		
St. Error	(0.00231)	(0.00384)
Z-values	303.393	132.765
P-values	0.000	0.000
Eagerness = 0.850*Attitude, Error variance = 0.278, R^2 = 0.722		
St. Error	(0.00495)	(0.00628)
Z-values	171.525	44.309
P-values	0.000	0.000

Error Avoidance = 0.853*Attitude, Error variance = 0.273, R^2 = 0.727		
St. Error	(0.00251)	(0.00411)
Z-values	339.689	66.499
P-values	0.000	0.000
Ethical Values = 0.526*Attitude, Error variance = 0.724, R^2 = 0.276		
St. Error	(0.00275)	(0.00742)
Z-values	191.068	97.524
P-values	0.000	0.000

The covariance matrix in Table 4 provides a similar outcome to that of Table 3, ethical values is the weakest related factor to attitudes about e-bookkeeping while easiness and error avoidance factors are the two most powerfully related ones.

Table 4. Covariance matrix of the factors in the second-level factor model

	Easiness	**Effectiveness**	**Eagerness**	**Error Avoidance**	**Ethical Values**	**Attitude towards e-bookkeeping**
Easiness	**1.000**					
Effectiveness	0.600	**1.000**				
Eagerness	0.729	0.595	**1.000**			
Error Avoidance	0.731	0.597	0.724	**1.000**		
Ethical Values	0.451	0.368	0.447	0.448	**1.000**	
Attitude towards e-bookkeeping	***0.858***	***0.700***	***0.850***	***0.853***	***0.526***	***1.000***

All the results achieved thus far reveal that the five factors extracted can statistically be merged under the umbrella of "attitude about e-bookkeeping". This attitude is mostly built on the thoughts that e-bookkeeping will bring about easiness, be helpful to avoid errors, and the participants are keen on switching to e-bookkeeping. Though it is considered that the overall effectiveness of accounting process will increase and tax frauds will be reduced via e-bookkeeping, ethical side of e-bookkeeping is not much emphasized.

5.2. Changes in the attitude towards e-bookkeeping according to participants' demographic properties, professional tenure and the size of business

The authors facilitate from many multivariate general linear models (GLMs) to understand whether the participants' attitude towards e-bookkeeping changes according to these people's age, gender, tenure in accounting profession and the number of workers in their businesses. Table 5 presents the results for the relationship between gender and the attitude, and the results indicate that the participants' attitudes towards e-bookkeeping does not change according to their gender.

Table 5. Multivariate model to test gender-attitude relationship

Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**	**Partial Eta Squared**	**Noncent. Parameter**	**Observed Power[b]**
Intercept	Pillai's Trace	.993	5.172E2[a]	18.000	65.000	.000	.993	9310.243	1.000
	Wilks' Lambda	.007	5.172E2[a]	18.000	65.000	.000	.993	9310.243	1.000
	Hotelling's Trace	143.235	5.172E2[a]	18.000	65.000	.000	.993	9310.243	1.000
	Roy's Largest Root	143.235	5.172E2[a]	18.000	65.000	.000	.993	9310.243	1.000
Gender	Pillai's Trace	.321	1.710[a]	18.000	65.000	.060	.321	30.776	.899
	Wilks' Lambda	.679	1.710[a]	18.000	65.000	.060	.321	30.776	.899
	Hotelling's Trace	.473	1.710[a]	18.000	65.000	.060	.321	30.776	.899
	Roy's Largest Root	.473	1.710[a]	18.000	65.000	.060	.321	30.776	.899

[a] Exact statistic
[b] Computed using alpha = .05
Test design: Intercept + Gender

The same result is achieved when age-attitude relationship is tested. Table 6 shows that the participants' attitude towards e-bookkeeping does not change according to their age.

Table 6. Multivariate model to test age-attitude relationship

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Intercept	Pillai's Trace	.993	2.944E2[a]	18.000	37.000	.000	.993	5299.043	1.000
	Wilks' Lambda	.007	2.944E2[a]	18.000	37.000	.000	.993	5299.043	1.000
	Hotelling's Trace	143.217	2.944E2[a]	18.000	37.000	.000	.993	5299.043	1.000
	Roy's Largest Root	143.217	2.944E2[a]	18.000	37.000	.000	.993	5299.043	1.000
Age	Pillai's Trace	6.568	1.070	522.000	972.000	.187	.365	558.449	1.000
	Wilks' Lambda	.000	1.129	522.000	644.254	.072	.425	475.844	1.000
	Hotelling's Trace	17.947	1.207	522.000	632.000	.012	.499	630.144	1.000
	Roy's Largest Root	5.121	9.535[c]	29.000	54.000	.000	.837	276.528	1.000

[a] Exact statistic
[b] Computed using alpha = .05
[c] The statistic is an upper bound on F that yields a lower bound on the significance level.

Test design: Intercept + Age

The participants' attitude does not change according to their tenure in accounting profession (Table 7).

Table 7. Multivariate model to test tenure-attitude relationship

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Intercept	Pillai's Trace	.993	2.922E2[a]	18.000	39.000	.000	.993	5259.408	1.000
	Wilks' Lambda	.007	2.922E2[a]	18.000	39.000	.000	.993	5259.408	1.000
	Hotelling's Trace	134.857	2.922E2[a]	18.000	39.000	.000	.993	5259.408	1.000
	Roy's Largest Root	134.857	2.922E2[a]	18.000	39.000	.000	.993	5259.408	1.000
Tenure	Pillai's Trace	5.116	.823	486.000	1.008E3	.993	.284	400.208	1.000
	Wilks' Lambda	.001	.835	486.000	658.748	.983	.330	324.285	1.000
	Hotelling's Trace	11.279	.861	486.000	668.000	.961	.385	418.560	1.000
	Roy's Largest Root	2.747	5.698[c]	27.000	56.000	.000	.733	153.847	1.000

[a] Exact statistic
[b] Computed using alpha = .05
[c] The statistic is an upper bound on F that yields a lower bound on the significance level.

Test design: Intercept + Tenure

A noteworthy result is that there is a connection between the size of business and the attitude. The participants' attitude changes according to the number of the workers in the business (Table 8).

Table 8. Multivariate model to test organizational size-attitude relationship

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Intercept	Pillai's Trace	.998	4.619E2[a]	18.000	14.000	.000	.998	8313.510	1.000
	Wilks' Lambda	.002	4.619E2[a]	18.000	14.000	.000	.998	8313.510	1.000
	Hotelling's Trace	593.822	4.619E2[a]	18.000	14.000	.000	.998	8313.510	1.000

	Roy's Largest Root	593.822	4.619E2[a]	18.000	14.000	.000	.998	8313.510	1.000
Number of workers	Pillai's Trace	10.151	1.145	630.000	558.000	.050	.564	721.633	1.000
	Wilks' Lambda	.000	1.470	630.000	311.287	.000	.707	752.820	1.000
	Hotelling's Trace	110.905	2.132	630.000	218.000	.000	.860	1343.179	1.000
	Roy's Largest Root	46.635	41.305[c]	35.000	31.000	.000	.979	1445.681	1.000

[a] Exact statistic
[b] Computed using alpha = .05
[c] The statistic is an upper bound on F that yields a lower bound on the significance level.

Model design: Intercept + Number of workers

6. Conclusion and Recommendations

The post-modern era has reflections upon many subjects, including accounting profession. This phenomenon shows itself via the use of information technology in accounting systems. One of the foremost examples is the use of e-bookkeeping, which is the focal point in this study. E-bookkeeping is to become mandatory for specific businesses in Turkey in 2014, thus the relevant businesses must prepare for it. Though these preparations may be provided in a formal way, it is vital that the accounting professionals within these businesses get ready for e-bookkeeping in psychological and professional terms. With this fact in mind, the authors of the current study determine to understand the attitudes of these professionals towards e-bookkeeping. As these attitudes may be linked with these peoples' demographical features as well as the properties of the relevant businesses, these are also accounted for.

The preliminary results show that the accounting professionals' attitudes depend on the combination of five factors. They consider that e-bookkeeping will provide easiness, be helpful to increase effectiveness, and be advantageous to avoid errors. They moreover show eagerness to switch to e-bookkeeping and reveal that they also note the ethical side about e-bookkeeping. A striking result is that the professionals mostly favor the idea that e-bookkeeping will make accounting process easier and it will also be easier to avoid errors, thus they are keen on switching to e-bookkeeping. This result may be considered as the expression of practicality – the professionals emphasize the practical use and consequences of e-bookkeeping. Another important result is that among the five factors, "ethical values" is the least preferred one. In other words, the professionals least favor the notion of reporting technical problems and frauds, and acting altruistically related with e-bookkeeping. This may be perceived as if these professionals are prone to expediency in terms of e-bookkeeping.

Another result achieved is that the professionals' attitudes do not change according to their demographical features such as their age, gender, and their tenure in accounting profession. On the other hand, their attitudes alter according to the size of the business, which is denoted by the number of workers. This result implies that the professionals' attitudes are only related to the business and they tend to consider e-bookkeeping impersonally.

These results achieved contain some implications according to the authors. It seems that switching to e-bookkeeping does not solely require formal preparations and necessary education; it moreover needs arrangements to be made upon the attitudes of the accounting professionals. Precisely, accounting professionals' psychological and emotional positions related to e-bookkeeping should also be accounted for. This study is a pioneer to uncover the attitudes towards e-bookkeeping, more follow-up studies should also be made. It is also important that e-bookkeeping has not gone into effect at the time this study was prepared, thus a new research that will be made after e-bookkeeping is followed, is advised. This can enable comparisons between the results achieved before and after e-bookkeeping.

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