Sharing Corporate Tax Knowledge with External Advisers

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Abstract

Tax knowledge is critical for companies to comply with tax laws, and to engage in tax planning and avoidance. Firms rely on external advisers in handling tax issues, however, sharing corporate tax knowledge with external advisers entails both opportunities and risks. We identify four relational factors that influence the decision of corporate taxpayers to engage in knowledge sharing with external tax advisers. Following a survey of 221 corporate taxpayers, our findings show a novel distinction between operational and strategic knowledge sharing. The operational dimension has a functional nature, whereas the strategic dimension has a more intentional character. Accessibility to, and a positive experience with, external advisers enables operational knowledge sharing. When firms perceive specific tax benefits in relation to sharing knowledge, they are more inclined to engage in operational knowledge sharing with external advisers but less prone to strategic knowledge sharing. Instead, strategic knowledge sharing is enhanced when firms have access to, and value the knowledge of their advisers, although this latter factor plays no significant role in explaining operational knowledge sharing. We link our results to current trends in research and discuss implications of our study for accounting regulators considering, or requiring, firm disclosures of corporate tax strategy.

Keywords: corporate tax; knowledge sharing; tax advisers; tax planning

Sharing Corporate Tax Knowledge with External Advisers

Introduction

A complex corporate tax environment means firms must be flexible and agile, while remaining tax compliant, in order to adapt to ensuing challenges (Glaister & Frecknall-Hughes 2008; Ihrig & MacMillan 2015). In response, firms hire external experts, often from the Big 4 accounting firms, who possess specialist knowledge (Empson 2004; Gibbins & Jamal 1993; Gracia & Oats 2012; Morris & Empson 1998; Mulligan & Oats 2016). External experts perform two main functions when acting for their corporate clients. First, they help in tax reporting and payment compliance in order to minimise tax penalties and the risk of investigation, and second, experts initiate and/or advise on tax planning (Frecknall-Hughes & Kirchler 2015; OECD 2006).

Apart from acting as client advocates, tax advisers' responsibilities also extend to include the accounting profession and the public, with tax advisers *"play(ing) a vital role in all our tax systems by helping taxpayers understand and comply with their tax obligations in an increasingly complex world"* (OECD 2006). Yet, the Confédération Fiscale Européenne warns that taxpayers *"must be able to trust that information shared with their adviser will remain confidential and that tax advisers are not watchdogs of the tax administration.*" (CFE 2014).[1] In their interactions with external advisers, corporate clients may be aware of potential conflicts of interest and take appropriate action or safeguards e.g. limiting extent of knowledge flows[2][3] and the relationship between corporate clients and external advisers is of a

[1] "The CFE (Confédération Fiscale Européenne) was founded in 1959 and today embraces 26 national organisations from 21 European States, representing more than 200,000 tax advisers." www.cfe-eutax.org/about

[2] Informal discussions with senior officials in two tax administrations suggests that complex taxpayers often simultaneously employ advisers from several different firms of advisers. They speculate the motive is to limit advisers' knowledge of clients' circumstances to well defined discrete aspects. Klassen et al. (2015) report that using one's auditor represents the smallest share of potential sources of tax advice i.e. the firm's own auditor, another external adviser or internal source. While the authors interpret the decision not to use the audit firm as being made to protect (perceived) auditor independence, attempting to limit auditors' access to tax related matters is an alternative interpretation.

[3] The application of legal professional privilege to communications between a client company and its lawyers while excluding similar communications with non-lawyers e.g. accountants, distorts companies' decisions on

complex nature as clients are confronted with both pros and cons related to exchanging knowledge with external advisers.

Knowledge is considered an important intangible organizational resource. It is created in social interactions, when experiences and information are shared and interpreted (Davenport and Prusak 2000). Knowledge sharing thus entails *"more than transferring knowledge, but creating it – less exploitation of existing knowledge than generation of new knowledge"* (Van den Hooff & Huysman 2009, p. 1). Sharing and creating knowledge in an inter-organisational context touches upon the essence of the professional service industry such as consultancy firms (Løwendahl et al. 2001; Sarvary 1999). Knowledge is shared when working on projects for clients, but as a result of interacting with clients new knowledge is also developed (Fosstenløkken et al. 2003; Sarvary 1999). This way, value for both clients and external advisers is created.

Prior literature finds that external advisers and clients are interdependent in sharing and creating knowledge (Argote & Fahrenkopf 2016; Gluckler & Armbruster 2003; Sturdy et al. 2009). Accordingly, companies may consider the benefits and potential risks involved in sharing knowledge with external experts, and decide whether their need for external expertise outweighs the risks of opening their doors to external experts. To date, little is known about the interaction between clients and external experts (Fosstenløkken et al. 2003; Sturdy et al. 2009) and its implications for sharing knowledge. This study provides more insight in this relationship by identifying which relational factors influence the decision of corporate taxpayers to engage in processes of knowledge sharing with external tax advisers. Specifically, our research question is: *Which relational antecedents contribute towards processes of knowledge sharing between corporate taxpayers and external tax advisers?*

The contribution of this study is threefold. First, our paper contributes to prior archival and critical research on tax planning and tax practice (Feller & Schanz 2017; Graham et al.

whom to employ to provide advice (Prudential 2013, ICAEW 2016) and arguably the information they choose to disclose to their adviser.

2014; Morris & Empson 1998; Mulligan & Oats 2016). Second, by gaining insight into processes of knowledge sharing in this specific context – characterised by the continuous change of tax legislation, the corporate taxpayers' obligation to comply with legislation, the asymmetric dispersion of specialist knowledge, and a multifaceted relationship between corporate taxpayers and external advisers – our study also contributes to the existing body of literature on inter-organisational processes of knowledge sharing (Gibbins & Jamal 1993; 1999; Gracia & Oats 2012). Third, we extend existing insight into relational factors that make organisations decide to engage in processes of knowledge sharing with external advisers, as interactions between corporate taxpayers and external tax advisers is under researched (Frecknall-Hughes & Kirchler 2015; Dyreng & Maydew 2018).

The paper is structured as follows. On the basis of literature on knowledge sharing, relational antecedents of knowledge sharing are identified, and expectations cast in a conceptual model of knowledge sharing between corporate taxpayers and external tax advisers. We test the model using a questionnaire study of U.K. corporate taxpayers. Finally, the results of the analyses are presented, and conclusions and implications are discussed.

Literature and hypotheses

The double edged sword

Kitay and Wright (2003) provide insight in the client-consultant relationship by identifying different consultant roles. They suggest that consultants can be seen as either organisational insiders or outsiders. Insiders develop social and long-term relationships with clients while outsiders maintain economic relationships where they keep more distance from their clients. Both types of consultants present their knowledge to clients either as unique and inimitable or as specialised yet accessible. Where an insider role is played, consultants involve clients in projects while at the same time providing specific expertise, or they work in close cooperation with clients which results into knowledge that is jointly created and

accessible to all. External consultants as outsiders either provide straightforward, standard solutions to clients, or they give ad-hoc advice to complex issues without being involved in its implementation. Hence, there is less co-creation of knowledge between clients and consultants when consultants take on an outsider role.

Werr and Styhre (2003) investigated the client-consultant relationship from a client perspective and concluded that the client-consultant relationship is more ambiguous and complex than Kitay and Wright (2003) suggest. In interacting with external consultants, organisational clients indicated that they experienced their relationship with consultants as a partnership with opportunities to interact and cooperate. However, the clients simultaneously observed potential risks in close cooperation with consultants, such as loss of control, which triggered them to maintain some distance from their consultants. These findings show that the expectations of organisations about the input and involvement of consultants can vary and sometimes even be contradictory. Sturdy et al. (2009) find that in practice some potential outcomes of consultancy projects are not defined as explicit objectives. One frequent undefined outcome is the flow of knowledge between clients and consultants (the focus of this paper). These knowledge flows occur in almost every consultancy project, but often as spin-offs from formal project goals (Løwendahl et al. 2001). Sturdy et al. (2009) argue there is no pre-defined consultant role that best contributes towards this outcome. In reality, consultants often take upon more than just one role and consultancy outcomes can be more diverse than generally suggested. Consultancy, the authors argue, can be described by "heterogeneity, complexity, and dynamism" (p. 631).

Cooperating with external consultants (advisers) thus works as a *double edged sword* for firms who expect benefits from hiring advisers (i.e. specialist advice and services). Firms are not simply passive recipients though, rather, they play an active role in assignments. After the hiring decision, clients are involved in processes of knowledge sharing that entail far more than simple direct knowledge flows from the adviser to the client. As a result, advisers not

only provide value to clients on the basis of their expert knowledge, they also develop knowledge themselves by working for organisational clients (Fosstenløkken et al. 2003; Løwendahl et al. 2001). Fincham (2002) even suggests that advisers depend on their clients more heavily than vice versa. Clients are aware that providing access to internal processes and assets, including confidential information, could accelerate the emergence of new insights among advisers that may be used in assignments for other clients (Sarvary 1999) and could potentially benefit competitors (Gluckler & Armbruster 2003). Advisers may seek to legitimise their role by gaining client-specific knowledge, seeking client support, strengthening strategic relationships, avoiding interaction with unsupportive or rival internal actors (Fincham 2002), and by simultaneously offering solutions and calling attention to new issues among clients (Fincham 1999; Sturdy 1997). Such legitimisation potentially increases the degree to which clients are dependent on external advisers.

Clearly, organisations and external advisers maintain complex relationships, yet these relationships are rarely studied (Sturdy et al. 2009). Especially knowledge sharing in the corporate tax environment has largely been ignored by researchers (Hasseldine et al. 2011).

The decision to share

In identifying which relational factors influence the decision of corporate taxpayers to share knowledge with external tax advisers we draw on the literature of transactive memory systems (Hollingshead 1998; Argote & Fahrenkopf 2016). Individuals who are involved in network relationships share a transactive memory system (Hollingshead 1998; Wegner et al. 1991). These systems can be described as *"shared understanding of who knows what"* (Griffith & Neale 1991, p. 381). People are aware of their own knowledge and they are knowledgeable about the knowledge of others in their network. This meta-knowledge allows them to locate and access relevant knowledge in the case they need it. The literature suggests that people are able to identify their need for knowledge and assess the usability of other

people's knowledge (Hsu et al. 2012; Lewis 2003). A developed transactive memory system allows individuals to trust in each other's expertise, enables them to specialise in different areas, and helps them to coordinate their work (Jarvenpaa and Majchrzak 2008), resulting in more effective knowledge sharing and knowledge application (Choi et al. 2010).

Prior research on transactive memory systems has focused on relationships at an interpersonal level (Hollingshead 1998; 2001; Wegner et al. 1991); a team level (Hsu et al. 2012; Lewis 2003; 2004; Lewis et al. 2005); and at the organisational level (Nevo & Wand 2005). In this paper, the principles of transactive memory are applied to relationships on the inter-organisational level. The corporate tax setting corresponds to the theory of transactive memory, in the sense that transactive memory systems are based on the idea that expertise is dispersed among different members of a network (Hollingshead 1998; Lewis 2004). With tax compliance and planning a knowledge challenge to most firms, they rely on the expertise of external tax advisers. However, hiring external advisers can be costly and even risky. As a result, we expect corporate taxpayers to have a highly developed sense of (limitations with regard to) the level of their own tax knowledge. Moreover, we expect corporate taxpayers to be critical (or strategic) in assessing whether the expertise of external tax advisers is relevant – perhaps even more critical than members in other networks, as corporate taxpayers cannot afford to turn to external tax advisers for every small trifle.

Conceptual model and hypotheses

We hypothesise that the decision of corporate taxpayers to engage in processes of knowledge sharing with external tax advisers is influenced by four relational antecedents[4]: perceived *value, access, benefits*, and *experience*. Our expectations are shown in Figure 1 and then discussed.

[4] Broadly based on Borgatti and Cross (2003).

[Insert Figure 1 here]

Figure 1: Conceptual model

Insight into the expertise of others is a basic requirement for deciding whom to turn to when in need of knowledge (Hollingshead 1998; 2001; Wegner et al. 1991) yet it is also important to assess the relevance and usability of that knowledge (Dyer & Singh 1998; Lewis 2003). Corporate taxpayers are expected to value the knowledge of their advisers and decide whether it is worthwhile engaging external expertise. Prior research findings on the individual level (Borgatti & Cross 2003), team level (Choi et al. 2010) and organisational level (Van den Hooff & Huysman 2009) confirm a positive influence of understanding (the usability of) the knowledge of others on knowledge sharing processes. Translating these findings to the inter-organisational corporate tax context, we expect that the decision of corporate taxpayers to share knowledge with external tax advisers depends on the extent to which they value the knowledge of these advisers.

H1: *The more corporate taxpayers value the knowledge of external tax advisers, the more likely they are to engage in processes of knowledge sharing with external tax advisers.*

Knowing and valuing external expertise does not necessarily imply that access to expertise is guaranteed. Lewis (2003, p. 588) states, *"transactive memory develops as a function of a person's beliefs about the knowledge possessed by another person and about the accessibility of that knowledge"*. Accessibility is thus also considered to be an important aspect in relationships where individuals, teams or organisations rely on each other's knowledge (Nahapiet & Ghoshal 1998). Borgatti and Cross (2003) argue that accessibility has more to do with the relational, than the technical availability of knowledge. Accessibility depends on the capabilities of the requesters to actually engage in processes of knowledge sharing. Previous empirical research shows that the accessibility to expertise of others, as part of transactive memory systems, contributes to communication and knowledge sharing

between individuals and in teams (Borgatti & Cross 2003; Choi et al. 2010; Hsu et al. 2012). Given the inter-organisational tax context in our study, we expect that:

> **H2:** *The more corporate taxpayers have access to the knowledge of external tax advisers, the more likely they are to engage in processes of knowledge sharing with external tax advisers.*

With interdependencies between corporate taxpayers and external tax advisers, processes of knowledge sharing are a double-edged sword for corporate taxpayers, with potential benefits but also potential costs, other than advisory fees, of engaging with advisers (Hasseldine et al. 2011). Jarvenpaa and Majchrzak (2008) show that members of ego-centered networks who distrust the goodwill of other members, are able to manage the risk that these others will use valued and confidential knowledge to their own benefit. Firms can thus protect their own interests in partnerships thereby enabling successful knowledge collaborations. In a similar fashion, we do not expect corporate taxpayers to be helpless creatures in their relationships with external tax advisers. Corporate taxpayers may perceive a diversity of possible benefits, including intellectual advantages such as more tax knowledge and a better understanding of tax risks, economic advantages, a limitation of perceived tax risks and an increase in their feeling of security and protection, and a relational improvement with tax legislators. Hasseldine et al. (2011) find that corporate taxpayers recognise such benefits of working with external advisers while simultaneously being alert to potential risks involved. This leads to:

> **H3:** *The more corporate taxpayers perceive processes of knowledge sharing with external tax advisers as beneficial, the more likely they are to engage in such processes.*

Relational social capital is generally described as *"the kind of personal relationships people have developed with each other through a history of interactions"* (Nahapiet & Ghoshal 1998, p. 244) and is regarded as a form of mutual trust. Sharing prior experiences

with others contributes to the development of transactive memory and the "ability to elaborate diverse information" (Van Knippenberg et al. 2004, p. 1019). Nahapiet and Ghoshal (1998) believe that strong relations between employees enables the creation of intellectual capital in organisations and other studies indeed find that relational social capital contributes towards knowledge sharing within firms (Van den Hooff & Huysman 2009; Hau et al. 2013).

Van Wijk et al. (2008) report a meta-analysis investigating various antecedents and outcomes of knowledge sharing and conclude that the relational dimension of social capital is the most important relational characteristic in explaining knowledge sharing both within and between organisations. Their finding implies that over a large number of empirical studies, strong relationships between organisations indeed contribute towards inter-organisational processes of knowledge sharing. Gluckler and Armbruster (2003) find that many client-consultant relationships have an ongoing nature, and organisations tend to continue to work with consultants with whom they share a history, without considering what other consultants have to offer and regardless of the competence of other consultants. Also other research findings confirm that positive prior experiences and a valued and trusted relationship with consultants contributes towards cooperation and knowledge sharing (Ko 2010; Werr & Styhre 2003). Consequently, we expect to find a similar outcome in the prior experience between corporate taxpayers and external tax advisers.

H4: *The more corporate taxpayers have experienced a prior positive experience with external tax advisers, the more likely they are to engage in processes of knowledge sharing with external tax advisers.*

Method

We obtained our dataset from a quantitative study of U.K. Corporate Sector panel members of the Association of Chartered Certified Accountants (ACCA).[5] Based on prior qualitative research (reference withheld to preserve author anonymity) and pilot testing, a

[5] The ACCA is a U.K. based institute for professional accountants and has statutory recognition. Membership is via examination. The ACCA was not involved in the design of the survey nor did it have control over its content.

questionnaire was developed to investigate which relational antecedents (or factors) contribute to knowledge sharing processes between corporate taxpayers and external tax advisers. The questionnaire was hosted on an independent website and links were shared by the ACCA. We received 221 responses comprising 180 fully completed on the variables in our conceptual model and a further 41 partially completed. In formulating the conceptual module we use the 180 responses and in testing the resulting models we use in turn use 180 and a reduced sample of 166 observations.[6]

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Participants

The companies in which the 180 participants are employed, operate in a variety of industries. Financial and insurance sector (13%), manufacturing (14%), construction (13%), and information and communication (9%) represent the largest industries in our sample. The number of employees averaged of 10,781 employees, although the median is170 160 employees. By EU size classifications (number of employees), the number of firms are Micro (7 firms), Small (45 firms), Medium (44 firms) and Large (84 firms).

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The participants indicate that their company interacts with approximately nine tax jurisdictions on average, with a range of one to 150. Participants have been employed by their company for seven years on average (median 4.25 years), with a maximum of 35 years. Corresponding almost exactly to the population of members, 69% of participants are 35–54 years old and, 36% of participants are female, also representative of the population of the ACCA Corporate Sector Panel (35% female).

Independent variables

The questionnaire used scale measures for all four independent variables hypothesised in Figure 1 and were all anchored: 1 = strongly disagree; 5 = strongly agree, allowing us to

[6] Fourteen of the 180 responses had missing values with respect to control variables hence the subsequent testing on the reduced sample of 166.

simply average the scale item scores. The scale to measure *value* consists of three items and is based on an existing measurement developed by Borgatti and Cross (2003). In their social network analysis, Borgatti and Cross used single-item measurements on the individual level. Like Hsu et al. (2012), we translated the measurement of value to our own research context, and extended it into a three-item scale shown in Table 1B.[7] An item that exemplifies the scale is: *"The external adviser's awareness of legislation is important to my organisation"*. Reliability analysis shows that the scale has a good reliability (α = .80).

The scale to measure *access* consists of four items. These items are also based on an existing measurement developed by Borgatti and Cross (2003). Similar to the measurement of value, we adjusted the measurement of access to our research context. In addition, we extended the scale by adding items that more explicitly measured the capabilities of corporate taxpayers to engage in processes of knowledge sharing with external tax advisers, corresponding to the transactive memory scale of Choi et al. (2010).[8] For example, one item in the scale, shown in Table 1B, is *"My organisation possesses sufficient expertise to share knowledge with the external tax adviser(s)"*. Reliability analysis shows that the scale has a good reliability (α = 0.81).

The scale to measure *benefits* comprises six items (originally eight) shown in Table 1A. We formulated a range of possible benefits that corporate taxpayers may experience as a result of working with external tax advisers. Some of these benefits are more general, such as the item *"Sharing knowledge with the external tax adviser(s) is financially beneficial"*. However, we also included items much more specific to the context of our study, e.g., *"The external tax adviser facilitates reaching agreement between my organisation and HMRC"*.

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[7] A principal component analysis with direct oblimin rotation was conducted to determine whether the scale was unidimensional. Bartlett's test of sphericity is significant ($\chi^2(3) = 235.271$, $p < 0.001$) and the Kaiser-Meyer-Olking measure was 0.63, suggesting an adequate factorability. The three items form a unidimensional scale: only one component has an eigenvalue above 1 (initial eigenvalue is 2.19), explaining 72.9% of the total variance.

[8] A principal component analysis with direct oblimin rotation was again performed to determine scale unidimensionality. Bartlett's test of sphericity is significant ($\chi^2(6) = 284.255$, $p < 0.001$) and the Kaiser-Meyer-Olking measure was 0.71, suggesting adequate factorability. The four items form a unidimensional scale: only one component has an eigenvalue above 1 (initial eigenvalue is 2.55), explaining 63.7% of the total variance.

Principal components analysis[9] showed the original eight items formed a two-dimensional scale: the first component has an initial eigenvalue of 3.62, explaining 45.3% of the total variance, and the second component has an initial eigenvalue of 1.30, explaining 16.2% of the total variance. The correlation between the two components is on the 0.32 threshold (r = 0.32), suggesting an oblimin rotation in this analysis. All of the eight items have a primary factor loading of at least 0.4. However, two items had a cross-loading above 0.32 and were removed from the scale (Tabachnick & Fidell (2001)).[10]

The remaining six items formed a two-dimensional scale and a principal component analysis with varimax rotation was conducted on the six items.[11] After rotation, the first component has an eigenvalue of 2.35, explaining 39.2% of the total variance, and the second component has an eigenvalue of 1.75, explaining 29.1% of the total variance. Table 1A lists the factor loadings for the principal component analysis with varimax rotation. The first component, termed "general benefits" consists of three items that describe possible benefits of sharing knowledge with external tax advisers on a broad spectrum. These items represent financial, intellectual and reputational benefits (α = 0.86). The second component, termed "specific benefits" consists of three items that describe more specific benefits of sharing knowledge with external tax advisers, including the assessment of risks, the facilitation of agreement with tax legislators, and the provision of insurance (α = 0.61).

[Insert Table 1 about here]

Experience is measured using the two items describing how corporate taxpayers experience their current relationship with external tax advisers (*"My organisation has a good relationship with the external tax adviser(s)"*) and the prior experience they have with these

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[9] The analysis with direct oblimin rotation was conducted to determine whether the scale was unidimensional. Bartlett's test of sphericity was significant ($\chi^2(28) = 543.891$, $p < 0.001$) and the Kaiser-Meyer-Olking measure was 0.82, suggesting an adequate factorability.

[10] "Sharing knowledge with the external tax adviser(s) enables the determination of the correct tax liability" and "Sharing knowledge with the external tax adviser(s) enables a decrease in tax liability".

[11] Bartlett's test of sphericity was significant ($\chi^2(15) = 384.313$, $p < 0.001$) and the Kaiser-Meyer-Olking measure was 0.73, suggesting an adequate factorability. All of the six items have a primary factor loading of at least 0.4 and none of the items have a cross-loading above 0.32 (Tabachnick & Fidell (2001))

advisers (*"My organisation has positive experiences with the external tax adviser(s)"*). The two items are strongly correlated, $r = 0.70$, $p < 0.01$ and $\alpha = 0.82$.

Dependent variable

Knowledge sharing is measured using a scale of seven items (originally eight) shown in Table 2 anchored 1 = strongly disagree; 5 = strongly agree. The scale comprises of items that measure knowledge sharing activities initiated by both external tax advisers (e.g., *"Tax advisers inform my organisation about tax matters unprompted"*) and corporate taxpayers (e.g., *"My organisation provides feedback to tax advisers about tax matters"*).

Principal component analysis showed the original eight items form a two-dimensional scale: the first component has an initial eigenvalue of 3.79, explaining 47.3% of the total variance, and the second component has an initial eigenvalue of 1.07, explaining 13.4% of the total variance.[12] The correlation between the two components exceeds the 0.32 threshold (r = .46), suggesting an oblimin rotation is suitable (Brown 2009). All of the eight items have a primary factor loading of at least 0.4. However, one item[13] had a cross-loading above 0.32 and was removed from the scale (Tabachnick & Fidell (2001)).

A principal component analysis with direct oblimin rotation was then conducted on the remaining seven items. The analysis shows that the seven items form a two-dimensional scale.[14] The first component has an initial eigenvalue of 3.43, explaining 49.0% of the total variance, and the second component has an initial eigenvalue of 1.07, explaining 15.3% of the total variance.

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[12] The analysis with direct oblimin rotation was conducted to determine whether the scale was unidimensional. Bartlett's test of sphericity was significant ($\chi^2(28) = 578.013$, $p < 0.001$) and the Kaiser-Meyer-Olking measure was 0.79, suggesting an adequate factorability.

[13] "My organisation is motivated to share knowledge with the external tax adviser(s)"

[14] The correlation between the two components is still beyond the 0.32 threshold ($r = 0.44$), indicating that the analysis is suitable for further interpretation. Bartlett's test of sphericity was significant ($\chi^2(21) = 511.491$, $p < 0.001$) and the Kaiser-Meyer-Olking measure was 0.76, suggesting an adequate factorability. All of the seven items have a primary factor loading of at least 0.4 and none of the items have a cross-loading above 0.32 (Tabachnick & Fidell (2001)).

Table 2 shows the factor loadings for the principal component analysis with direct oblimin rotation. The first component "operational knowledge sharing" consists of four items that describe how corporate taxpayers experience the knowledge flows with external tax advisers, for instance how proactive they think their advisers are, and reflects adviser-instigated knowledge sharing ($\alpha = 0.80$).

The second component "strategic knowledge sharing" consists of three items that describe the strategic usage of the expertise of external tax advisers by corporate taxpayers. The items in this component focus on intentional knowledge flows where the corporate taxpayer has an active approach towards taxation, e.g. *"My organisation uses tax advisers in implementing and applying tax knowledge"*. This component reflects taxpayer-instigated knowledge sharing ($\alpha = 0.73$).

When repeated on the reduced sample of 166 observations the same two factors are identified. However, one variable "cross" loads on both factors with values of 0.321 and 0.650 respectively, though the lower value of 0.321 is marginally higher than a standard rule cut off of 0.32 (Tabachnick & Fidell (2001). When this variable is excluded and the factor analysis repeated two factors are again identified though the second factor's eigen value of 0.987, below the standard threshold of 1.00. The proportion of variance explained is an alternate criteria on which to identify relevance number of factors (ref xxx). As the two factors explain 47.8% and 14.1% of the variance respectively, in our view the results based on 166 supports the identification of the two factors estimated using 180 observations.

[Insert Table 2 about here]

This distinction between operational and strategic knowledge sharing is novel and implies a specification of the concept of knowledge sharing in the inter-organisational context. In analyses contained in the next section, we therefore continue to make a distinction between operational and strategic knowledge sharing. We investigate if the relational

antecedents influence the decision of corporate taxpayers to engage in processes of both operational and strategic knowledge sharing with external tax advisers.

Results

Means, standard deviations and correlations are reported in Table 3. In the correlation analysis, five possible control variables are included. First, the need for tax knowledge. This variable indicates the extent to which corporate taxpayers experience a high need for tax knowledge. Second, the provision of in-house tax specialists, which measures if the organisation's tax responsibilities are dealt with by external advisers or by internal staff. It shows the extent to which organisations consider they have the ability to deal with taxation internally and can therefore be perceived as an indicator of self-efficacy. Third, HMRC as a knowledge source. In learning about tax matters, organisations can use HMRC as an alternate source of knowledge, instead of or next to external tax advisers. This variable measures the extent to which organisations perceive HMRC as an important knowledge source. The final two control variables measure company characteristics, i.e. firm size measured by the number of employees, and the number of tax jurisdictions the organisation interacts with. The correlation matrix shows that the main variables in our study are all significantly correlated. The control variables are not significantly or weakly (maximum r = -.28) associated with the main variables.

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[Insert Table 3 about here]

Because we found a distinction between operational and strategic knowledge sharing, all hypotheses were tested for both types of knowledge sharing. We conducted two sets of hierarchical multiple regression analyses. Each set consists of three regression models. In the first model, only control variables were included while the main independent variables were added in a second model. In the third model the variable strategic (operational) knowledge

sharing is added to capture any interaction between operational and strategic knowledge sharing.[15] Table 4 presents the results of these analyses.[16]

[Insert Table 4 about here]

For operational knowledge sharing, we tested the influence of the independent variables *value*, *access*, *general* and *specific benefits*, and *experience* on *operational knowledge sharing.* The regression model (model 2) is significant, $F(10, 169) = 15.82$, $p < 0.001$, with an adjusted R^2 of 0.397. *Operational knowledge sharing* is positively influenced by *access*, $\beta = 0.430$, $t = 3.63$, $p = 0.000$, *specific benefits* $\beta = 0.170$, $t = 2.13$, $p = 0.004$, and *experience* $\beta = 0.197$, $t = 1.92$, $p = .020$. *Value*, $\beta = -0.018$, $t = 0.19$, *ns*, *general benefits* $\beta = -0.023$, $t = 0.21$, *ns*, and with the exception of the *number of tax jurisdictions* $\beta = 0.067$, $t = 2.009$, $p = 0.04$ none of the control variables are significantly related to operational knowledge sharing. As a robustness test we extend model 2 by adding an additional independent variable *Strategic knowledge sharing* to give model 3.[17] In model 3 this variable is positively associated with *Operational knowledge sharing* $\beta = 0.250$, $t = 2.50$, $p = 0.00$. The results of model 3 are qualitatively the same as those in model 2 with the exception the variable *experience* is no longer statistically significant at 0.05.

For strategic knowledge sharing, we tested the influence of the independent variables *value*, *access*, *general* and *specific benefits*, and *experience* on strategic knowledge sharing. The regression model (model 2) is significant, $F(10, 169) = 20.337$, $p < .001$, with an adjusted R^2 of 0.550 Strategic knowledge sharing is positively influenced by *value* $\beta = 0.417$, $t = 4.45$, $p = 0.000$, *access* $\beta = 0.382$ $t = 3.85$, $p = 0.000$. *Specific benefits* have a negative influence on strategic knowledge sharing, $\beta = -0.47$, $t = 2.30$, $p = 0.026$ as does *experience* $\beta = 0.165$, $t = 1.66$, $p = 0.025$. *General benefits*, $\beta = -0.01$, $t = -0.07$, *ns*, are not significantly related to

[15] We thank a reviewer for suggesting this approach.
[16] In all regression models, the VIF values are below 10 (the highest VIF level is 2.99), which shows that there is no problematic collinearity in our data, see also footnote 17 and 18.
[17] The addition of this variable significantly increases the adjusted R^2 as reported in table 4. Together with a maximum VIF of 2.99 this results suggests the set of independent variables in model 3 does not exhibit problematic collinearity.

strategic knowledge sharing. The control variables *Need for tax knowledge* β = 0.087, t = 1.76, p = 0.025, *Provision of tax specialists* β = -0.093, t = 1.72, p = 0.025 and *HMRC as a Knowledge Source* β = 0.091, t = 2.01, p = 0.025 are significantly related to strategic knowledge sharing.. We also extend model 2 by adding an additional independent variable *Operational knowledge sharing* to give model 3.[18] In model 3 this variable is positively associated with *Strategic knowledge sharing* β = 0.187t = 2.19, p = 0.001. The results of model 3 are qualitatively the same as those in model 2. [19]

We test the robustness of the above results in the following ways. As discussed in footnote 6, the 180 responses include partially completed responses with respect to the control variables. If these observations are removed and the hypotheses tested on the 166 fully complete responses the results are qualitatively identical to those reported in table 4 We also estimate the results on reduced samples firstly after excluding two "non-engaged" respondents and secondly after excluding particular extreme values of associated with the control variables number of jurisdictions and number of employees.[20][21] In both cases the results are qualitatively identical to those reported in table 4. Finally, in the preceding analysis the composite variables are factor based scores derived from an equal weighting of the items loading on each factor. We relax this assumption of equal weighting by using (weighted) Factor Scores based on the relative loadings of each item on a factor. Results based on these Factor Scores are qualitatively identical to those in table 4 with two exceptions. In model 3 Operational knowledge sharing (Strategic knowledge sharing), the variable Strategic

[18] The addition of this variable significantly increases the adjusted R^2 as reported in table 4. Together with a maximum VIF of 2.68 this results suggests the set of independent variables in model 3 does not exhibit problematic collinearity.

[19] There is no evidence of endogeneity (simultaneity) in either version of model 2 i.e. with the dependent variable comprising Operational knowledge sharing or Strategic knowledge sharing respectively. In all cases the null hypothesis of the Wu-Hausman test cannot be rejected at acceptable significance levels. We thank a referee for raising this point.

[20] "Non-engaged" respondents were defined as respondents with a zero standard deviation of their responses across the attitudinal questions.

[21] The extreme values of the two variables, Number of Jurisdictions and Number of Employees were defined after visually examining the data as values in excess of 48 and 98,000 respectively resulting in the exclusion of 10 and 5 cases respectively.

knowledge sharing (Operational knowledge sharing) is no longer statistically significant at the 5% level.[22]

On the basis of these results, hypothesis 1 is partially supported. The more corporate taxpayers *value* the knowledge of external tax advisers, the more likely they are to engage in processes of strategic knowledge sharing with external tax advisers. However, the same does not apply to processes of operational knowledge sharing. Hypothesis 2 is fully supported by the results. The more corporate taxpayers have *access* to the knowledge of external tax advisers, the more likely they are to engage in processes of operational and strategic knowledge sharing with external tax advisers. In hypothesis 3, it was expected that the more corporate taxpayers would perceive processes of knowledge sharing with external tax advisers as beneficial, the more likely they were to engage in such processes. We tested this hypothesis with two types of benefits, and found that general benefits did not have any significant influence on operational or strategic knowledge sharing. However, when corporate taxpayers perceived specific benefits related to sharing knowledge with external tax advisers, they were more inclined to engage in processes of operational knowledge sharing. Conversely, specific benefits were found to negatively influence the likelihood to engage in processes of strategic knowledge sharing. This shows that there are mixed outcomes for hypothesis 3. Finally, hypothesis 4 is marginally supported by the results. The more corporate taxpayers experience a positive prior experience with external tax advisers, the more likely they are to engage in processes of operational – but not strategic - knowledge sharing with external tax advisers. However, a robustness check (Model 3) shows insignificant results for experience.

The findings of the separate regression analyses (from Model 2) are shown in relation to our conceptual model in Figure 2.

[Insert Figure 2 here]

Figure 2: Summary of findings applied to conceptual model

[22] We do not report the three sets of regression analyses discussed in this paragraph here, but they are available on request from the authors.

Conclusion and discussion

This study extends prior corporate tax research. Mulligan and Oats (2016) find in-house tax professionals are an elite group of knowledge experts who can shape law and practices. Therefore, understanding how, and why, in-house tax professionals decide whether, or not, to share corporate tax knowledge with external tax advisers is important to document. By identifying the relational antecedents that contribute to knowledge sharing processes between corporate taxpayers and their external tax advisers, we provide a distinct baseline for other research documenting economic incentives to avoid taxes. Archival studies, such as Graham et al. (2014) and Klassen et al. (2017), explore the incentives for tax planning and avoidance, and analyse the economic / reputational consequences on firm effective tax rates (ETR) without considering the prior step of knowledge sharing with the firm's external tax advisers.

We provide a baseline test of four key relational antecedents: the extent to which corporate taxpayers *value* the knowledge of external tax advisers, have *access* to this knowledge, perceive *benefits* as a result of engaging in processes of knowledge sharing, and share prior positive *experience* with advisers.

Our data indicates a difference between general and specific benefits related to sharing knowledge with external tax advisers. General benefits represent advantages on a broad spectrum, entailing financial, intellectual and reputational advantages. These advantages reach beyond taxation; they are not explicitly related to tax matters. In contrast, specific benefits are inextricably linked with tax, comprising the assessment of tax risks, facilitating agreement with tax agencies, and the provision of an insurance function by external tax advisers. Because of the clear distinction between general and specific benefits, we distinguished both types of benefits in our empirical analyses.

Additionally, a distinction between two different types of knowledge sharing emerged, which we classify as *operational* and *strategic* knowledge sharing. Operational knowledge

sharing concerns daily practices regarding knowledge sharing activities with external tax advisers, and is often adviser-instigated. From the viewpoint of the corporate taxpayer, the activities of both corporate taxpayers and external tax advisers are assessed. It entails the extent to which firms provide feedback to their advisers and believe that their advisers are active and pro-active in sharing tax knowledge. Such operational knowledge flows are functional and can be considered a basic necessity in interacting with external tax advisers. Strategic knowledge sharing, on the other hand, reflects a firm's strategic utilisation of the expertise of external tax advisers. This type of knowledge sharing is focused on knowledge flows that are intentional. It entails more than just the way in which knowledge flows are perceived. Instead, strategic knowledge flows provide insight into the extent to which corporate taxpayers purposefully engage in processes of knowledge sharing with external tax advisers and the willingness of these advisers to share knowledge once employed. Central to strategic knowledge sharing is the intentional nature of the relationship between corporate taxpayers and external tax advisers and the active approach of corporate taxpayers towards taxation. Given this differentiation between operational and strategic knowledge sharing, we measured the influence of the identified relational antecedents on operational and strategic knowledge sharing separately.

Focusing on operational knowledge sharing, our results show corporate taxpayers are inclined to engage in such processes when they have access to their external tax advisers, when they perceive specific tax benefits in relation to sharing knowledge, and when they have a positive experience with their advisers. Although we found a positive influence of specific tax benefits on operational knowledge sharing, we did not find a similar influence of general benefits. Our data shows that firms do recognise general benefits as a result of sharing knowledge with advisers, although they were not statistically significant in explaining operational knowledge sharing. Firms may regard intellectual, reputational and financial advantages as a bonus to sharing tax knowledge, but not as a motivation to engage in such

processes. In contrast to general benefits, specific benefits are more tangible and develop over a shorter time and are therefore easier to quantify, with immediately visible effects.

Turning to strategic knowledge sharing, slightly different patterns are visible. Processes of strategic knowledge sharing between corporate taxpayers and external tax advisers are enhanced when organisations value the knowledge of their advisers and when their advisers are accessible. Similar to operational knowledge sharing, general benefits did not significantly influence strategic knowledge sharing. The lack of a significant relationship between general benefits and either form of knowledge sharing suggests the decision to share is based on more tangible, quantifiable factors as captured by the specific benefits. And whereas we found a positive relationship between specific benefits and operational knowledge sharing, a negative relationship between specific benefits and strategic knowledge sharing was found.

The relationship between specific benefits and knowledge sharing may be explained by the willingness to take liability over tax issues. Strategic knowledge sharing reveals that corporate taxpayers are more involved in and active towards tax than in operational knowledge sharing. This involvement suggests that they feel more responsible and can possibly be held accountable for tax decisions and outcomes. When firms want to reap specific tax benefits, they are more inclined to lay the burden of responsibility with their tax advisers. For example, with regard to companies' risk attitude to tax avoidance, because of concerns over potential adverse reputational effects surrounding tax aggressiveness (Holland et al. 2016), corporate taxpayers with high risk preferences are less likely to share strategic knowledge with external advisers, as such sharing may require them to be explicit about their tax risk preferences.[23] Such concerns are consistent with the finding that firms which prepare their own tax returns are associated with more tax aggressiveness than firms that use their auditors to prepare their tax returns (Klassen et al. 2015).

[23] A general unwillingness to disclose is consistent with the observation that firms rarely voluntarily publish their compliance risk rating produced by HMRC's "Business Risk Review". This even holds for firms classified by HMRC as being "Low (Compliance) Risk".

The different nature of the two types of knowledge sharing may also explain the different impact of value on operational and strategic knowledge sharing. Our results show that valuing external advisers does not affect operational knowledge sharing, which is more adviser-instigated (or 'supply' driven), but does positively influence strategic knowledge sharing, which is more 'demand' driven. Because strategic knowledge sharing is such an intentional and purposeful process, corporate taxpayers must be careful in selecting the 'right' adviser for the job. This explains why valuing the expertise of external advisers is relevant in explaining strategic knowledge sharing. Corporate taxpayers who value their external advisers as a source of supportive knowledge may find this security encourages them to take more responsibility towards tax issues and engage in processes of strategic knowledge sharing.

The finding that positive prior experiences positively influence operational knowledge sharing, but have no significant impact on strategic knowledge sharing, corresponds to Gluckler and Armbruster's (2003) finding that firms have the tendency to continue cooperation with advisers whom they are familiar with. Given the ongoing and functional nature of operational knowledge sharing, positive prior experiences understandably contribute towards such knowledge sharing. However, for strategic knowledge sharing firms are less driven by a shared history with their adviser. Instead, firms are selective in choosing the adviser that fits the specific job best.

All in all, our study provides clues into how to facilitate processes of knowledge sharing in the corporate tax environment. Relational factors appear to play an important role in the decision of firms to share knowledge with external advisers. It is essential for external advisers to be aware of the intentions and potential involvement of their clients in sharing tax knowledge. This will determine whether or not it is important to emphasise their value and specific benefits and generate successive positive experiences. In any case, processes of knowledge sharing between firms and external advisers benefit from advisers being accessible to their clients.

Future research might focus on the two types of knowledge sharing we classify, both in tax and other consultancy contexts, and investigate under which conditions one or both types of knowledge sharing can emerge and flourish. Further research might also explore linking tax risk attitudes to knowledge sharing and investigating how companies decide when, or whether, to use either in-house or external advisers, or both, and the consequences of these decisions.

Lastly, our study raises implications for accounting regulators. If firms are reluctant to share specific forms of information with their professional advisers, this may reduce the ability of professional accounting institutes to regulate the actions of their members and, indirectly, the tax behaviour of firms. A corollary of a reluctance to share is that external parties, e.g. shareholders, may not be able to rely on firm managers to make voluntary disclosures about companies' tax actions. Consequently, if increased shareholder monitoring of companies' tax behaviour is considered desirable, mandatory increased disclosures could be introduced. Financial reporting standard setters have been slow to recognise the limitations of current disclosure requirements and as consequence, there is new evidence that tax administrations are attempting to fill this information vacuum. For example, from 2016 HMRC requires U.K. companies with a balance sheet over £2 billion, or sales turnover exceeding £200 million, to publish their tax strategy explaining the firm's attitude to tax planning and how tax risks are managed with penalties for non-compliance (HMRC 2016). Part of this published tax strategy must include why the firm might seek external tax advice, their tax planning motives, and the importance of each to the firm's tax strategy. The impact of this disclosure initiative on firms' tax planning and avoidance activity, if any, remains to be seen.

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Table 1: Independent variables

A. Benefits - Factor loadings principal component analysis with varimax rotation

	General benefits	Specific benefits
Sharing knowledge with the external tax adviser(s) is intellectually beneficial.	**0.91**	0.17
Sharing knowledge with the external tax adviser(s) is reputationally beneficial.	**0.86**	-0.01
Sharing knowledge with the external tax adviser(s) is financially beneficial.	**0.85**	0.29
The external adviser facilitates reaching agreement between my organisation and HMRC.	0.21	**0.81**
The external adviser is helpful in assessing my organisation's tax risks.	0.17	**0.77**
The use of an external adviser is designed to provide a form of insurance.	0.01	**0.62**
Eigenvalue	2.35	1.75
Percentage of explained variance	39.19	29.09
Cronbach's alpha	0.86	0.61

Commented [PvdR14]: FYI: Table is updated

B. Relational antecedent scale items and reliability analyses

Items in scales	Cronbach's alpha
Value	0.80
Tax advisers are an important source for my organisation in learning about tax matters.	
The external adviser's awareness of legislation is important to my organisation.	
The external adviser's experience in the practicalities of complying with tax legislation is important to my organisation.	
Access	0.81
My organisation has the ability to share knowledge with the external tax adviser(s).	
My organisation has sufficient opportunities to share knowledge with the external tax adviser(s).	
My organisation finds the external tax adviser(s) accessible.	
My organisation possesses sufficient expertise to share knowledge with the external tax adviser(s).	
Experience	0.82
My organisation has a good relationship with the external tax adviser(s).	
My organisation has positive experiences with the external tax adviser(s).	

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Table 2: Knowledge sharing scale items, factor loadings and reliability analysis

	Operational knowledge sharing	Strategic knowledge sharing
Tax advisers inform my organisation about tax matters unprompted.	**0.69**	0.16
Tax advisers ask my organisation for feedback on tax matters.	**0.92**	-0.05
My organisation provides feedback to tax advisers about tax matters.	**0.87**	-0.10
The external adviser is proactive in suggesting tax planning opportunities to my organisation.	**0.62**	0.10
My organisation uses tax advisers to acquire tax knowledge.	0.16	**0.79**
My organisation uses tax advisers in implementing and applying tax knowledge.	0.12	**0.84**
The external adviser(s) is willing to share tax knowledge when employed by my organisation.	-0.10	**0.67**
Eigenvalue	3.43	1.07
Percentage of explained variance	48.99	15.32
Cronbach's alpha	0.80	0.73

Commented [PvdR16]: FYI: Table is updated

Table 3: Correlation matrix

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1 Value	4.26	0.59											
2 Access	3.75	0.67	0.43 **										
3 General benefits	3.61	0.78	0.44 **	0.69 **									
4 Specific benefits	3.74	0.59	0.56 **	0.32 **	0.34 **								
5 Experience	4.01	0.65	0.62 **	0.65 **	0.57 **	0.48 **							
6 Operational knowledge sharing	3.38	0.74	0.36 **	0.61 **	0.44 **	0.36 **	0.53 **						
7 Strategic knowledge sharing	3.94	0.63	0.63 **	0.61 **	0.48 **	0.30 **	0.60 **	0.52 **					
8 Need for tax knowledge	3.68	1.09	0.01	0.18 *	0.13	-0.11	0.06	0.10	0.17 *				
9 Provision of tax specialists	0.46	0.50	-0.28 **	0.09	-0.11	-0.23 **	-0.15 *	0.06	-0.15 *	0.14			
10 HMRC as knowledge source	3.78	0.90	0.12	0.03	0.07	0.07	0.03	0.09	0.14	0.08	0.06		
11 Number of employees	10781	48653	-0.25 **	0.02	-0.03	-0.26 **	-0.10	-0.01	-0.09	0.12	0.15 *	0.07	
12 Number of tax jurisdictions	8.93	21.17	-0.05	0.15 *	0.08	-0.07	0.06	0.15	0.05	0.09	0.20 **	0.01	0.35 **

Note. N = 180 for variables in conceptual model. *p < .05 (2 tailed) **p < .01 (2 tailed).

Variables	*M*	*SD*	*N*	1	2	3	4	5	6	7	8	9	10	11
1 Value	4.26	0.59	180											
2 Access	3.75	0.67	180	0.43 **										
3 General benefits	3.61	0.78	180	0.44 **	0.69 **									
4 Specific benefits	3.74	0.59	180	0.56 **	0.32 **	0.34 **								
5 Experience	4.01	0.65	180	0.62 **	0.65 **	0.57 **	0.48 **							
6 Operational knowledge sharing	3.38	0.74	180	0.36 **	0.61 **	0.44 **	0.36 **	0.53 **						
7 Strategic knowledge sharing	3.94	0.63	180	0.63 **	0.61 **	0.48 **	0.30 **	0.60 **	0.52 **					
8 Need for tax knowledge	3.68	1.09	176	0.01	0.18 *	0.13	-0.11	0.06	0.10	0.17 *				
9 Provision of tax specialists	0.46	0.50	180	-0.28 **	0.09	-0.11	-0.23 **	-0.15 *	0.06	-0.15 *	0.14			
10 HMRC as knowledge source	3.78	0.90	179	0.12	0.03	0.07	0.07	0.03	0.09	0.14	0.08	0.06		
11 Number of employees	10781	48653	179	-0.25 **	0.02	-0.03	-0.26 **	-0.10	-0.01	-0.09	0.12	0.15 *	0.07	
12 Number of tax jurisdictions	8.93	21.17	171	-0.05	0.15 *	0.08	-0.07	0.06	0.15	0.05	0.09	0.20 **	0.01	0.35 **

Note. *p < .05 (2 tailed) **p < .01 (2 tailed).

Commented [PvdR17]: We need to decide on one of the tables below

Commented [PvdR18]: This is table 3 option a: A note that says that n=180 for the variables in the conceptual model. No information is provided on the nonresponse on the control variables.

Commented [PvdR19]: And this is table 3 option b with a column included in which the response per variable is included. Personally, I think that this table is more informative.

Table 4: Hierarchical regression analyses: Factor based results

Commented [K20]: Updated for n= 180

	Dependent variable: Operational knowledge sharing			*Dependent variable:* Strategic knowledge sharing		
Independent variables:	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Strategic knowledge sharing			0.250 *2.50****			
Operational knowledge sharing						0.187 *2.19***
Value		-0.018 *0.19*	-0.123 *1.14*		0.417 *4.45****	0.420 *4.70****
Access		0.430 *3.63****	0.334 *3.14****		0.382 *3.85****	0.302 *3.27****
Benefits - general		-0.023 *0.21*	-0.014 *0.14*		-0.036 *0.36*	-0.032 0.35
Benefits - specific		0.170 *2.13***	0.206 *2.78****		-0.147 *2.30***	-0.179 *2.74****
Experience		0.197 *1.92**	0.156 *1.62*		0.165 *1.66***	0.128 *1.37*
Need for tax knowledge	0.088 *1.17*	0.016 *0.27*	-0.006 *0.11*	0.191 *2.61****	0.087 *1.76**	0.085 1.78*
Provision of tax specialists	0.020 *0.26*	0.059 *0.94*	0.082 *1.35*	-0.181 *2.44***	-0.093 *1.72**	-0.104 *1.96**
HMRC as knowledge source	0.086 *1.15*	0.060 *1.02*	0.037 *0.63*	0.145 *2.00***	0.091 *2.01***	0.080 *1.78**
Number of employees	-0.081 *1.02*	0.009 *0.23*	0.015 *0.36*	-0.137 *1.77**	-0.025 *0.65*	-0.026 *0.66*
Number of tax jurisdictions	0.162 *2.02***	0.067 *2.09***	0.064 *2.14***	0.109 *1.40*	0.011 *0.30*	-0.002 0.06
Constant	n/a *9.75****	n/a *0.41*	n/a *-0.64*	n/a *13.45****	n/a *1.07*	n/a *1.16*
n	180	180	180	180	180	180
F test	1.51 (5, 174)	15.82*** (10, 169)	15.05*** (11, 168)	3.74** (5, 174)	20.33*** (10, 169)	18.07*** (11, 168)
Adj R^2	0.015	0.397	0.422	0.071	0.550	0.568
Max VIF	1.17	2.68	3.02	1.17	2.68	3.00
Breusch-Pagan	0.47 (1)	5.27** (1)	6.50*** (1)	1.63 (1)	4.01* (1)	6.69*** (1)

1. *, ** and *** - significant (single tail) at the 5, 2.5 and 1% level respectively.
2. Robust (White-corrected) standard errors are employed in the presence of significant heteroscedasticity as indicated by Breusch-Pagan test statistic.

Table 5: Hierarchical regression analyses: Factor based results

Commented [K21]: Updated for n= 166

	Dependent variable: Operational knowledge sharing			*Dependent variable:* Strategic knowledge sharing		
Independent variables:	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Strategic knowledge sharing			0.305 *3.16****			
Operational knowledge sharing						0.243 *2.70***
Value		0.015 *0.18*	-0.113 *1.04*		0.418 *4.26****	0.415 *4.50****
Access		0.456 *4.82****	0.336 *3.20****		0.395 *3.98****	0.285 *3.11****
Benefits - general		0.018 *0.22*	0.041 *0.43*		-0.073 *0.72*	-0.077 0.86
Benefits - specific		0.143 *1.87**	0.193 *2.59****		-0.165 *2.35****	-0.200 *2.87****
Experience		0.151 *1.62*	0.099 *1.10*		0.168 *1.60*	0.131 *1.39*
Need for tax knowledge	0.106 *1.35*	0.022 *0.36*	-0.004 *0.07*	0.196 *2.57****	0.085 *1.62*	0.080 1.61
Provision of tax specialists	-0.009 *0.12*	0.043 *0.64*	0.080 *1.28*	-0.194 *2.51***	-0.121 *2.12***	-0.131 *2.34***
HMRC as knowledge source	0.083 *1.06*	0.073 *1.19*	0.043 *0.71*	0.125 *1.65***	0.099 *2.02***	0.081 *1.66**
Number of employees	-0.083 *0.99*	0.018 *0.26*	0.028 *0.64*	-0.151 *1.86**	-0.033 *0.84*	-0.038 *0.89*
Number of tax jurisdictions	0.161 *1.92**	0.054 *0.82*	0.051 *1.72**	0.109 *1.34*	0.009 *0.24*	-0.004 0.12
Constant	n/a *9.19****	n/a *0.90*	n/a *1.20*	n/a *13.27****	n/a *1.34*	n/a *1.55*
n	166	166	166	166	166	166
F test	1.46 (5, 160)	12.66*** (10, 155)	13.47*** (11, 154)	3.61*** (5, 160)	19.83*** (10, 155)	20.47*** (11, 154)
Adj R^2	0.014	0.414	0.454	0.073	0.533	0.565
Max VIF	1.17	2.52	2.88	1.17	2.52	2.90
Breusch-Pagan	0.37 (1)	3.73* (1)	4.13* (1)	1.40 (1)	5.24** (1)	9.36*** (1)

1. *, ** and *** - significant (single tail) at the 5, 2.5 and 1% level respectively.
2. Robust (White-corrected) standard errors are employed in the presence of significant heteroscedasticity as indicated by Breusch-Pagan test statistic.