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Abstract

Top management involvement in IT governance may positively influence the establishment and implementation of effective IT governance within organisations. There are few studies, however, investigating those factors that drive top managements' ability to absorb IT governance knowledge within organisations. This study offers a deeper understanding of factors that help positively influence top managements' knowledge of IT governance. Using absorptive capacity as its theoretical underpinning and based on Australian empirical data, this study shows that for top management to have good levels of absorptive capacity of IT governance knowledge, four factors are required. Within the context of IT governance, those four factors are prior relevant knowledge, communication network, communication climate, and knowledge scanning. In rank order this study shows that the level of absorptive capacity of IT governance of top management was strongly influenced by communication network. Knowledge scanning was found as the next most important factor for improving the level of absorptive capacity of IT governance knowledge. Communication climate was found to be the third most important factor. Lastly, 'Prior relevant knowledge' was also important for enhancing the level of absorptive capacity of IT governance among top management. Organisations that want their top management to be positively involved in IT governance can use these empirically validated factors to help contribute to top management involvement in IT governance.

Keywords

Construct development, absorptive capacity theory, top management, IT governance, second-order confirmatory factor analysis.

INTRODUCTION

The key role of top management in aligning business and information technology (IT) has been acknowledged in prior studies (Boritz and Lim, 2007; ITGI, 2003; Salmela et al., 2000; Sohal and Fitzpatrick, 2002). Top management involvement in IT governance may positively influence the establishment and implementation of effective IT governance within organisations. As such, a high level of IT governance knowledge is important for top management to be actively involved in IT governance arrangements. A survey conducted by Weill and Ross (2004) found that IT governance performance can be accurately predicted by the knowledge of IT governance held by top management. They found that, on average, only 38% of respondents thought that their senior managers knew their organisation's IT governance framework. For the best performers however, the respondents

thought that 80% of their top managers knew their organisation's IT governance framework. Using a survey of senior IT managers from 132 firms in the US, Boynton et al. (1994) found that managerial IT knowledge is the dominant factor in explaining high levels of IT use in firms. A more recent study by Ray et al. (2005) revealed that the performance effect of IT is likely to be contingent on the shared knowledge held by IT management.

There are few studies, however, investigating those factors that drive top managements' ability to absorb or integrate IT governance knowledge within organisations. Thus this study proposes a construct called 'absorptive capacity in IT governance knowledge (ACAP-ITG)'. ACAP-ITG can be used to assess the level and extent of top managements' IT governance knowledge. This study defines absorptive capacity for IT governance knowledge as *the ability of top management in an organisation to recognise the value of IT governance information and knowledge, assimilate it, and apply it for competitive advantage*. In the context of absorptive capacity theory, 'top management IT governance knowledge' refers to the knowledge of IT governance frameworks that are held by top management. Furthermore, absorptive capacity of IT governance knowledge focuses on the top management level within organisations. This focus arises from IT governance being the responsibility of boards of directors and top management (ITGI, 2003).

In this study, top management refers to the C-suite management level (e.g., CEO, COO, CFO, and CIO) (Elbashir, 2006). ITGI (2003) describes IT governance knowledge as leadership, organisational structures and processes that ensure alignment between IT and business goals. According to the IT Governance Institute (2003), the general purpose of IT governance is to "to understand the issues and the strategic importance of IT, so that the enterprise can sustain its operations and implement the strategies required to extend its activities into the future" (IT Governance Institute, 2003, p.7). ACAP of IT governance knowledge implies that top management has extensive knowledge of IT governance arrangements within their organisation. When top management has extensive knowledge of IT governance, we expect that knowledge will lead to enhanced IT governance within their organisations. Thus the objective of this research is to determine which factors facilitate top management in absorption of IT governance knowledge.

This paper proceeds as follows. Section 2 discusses the construct development methodology. Sections 3 and 4 present the research discussion and conclusion, and Section 5 concludes with the study's limitations and future studies.

CONSTRUCT DEVELOPMENT METHODOLOGY

Absorptive capacity (ACAP) in IT Governance Knowledge

Adapted from the macroeconomics domain (Adler, 1965), Cohen and Levinthal (1990, p.128) proposed the absorptive capacity (ACAP) concept in the organisational context as the "ability of a firm to recognise the value of new, external information, assimilate it, and apply it to commercial ends". ACAP focuses on organisational learning and is the result of continuous learning action. ACAP is mainly concerned with acquiring external knowledge and information (Cohen and Levinthal, 1990). Implicitly, ACAP theory is the acknowledgment of the existence of internal knowledge and information within organisations. Jones and Craven (2001) posited that many organisations, however, may not realise or have access to their internal knowledge (e.g. tacit and explicit knowledge). To deal with their concern, they proposed a network of formal and informal communication to support the internal diffusion of new knowledge and technology within the organisation.

Several studies have proposed some constructs to operationalise ACAP. For example, Brown (1996) proposed three major components of a firm's ACAP that facilitate absorption of available internal knowledge. The components are prior relevant knowledge, communication network, and communication climate. By combining the studies of Brown (1996) and Cohen and Levinthal (1990), Tu et al. (2006) proposed ACAP as the organisational mechanisms that enable identification, communication, and assimilation of relevant internal and external knowledge. Applying this notion in the context of IT governance, ACAP theory provides strong support for the importance of IT governance knowledge within organisations.

Analogous to Tu et al. (2006) and Lee et al. (2009) in this study, an organisation's absorptive capacity for IT governance (as a second-order construct) is represented by four first-order sub-constructs: prior relevant knowledge, communication network, communication climate and knowledge scanning (see Table 1 below). These elements, respectively, represent top management's existing knowledge base of IT governance mechanisms (frameworks); the effectiveness of the organisation's top management communication network and climate in the context of IT governance; and the effectiveness of the organisation's top management environment scanning in the context of IT governance. The aforementioned four constructs will reflect this study's second order construct, that is, *absorptive capacity of IT governance knowledge (ACAP-ITG).*

Prior relevant knowledge

Cohen and Levinthal (1990) posit that prior relevant knowledge is the most important element of absorptive capacity as it enables individuals in an organisation to identify and assess the value of new information. Firms having a sufficient base of prior knowledge are more adept at predicting and investigating future technological progress as opposed to firms with limited prior knowledge (Cohen and Levinthal, 1990). Relative to the main objective of this study, top management that have an adequate base of prior IT governance knowledge are more adept at controlling and directing their IT governance, thus, better aligning IT with business goals.

As there are no pre-existing metrics for measuring the top management IT governance knowledge construct, this study seeks to develop its own measurements. This task will be done using existing IT governance literature such as ITGI (2008), Van Grembergen et al. (2004) and Weill and Ross (2004). For example, ITGI (2003) describes IT governance knowledge as leadership, organisational structures and processes that ensure the alignment between IT and business goals.

Communication network

The communication network is the "scope and strength of structural connections that brings flows of information and knowledge to different organisational units" (Tu et al., 2006, p.695). As Lee et al. (2009, p.8) point out, however, the communication network is "not technical and instead refers to the social network of human contacts that must be in place for effective communication" between top management and employees within an organisation. Therefore, an effective internal communication network is crucial in enhancing absorptive capacity of organisations (Cohen and Levinthal, 1990).

Table 1. Sub-constructs of ACAP in IT Governance Knowledge

Sub-construct (items)	Definition	Literature
Prior relevant Knowledge (PK) (3 items)	Understanding of IT governance knowledge possessed by top management members (i.e., C-level management) that covers knowledge of structure, processes and mechanisms to ensure alignment between IT and business goals.	Brown (1996); Cohen and Levinthal (1990); Weill and Ross (2004); ITGI (2003); Van Grembergen et al. (2004).
Communication network (CN) (3 items)	Scope and strength of structural connections that bring flows of information and knowledge (of IT governance) from top management to different organisational units.	Brown (1996); Cohen and Levinthal (1990); Tu et al. (2006); Lee et al. (2009).
Communication Climate (CC) (3 items)	Atmosphere within the organisation that defines accepted communication behaviour by top management which may facilitate or hinder the communication processes in the context of IT governance.	Brown (1996); Cohen and Levinthal (1990); Tu et al. (2006); Lee et al. (2009).
Knowledge Scanning (KS) (3 items)	An organisational mechanism that enables top management to identify and capture relevant external and internal IT governance knowledge and technology.	Brown (1996); Cohen and Levinthal (1990); Tu et al. (2006); Lee et al. (2009).

Communication climate

The communication climate is the "atmosphere within the organisation that defines accepted communication behaviour, which may facilitate or hinder the communication processes" (Tu et al., 2006, p.965). An open and supportive communication climate improves the learning ability of employees whereby creating a conducive environment for implementing new ideas (Nevis et al., 1995). As IT governance primarily deals with new ideas (Dos Santos and Peffers, 1995), a good communication climate may enhance the learning ability of top management relative to IT governance. Improving the quality of communication mechanisms may, therefore, help support improved governance.

Knowledge scanning

Tu et al. (2006, p.969) contend that knowledge scanning is "an organisational mechanism that enables firms to identify and capture relevant external and internal knowledge and technology". This mechanism includes market tracking, benchmarking, and technology assessments. These activities encourage people to actively find new information that can be applied for competitive advantage (Lee et al., 2009). In the context of this study,

knowledge scanning is an organisational mechanism that enables top management to identify and assimilate relevant external and internal IT governance knowledge.

Pre-test and pilot test

A survey instrument was developed by modifying questions from the prior studies (see Table 1 above). There were 3 (three) question items for each of the four first-order constructs. All 12 question items were measured by a 7-point Likert-scale (ranging from 1= 'Strongly disagree' to 7='Strongly agree'). Likert-scale was chosen as this study used perceptual measures for measuring the ACAP-ITG construct. Most studies in social sciences including information systems domain used a 7-point Likert-scale as it maximizes both information retrieval from respondents and measurement reliability (Preston and Colman, 2000; Lozano et al. 2008; Dawes, 2008).

Following the creation of the research instrument, three tests (i.e., pre-test, pilot-test and content validity test) were run to ensure the face and content validity of the research instrument. The pre-test and pilot test were conducted to acquire empirical feedback from expert participants to assess the appropriateness of the original survey instrument (Lewis, et al., 2005). This step involved 12 participants consisting of 8 IT academics and 4 IT professionals. The participants were requested to complete the research instrument via an online-survey and a paper-based survey. Following the pre-test, a pilot test was performed. The test involved 10 participants consisting of 2 IT auditors, 4 IT professionals, and 4 IT academics. The participants were asked to complete the online instrument, and to give feedback on any difficulties when completing the instrument. Based on the feedback from the participants of both tests on the content and design of the survey, some minor adjustments were made such as providing some definitions used in the survey and rewording some survey items to improve their understandability.

Content validity test

In order to ensure the 12 items represent the content domain of the ACAP IT governance knowledge, a content validity ratio (CVR) based on Lawshe (1975) was used. Based on their CVR, items that were not statistically significant were dropped from the survey instrument.

Participants in this test were a panel of experts consisting of 13 internationally-renowned IT scholars in the area of IT governance. The panellists were sent a list of the items from the updated instrument and were asked to evaluate the relevance of each to its related construct on a three-point scale: 1='Not Relevant', 2='Important (But Not Essential)', and 3='Essential'. The CVR is computed for each of the items using the following formula: CVR = (n-N/2)/ (N/2). Where N= total number of respondents, and n= frequency count of the number of panellists rating the item as appropriate, either 3='Essential' or 2= 'Important (But Not Essential)'.

The CVR of each item was evaluated for statistical significance using Lawshe's table (1975). Following Lewis (et al. 2005), this study uses a less stringent criterion by using both 2 and 3. This is justifiable as "responses of both 'Important (But Not Essential)' and 'Essential' are positive indicators of an item's relevance to the construct" (Lewis et al., 2005, p.393). Out of 12 items, there was one (1) insignificant item (i.e., CN2) that was dropped from the study's research instrument. See Table 2 for the content validity test results.

Table 2. Content Validity Results of sub-constructs of 'absorptive capacity in IT Governance' construct

Code/Measurement Item	Mean[a]	CVR	Alpha	CR[b]	Mean[c]	Std Dev[c]
Prior relevant knowledge (PK)			0.930	0.933		
PK1/Our top management team members are knowledgeable about IT governance structures (e.g., IT steering committee, IT strategy committee, IT architecture committee.)	2.92	1.00*			3.80	2.39
PK2/Our top management team members are knowledgeable about IT governance processes (e.g., strategic information planning, and service level agreement).	2.69	1.00*			3.92	2.25
PK3/Our top management team members are knowledgeable about IT governance relational mechanisms (e.g., senior management involvement in IT, business/IT account manager, and IT leadership).	2.62	0.845*			3.85	2.39

Communication network (CN)			0.801	0.801		
CN1/Our top management team communicate about IT governance their subordinates extensively.	2.39	0.69*			3.56	2.45
CN2/Our top management team communicate about IT governance with their subordinates frequently.	2.23	0.39			-	-
CN3/Our top management team know the right people in our firm who can provide IT governance information.	2.54	0.85*			4.41	2.49
Communication climate (CC)			0.924	0.926		
CC1/Our top management team and their subordinates trust each other.	2.77	1.00*			4.29	2.49
CC2/Our top management team and their subordinates have a very open communication environment.	2.85	1.00*			4.48	2.52
CC3/Our top management team and their subordinates are willing to share ideas about IT governance with each other.	2.69	1.00*			4.43	2.50
Knowledge scanning (KS)			0.903	0.905		
KS1/Our top management team seek to learn from training courses/education for useful IT governance information.	2.62	1.00*			4.06	2.42
KS2/Our top management team seek to learn from tracking new IT governance trends in our industry.	2.54	0.85*			4.05	2.26
KS3/Our top management team seek to learn from the best IT governance practices in our industry to apply those practices to our firm.	2.85	1.00*			4.00	2.33

Notes: *significant at the 0.05 level; Mean[a] resulted from the content validity test; CR[b] = composite reliability= (square of the summation of the factor loadings)/ {(square of the summation of the factor loadings) + (summation of error variables), resulted from the main survey; Mean[b] and Std Dev[b] resulted from the main survey.

Survey Results

Following the content validity test, a revised online questionnaire was sent to a panel of respondents administered by an Australian based survey panel vendor. The use of a survey panel vendor was influenced by the difficulty associated with getting accurate data of potential survey participants from existing databases such as ORBIS, OSIRIS, and MintGlobal. Prior studies indicate that results from panel surveys do not differ significantly from those collected from random mail samples (Dennis, 2002; Pollard, 2002; Skinner et al., 2009). Furthermore, previous IS studies have used survey panel vendors with reliable results (Kaye and Johnson, 1999; Lee et al., 2009; Wetzels et al., 2009). Survey panel vendors ensure only eligible respondents participate in the survey by having control measures such as unique login IDs and respondents' background profiles. The online questionnaire itself also had several screening questions (e.g., job-title, type of industry) to ensure that only eligible and appropriate participants took part in the survey.

Members of top management teams within Australian for-profit organisations were the target respondents of this survey. The use of perceptual data from top management members has been widely used in prior IT management research (Tallon et al., 2000, DeLone and McLean, 1992; Grover et al., 1998; Broadbent and Weill, 1993; Tallon, 2007). Using a 7-point Likert-scale (ranging from 1= 'Strongly disagree' to 7='Strongly agree'), respondents were asked to which extent the 11 items of the ACAP IT governance knowledge construct have been existed/implemented by their top management (e.g., CEO, COO, CFO, and CIO). For questions the

respondents may not think applied to their organisation, 'N/A' (not applicable) as an answer option was provided.

Two hundred and thirty-one (n=231) valid responses were collected from the survey, giving a response rate for this survey of 13.3%, which favourably compares with previous studies with top management members as the target respondents (Prasad, et al., 2010; Jeffers et al., 2008). The highest percentages of respondents were from property/business services and retail/trade industry (13.4%, and 13% respectively). 45% of respondents were managing directors and 17.7% were general managers. 36% of respondents had 0-5 years work experience and 34.6% respondents had 5.1-10 years of experience. The average sales for the respondents' organisation was AU$1.24 billion per year which is broadly comparable with prior Australian studies (Elbashir, 2006).

Confirmatory factor analysis (CFA)

A second-order confirmatory factor analysis (CFA) using AMOS 7.0 was used to analyse the data. CFA was used as the researchers have "some knowledge of the underlying latent variable structure" (Bryne, 2001, p. 6) derived from prior studies. The measurement model is first examined, followed by the structural evaluation.

ACAP-ITG was tested in the measurement model as a second-order factor which was operationalised by the four first-order factors of ACAP-ITG discussed above as reflective indicators. Following Jarvis et al. (2003), the selection of a reflective measurement model was consistent with prior studies, and the four first-order factors also have high correlations. Further, consistent with Jarvis et al.'s suggestion (2003), all the four first-order constructs tested in this study were modelled using reflective indicators measurement model (or molecular models for second-order constructs) (Chin and Gopal, 1995).

Measurement model

The measurement model analyses the relationships between the latent constructs and their associated items i.e., the relationships between the four first-order constructs with their associated indicators. In this analysis, the adequacy of the indicators, represented by their loadings to their respective constructs was examined. The loadings (i.e., standardised regression weights) of the indicators revealed that all indicators were greater than 0.707 (Chin et al., 2008), ranging from 0.790 to 0.992, suggesting that all of them are reliable indicators of all four first-order constructs (see Table 3 below).

To further indicate the reliability of the latent constructs indicators as a whole, the loadings of the constructs were used to calculate Cronbach's alpha and composite reliabilities (CR) for the constructs (See Table 2 above). None of the sub-constructs' alpha is lower than 0.6. The composite reliabilities were also calculated as they estimate the extent to which a set of latent construct indicators share in their measurement of a construct (Hair et al., 1998). In contrast to alpha, CR does not assume tau equivalence among the indicators (Chin et al., 2008). The results are all above the minimum 0.80, ranging from 0.801 to 0.933. Consequently, these latent construct indicators provided a reliable and consistent measure of the intended first-order sub-constructs. The means and standard deviation are also provided in Table 2, above.

Structural evaluation

The structural model analyses the relationships between the various latent variables e.g., between the four first-order constructs and the second-order construct (i.e., ACAP-ITG) (See Figure 1 below). The goodness-of-fit indices for the model are shown in Figure 1.

The Chi-square ($\chi 2$) statistic is the traditional measure for evaluating model fit (Schumacker and Lomax, 2004). It examines the differences between the covariance matrix implied by the model and the covariance matrix obtained from the data. The test of a second-order factor (ACAP-ITG) which was represented by the four first-order constructs, generated $\chi 2$ value of 100.813, with 40 degrees of freedom and a probability of less than 0.0001 ($\rho<0.0001$). Such a result indicates that the fit of the data to the hypothesized model was not entirely adequate. However, many psychometricians suggest that $\chi 2$ goodness-of-fit statistic should not be used as a reliable guide for model adequacy (Curran et al., 1996; Hu and Bentler, 1999; Chin et al., 2008), as it depends on model adequacy and large sample size (Joreskog and Sorborn, 1993), and it has no upper limit and its value cannot be interpreted in a standardised way (Kline, 2005; Chin et al., 2008). Further, Byrne (2001, p.81) states that "findings of well-fitting hypothesized models, where the $\chi 2$ value approximates the degree of freedom, have proven to be unrealistic in most SEM empirical research." Thus, this study examines other fit indexes resulting from the AMOS data analysis such as Normalised $\chi 2$, GFI, AGFI, NFI, TLI, CFI and RMSEA (see Figure 1 below).

Normalised $\chi 2$ was 2.52 indicating the model has a good model fit. Schumacker and Lomax (2004) suggest that Normalised chi-square value should be between 1.0-5.0, beings less than 0.1 indicating model has a poor model fit and being more than 5.0 suggesting model needs improvement. The GFI and AGFI value were of 0.930 and

0.885, closer to 1.00, indicating the model fits the sample data fairly well. NFI = 0.956, TLI = 0.963, and CFI = 0.973, greater than 0.950, suggesting that the model represented an adequate fit to the data. Lastly, RMSEA = 0.081 this model has mediocre fit. Overall, the results indicate that this model is quite acceptable and fits the data well (Byrne, 2001; Hu and Bentler, 1999).

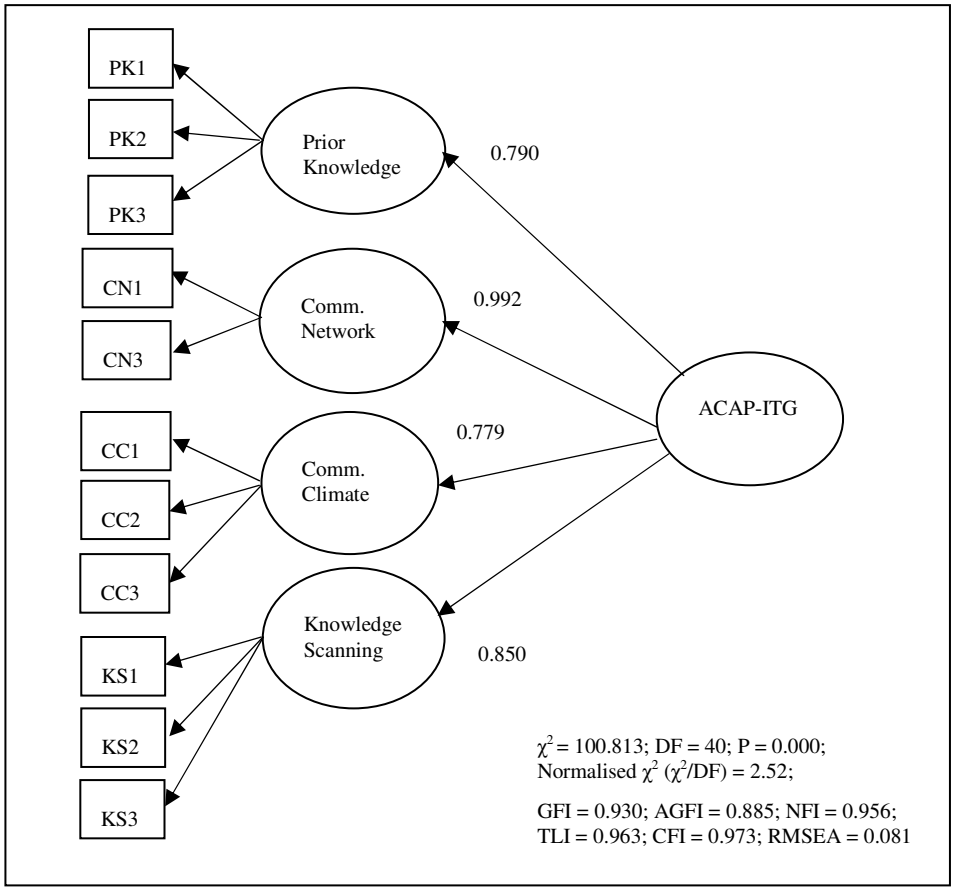

Figure 1: A Second-Order Confirmatory Factor Analysis Results (AMOS)

DISCUSSION

Table 3 below presents the regression weights and loading of all parameters. All the unconstrained estimates have critical ratio greater than 1.96 (i.e., ranging from 11.698 to 20.188) and ρ-value smaller than 0.05 i.e., statistically significant. The results indicate that the four first-order factors represent an adequate description of ACAP-ITG construct.

This study shows that the level of absorptive capacity of IT governance of top management is strongly influenced by communication network (loading 0.992 and $\rho<0.001$) which suggests that top management communicate about IT governance with their subordinates extensively. Also, top management know the right people in their firm who can provide with IT governance information. Knowledge scanning was found as the second most important factor for improving the level of absorptive capacity of IT governance knowledge (loading 0.850 and $\rho<0.001$), indicating that top management seek to learn from training courses or education of IT governance, to learn from tracking new IT governance trends in industry, and to learn from the best IT governance practices in the industry.

Communication climate was found as the third most important factor (loading 0.799 and $\rho<0.001$). This result indicates that it is important for top management and their subordinates to trust each other, have a very open communication environment, and are willing to share ideas about IT governance with each other. Lastly, 'Prior relevant knowledge' (loading 0.790 and $\rho<0.001$) was also important for enhancing the level of absorptive capacity of IT governance among top management. This result shows that it is beneficial for organisations to have top management who are knowledgeable about IT governance structure, process and relational mechanisms.

Those results are consistent with IT governance literature. Prior relevant knowledge of IT governance by top management coupled with the ability to share that knowledge with the appropriate employees via the appropriate

channels (i.e., communication network and communication climate) are essential for implementing effective IT governance. Communication mechanisms are essential for enhancing absorptive capacity of IT governance knowledge within organisations. Weill and Ross (2004, pp.104-105) state that "communication mechanisms are intended to "spread the word" about IT governance decisions and processes and related desirable behaviours throughout the enterprise. We found that the more management communicated formally about the existence of IT governance mechanisms, how they worked and what outcomes were expected, the more effective was their governance". Further, Weill and Ross (2004, p.7), assert that "education of the senior management team about how governance mechanisms combine to work for the enterprise is an essential and ongoing task for effective governance". Finally, the knowledge scanning mechanism allows top management within organisations to identify and capture relevant external and internal knowledge that can increase IT governance expertise (Xue et al., 2008).

Table 3. Regression Weights and Loadings

			Estimate	Std. Error	Critical Ratio		Loading
PK	←	ACAP-ITG	1.597	.137	11.698	***	0.790
CN	←	ACAP-ITG	1.996	.140	14.241	***	0.992
CC	←	ACAP-ITG	1.731	.143	12.071	***	0.799
KS	←	ACAP-ITG	1.692	.139	12.146	***	0.850
PK1	←	PK	1.000				0.847
PK2	←	PK	1.059	.052	20.188	***	0.953
PK3	←	PK	1.084	.057	19.059	***	0.918
CN1	←	CN	1.000				0.824
CN3	←	CN	1.003	.073	13.740	***	0.811
CC1	←	CC	1.000				0.871
CC2	←	CC	1.073	.054	19.941	***	0.923
CC3	←	CC	1.034	.054	19.055	***	0.899
KS1	←	KS	1.000				0.822
KS2	←	KS	1.007	.062	16.265	***	0.887
KS3	←	KS	1.060	.063	16.729	***	0.907

*** significant at 0.001

CONCLUSIONS

The key role of top management in aligning business and IT has been acknowledged by prior studies. Top management involvement in IT governance appears to positively influence the establishment and implementation of effective IT governance within organisations. This study proposes and validates a construct called "ACAP in IT governance knowledge" which help facilitate top management with absorption of IT governance knowledge. The proposed second order construct comprises of four first-order constructs: prior relevant knowledge, communication network, communication climate and knowledge scanning. Based on a domain definition, and constructs and its indicators--grounded in the literature, this study reports the work in

developing an empirically reliable and valid measure of ACAP in IT governance knowledge. Adopting a rigorous method in the derivation of this measure, the preliminary confirmatory factor analysis result is a four-factor, 11-item instrument for facilitating top managements' absorption of IT governance knowledge. Organisations that want its top management to be positively involved in IT governance can use these empirically validated factors to help contribute to top managements' involvement in IT governance.

LIMITATIONS AND FUTURE STUDIES

This study has three potential limitations. First, the measurement instrument developed in this study for ACAP of IT governance knowledge should be considered a first iteration that will benefit from further empirical testing to improve its efficacy in IT governance studies. Second, the construct (i.e., ACAP in IT governance knowledge) is a subjective and indirect measure (based upon respondents' perceptions) and, hence, it is not necessarily as strong as direct objective measures. This limitation is considered necessarily unavoidable, however, as the research methodology adopted is a questionnaire approach given the absence of objective measures. Third, the sampling frame in this study was limited to the panel group that self-selected to work with the survey firm. They may not be completely representative of for-profit organisations in Australia in their demographic characteristics. While this does not invalidate the study's results, readers should consider the context of this study when interpreting the study's results (Lee et al., 2009). For future studies, as the IT governance concept continues to evolve, new dimensions to the ACAP-IT governance knowledge may unfold. It would also be interesting to identify antecedent and consequential factors that relate to the level of ACAP-ITG within an organisation.

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