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Organizational culture and information privacy assimilation: An empirical study

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ABSTRACT

Data privacy concerns in organizations have been rising over the past several decades. As per the GDPR (General Data Protection Regulation), organizations need to implement highest-possible privacy settings by design and default. This study develops a model for understanding the mechanisms of information privacy assimilation in Information Technology (IT) organizations. This study treats information privacy as a distinct dimension separate from information security. We have examined the mediating role of senior management participation and organizational culture on privacy assimilation (strategy and organizational activities). On the strategy, our findings showed that full mediating role of senior management participation for coercive forces, partial mediation for normative and mimetic forces. On the organizational activities, our findings showed that full mediating role of organizational culture for coercive forces and normative forces, partial mediation for mimetic forces. These findings would enable senior managers to identify and respond to institutional pressures by focusing on appropriate factors within the organization.

Keywords

Information privacy, Security, Assimilation, Neo-institutional theory, Organizational culture

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INTRODUCTION

Data privacy concerns in organizations have been rising over the past several decades. As per the GDPR (General Data Protection Regulation), organizations need to implement highest-possible privacy settings by design and default. This implies that business processes that handle personal data must be designed and built with consideration of the GDPR principles and provide safeguards to protect data (for example, using pseudonymization or full anonymization as appropriate). Prior research has highlighted the role of employee behavior and organizational culture in the assimilation² of information security in organizations (Hsu et al. 2012). However, organizational culture and information privacy still remains underexplored, In particular, how does organizational culture influence information privacy? How does senior management inculcate organizational culture that leads to information privacy assimilated in organizational strategy and actions?

Academic studies have analyzed the interplay between the external institutional forces and internal factors at an organizational level with reference to information security assimilation (Hsu et al. 2012; Tejay and Barton, 2013) with institutional theory as theoretical lens. Recent studies have also reported scarcity of privacy studies at organizational level as against individual level (Belanger and Crossler, 2011). Furthermore, organizational culture shapes and guides the behavior of its members via shared values among the members (Smircich, 1983). Although a recent study has identified organizational culture as a key factor influencing organizational privacy strategy using case data (Attili et al., 2018), the generalizability of this relationship is not known. This significant gap in the current understanding of information privacy at organizational level forms the focus of this research.

² Assimilation is defined as the process spanning from an organization's awareness of a practice to potentially widespread deployment (Meyer and Goes, 1988).

The remaining part of this paper is organized as follows. First, we review the related literature. Next, we provide the theoretical background, followed by hypothesis development. Further, we discuss our methodology, research model and preliminary results. Finally, we conclude with the implications of the study along with limitations and future scope.

REVIEW OF LITERATURE

In the recent past, we recognized strong evidence from literature to support the need for a separate and distinct focus on information privacy research. Culnan and Williams (2009) argued that organizations can successfully secure the stored personal information but still make bad decisions about the subsequent use of personal information, resulting in information privacy problems. Studies by Chan et al. (2005) and Greenaway et al. (2015) highlighted organizational imperative to address privacy, distinct from security. Belanger and Crossler (2011) conducted an exhaustive review of over 500 articles and 102 conference proceedings that studied information privacy at individual, group, and organizational levels. They pointed out that bulk of the research in privacy pertains to individual level of analysis and privacy at organizational level remained less explored.

Building on prior assimilation literature, we define privacy assimilation as important outcome in efforts of an organization to leverage the potential of information privacy practices (to protect and use customers' personal information) in their business activities and strategies (Armstrong and Sambamurthy, 1999). In prior studies on IT assimilation, top or senior management support (Chatterjee *et al.*, 2002; Hsu *et al.*, 2012; Liang *et al.*, 2007; McFadzean *et al.*, 2011) was identified as a critical factor influencing assimilation. Considering the organizational context, we include culture (Gallivan, 2001; Hsu *et al.*, 2012; Hu *et al.*, 2012) as another critical factor.

This study bridges this gap in information privacy research and aims to test a theory to explain information privacy assimilation in IT organizations, using a large sample. We draw upon neo-institutional theory and concepts from technology assimilation from IS literature.

THEORETICAL BACKGROUND

Institutional theory has been used to analyze information security and privacy at organizational level (Attili et al. 2018; Hsu et al. 2012; Hu et al. 2012; Tejay and Barton, 2013). According to neo-institutional theory, organizations become similar over time through the process of isomorphism. Three primary mechanisms drive isomorphism: coercive, mimetic, and normative. Coercive mechanisms are external influences from regulatory sources, competition, and society that pressure organizations to change. Mimetic mechanisms occur when organizations copy practices from other organizations they perceive as successful, and are common in uncertain environments. Normative mechanisms are changes that result from professionalization of the workforce. Common education and training leads to similar skills throughout the organization (DiMaggio and Powell 1982; P. J. DiMaggio and Powell 1991; Powell and DiMaggio 2012).

Assimilation is defined as the process spanning from an organization's awareness of a practice to potentially widespread deployment (Meyer and Goes, 1988). From a technological view, it is also defined as the extent to which the use of technology diffuses across organizational work processes to become routinized in the activities associated with those processes (Armstrong and Sambamurthy, 1999; Chatterjee et al. 2002; Fichman and Kemerer, 1997; Gallivan, 2001).

HYPOTHESES DEVELOPMENT

Building on prior literature, we regard information privacy assimilation as an important outcome in the efforts of organizations to leverage the potential of information privacy practices in their

“business strategies” and “organizational activities” (Armstrong and Sambamurthy 1999; Chatterjee et al. 2002).

Mediating Role of Senior Management

In prior research on technology innovation, top/senior management support (Chatterjee et al. 2002; Hsu et al. 2012; Liang et al. 2007) was identified as a mediator influencing assimilation. Also in the prior qualitative research (Attili et al. 2018), the themes identified under the “senior management support” construct (tone at the top, strategy formulation, decision making support and assigning responsibilities) highlights its influence as a key mediating factor on privacy assimilation. Considering the above, the following hypotheses are framed with a focus on the “Business Strategy” part of privacy assimilation.

H1a: The relationship between the coercive forces and privacy related business strategy is mediated by senior management participation.

H1b: The relationship between the normative forces and privacy related business strategy is mediated by senior management participation.

H1c: The relationship between the mimetic forces and privacy related business strategy is mediated by senior management participation.

Mediating Role of Organization Culture

Organization culture is also identified as a critical element influencing privacy assimilation. Organization culture related themes like ‘company value and ethics,’ ‘Dynamic, first with competitive actions,’ ‘swift in changing formal rules and policies’ and ‘focus on learning, awareness’ were identified as key internal influencers (Attili et al. 2018) in privacy assimilation. Prior literature indicates that culture shapes and guides the behavior of its members via shared values among the members (Smircich, 1983). Further, it has been argued that security policies

must be instilled into organizational culture to be effective (Von Solms and Von Solms, 2004). Recent study has reported that higher the cultural acceptability of innovation, the stronger the relationship between institutional influences and assimilation (Hsu *et al.* 2012). Considering the above, the following hypotheses are framed with a focus on the “Organizational Activities” slice of the assimilation.

H2a: The relationship between the coercive forces and organizational privacy activities is mediated by organizational culture.

H2b: The relationship between the normative forces and organizational privacy activities is mediated by organizational culture.

H2c: The relationship between the mimetic forces and organizational privacy activities is mediated by organizational culture.

We intend to analyze the role of organization culture between the two elements of assimilation i.e. between ‘business strategy’ and ‘organizational activities’ in an alternative model (Appendix A). Unlike primary research model, this alternative model assumes organization culture doesn’t interplay with external forces and its influence is internal. The following hypothesis is framed to highlight the role of culture in converting the strategy to organizational activities.

H3: The relationship between the privacy related business strategy and organizational privacy activities is mediated by organizational culture.

RESEARCH METHODOLOGY

For developing the measures, we studied 18 global IT organizations and our sample consisted of respondents from these organizations. As a part of the qualitative data analysis, we followed the six-phased thematic analysis suggested by Braun and Clarke (2006). Here, the themes captured from the data are important in relation to the research question. For the purpose of the data

triangulation and to strengthen the themes, we extensively referred to the websites of the companies, industry bodies and reports of consulting companies. The survey instrument (Appendix B) is developed by referring to the literature related to the identified themes from the qualitative study (Attili et al., 2018). Then we followed a quantitative approach to test our hypotheses.

Data Collection

In the current study, we focused on the concept of assimilation pertaining to information privacy in IT organizations that are spread in India and USA. For quantitative validation, samples were collected from IT industry employing the survey instrument developed over a span of 6 months (Dec 2016 to May 2017). We received 214 complete industry responses from the survey, with participants more than 10 years of IT experience. The responses were collected from more than 25 different IT organizations. Four (4) records were removed for not satisfying the combination of “attention survey question” and “time spent to fill the survey”. Two (2) records were removed due to consistency in all responses, leading to standard deviation below the threshold of 0.5. This resulted in 208 responses to be considered for further analyses. We used Partial Least Squares (PLS) based Structural Equation Modeling (SEM) to test our research model and used SmartPLS software V3.2.7. PLS-SEM estimation is less sensitive to sample size and does not assume normality of data (Hair Jr et al. 2016).

Common Method Bias Test

First, we tested our measurement items for potential common method bias. A single factor (Harmon’s one factor) model explained only 34.5% of variance in the data, which is less than the threshold of 50%. Second, we followed Liang et al. (2007), specified the measurement model and included a common method factor that links to all of the single-indicator constructs

that were converted from observed indicators. The average substantive construct loading was 0.735 and percent of indicator variance caused by substantive construct (the squared loadings) was 0.557. As the method factor loading average was -0.008 and percent of indicator variance caused by method 0.007, common method bias was not a major concern in our measurement.

MEASUREMENT MODEL

We estimated construct validity through Confirmatory Factor Analysis (CFA) using the measure of the construct (loadings), other theoretically associated measures (convergent validity) and measures varying independently (discriminate validity). Table 1 describes measurement model and gives the item loadings and Average Variance Extracted (AVE). Three indicators of various constructs were eliminated (i.e., COER5: Competitive conditions, MIM5: Competitor's benefits OR failures, and CULT5: Focus on learning, awareness) to increase the composite reliability (Hair et al. 2016, p. 113). One indicator i.e. NORM5: Journal subscriptions was eliminated for the Average Variance Extracted (AVE) to cross the threshold of 0.50 (Hair et al. 2016).

Table 1. Reliability and convergent validity of the measurement model

Construct (Reflective)	Indicator	Loadings	Composite Reliability	AVE
Coercive Force (COER)	COER1	0.810	0.834	0.559
	COER2	0.795		
	COER3	0.714		
	COER4	0.661		
Normative Force (NORM)	NORM1	0.744	0.808	0.515
	NORM2	0.798		
	NORM3	0.612		
	NORM4	0.703		
Mimetic Force (MIM)	MIM1	0.678	0.804	0.509
	MIM2	0.811		
	MIM3	0.716		
	MIM4	0.637		
Senior Management Participation (SMP)	SMP1	0.815	0.917	0.734
	SMP2	0.887		
	SMP3	0.903		
	SMP4	0.818		

Organization culture (CULT)	CULT1	0.819	0.898	0.688
	CULT2	0.839		
	CULT3	0.834		
	CULT4	0.825		
Business Strategy (BST)	BST1	0.777	0.874	0.581
	BST2	0.807		
	BST3	0.725		
	BST4	0.729		
	BST5	0.771		
Organizational Activities (OAT)	OAT1	0.815	0.874	0.582
	OAT2	0.810		
	OAT3	0.736		
	OAT4	0.744		
	OAT5	0.703		

Table 2 displays the inter-construct correlations and the values highlighted in bold across the diagonal represent the square root of AVE values shared with the measures. All values across the diagonal are sufficiently greater than the desired value of 0.5 and all these values are greater than the off-diagonal values in their corresponding row and corresponding column (Fornell & Larcker, 1981). These two tests affirm the discriminant validity of our measurement model.

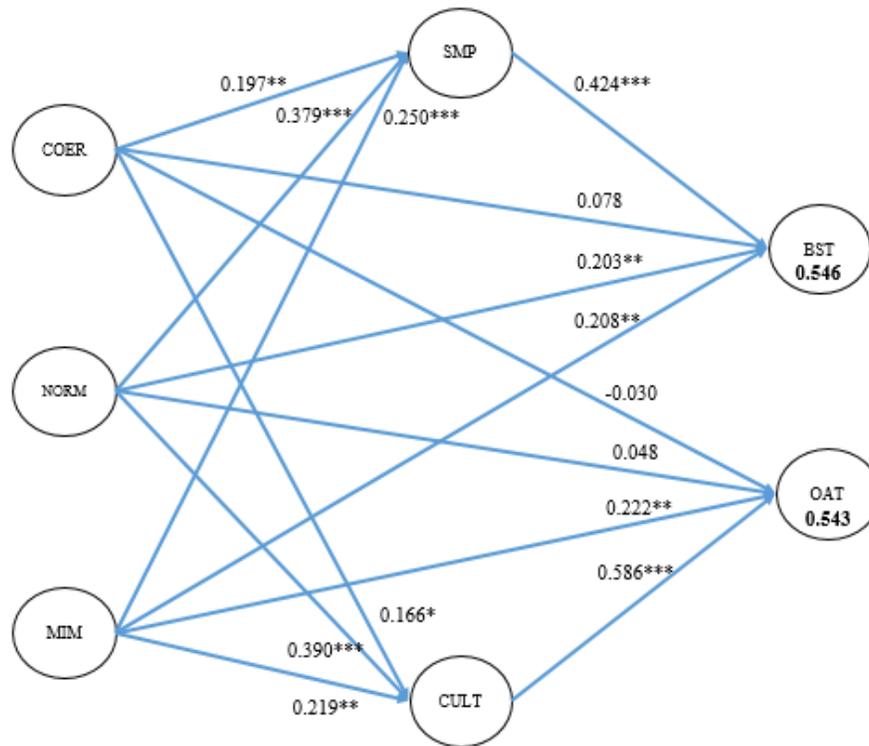
Table 2. Discriminative Validity: Inter-correlations between Reflective Constructs

Header 1	BST	COER	CULT	MIM	NORM	OAT	SMP
Business Strategy (BST)	0.762						
Coercive Force (COER)	0.368	0.748					
Organization culture (CULT)	0.703	0.346	0.829				
Mimetic Force (MIM)	0.561	0.375	0.474	0.713			
Normative Force (NORM)	0.567	0.257	0.543	0.504	0.717		
Organizational Activities (OAT)	0.727	0.268	0.707	0.512	0.472	0.763	
Sr. Management Participation (SMP)	0.675	0.388	0.670	0.513	0.556	0.680	0.857

STRUCTURAL MODEL

The structural model was evaluated using PLS path modeling (SmartPLS version.3.2.7), resulting in standardized path coefficients, their significance level (t-statistic) and R² estimates.

Figure 1 provides details on the parameter estimates for the model.



*p < .05; **p < .01; ***p < 0.001

Figure 1. Primary Model - Bootstrap (5000 sample) result in SmartPLS-3

Consistent with Hair et al. (2016), bootstrapping was used to generate p-values and confidence intervals. R² values of business strategy (0.546) and organization activities (0.543) indicate that the model explains 54.6% and 54.3% of variance of each construct respectively.

Mediating Effects

To test the mediating hypothesis (H1a, H1b, H1c, H2a, H2b and H2c), we have applied SmartPLS3 bootstrapping and the analytical approach described in the recent literature (Nitzl et al. 2016). We have chosen the bootstrapping procedure with 5000 samples to test the indirect effects. Based on the significance of the direct and indirect (mediation of SMP) effects of institutional forces (COER, NORM and MIM) on privacy related business strategy (BST), the support for the hypothesis is established and listed in the Table 3.

Table 3. Mediating effects of senior management participation (SMP)

Paths	Direct Effect		Indirect Effect		Comments
	β	Remarks	β	Remarks	
COER \rightarrow BST	$\beta = 0.078$ $p = 0.320$	Non-Significant	$\beta = 0.083$ $p = 0.020$	Significant	Full Mediation H1a Supported
NORM \rightarrow BST	$\beta = 0.203$ $p = 0.001$	Significant	$\beta = 0.161$ $p = 0.000$	Significant	Partial mediation H1b Not-supported
MIM \rightarrow BST	$\beta = 0.208$ $p = 0.001$	Significant	$\beta = 0.106$ $p = 0.003$	Significant	Partial mediation H1c Not-supported

Based on the significance of the direct and indirect (mediation of Organizational Culture (CULT)) effects of institutional forces (COER, NORM and MIM) on organizational privacy activities (OAT), the results of hypothesis testing is given in Table 4.

Table 4. Mediating effects of organizational culture (CULT)

Paths	Direct Effect		Indirect Effect		Comments
	β	Remarks	β	Remarks	
COER \rightarrow OAT	$\beta = -0.030$ $p = 0.597$	Non-Significant	$\beta = 0.097$ $p = 0.025$	Significant	Full Mediation H2a Supported
NORM \rightarrow OAT	$\beta = 0.048$ $p = 0.496$	Non-Significant	$\beta = 0.229$ $p = 0.000$	Significant	Full Mediation H2b Supported
MIM \rightarrow OAT	$\beta = 0.222$ $p = 0.001$	Significant	$\beta = 0.128$ $p = 0.004$	Significant	Partial mediation H2c Not-supported

Alternative Model

We also tested the mediating role of organization culture between the two elements of assimilation i.e.: ‘business strategy’ and ‘organizational activities’ related to privacy. This alternate model (Figure 2, Appendix A) tests the internal influence of organizational culture in translating strategy to activities. However, our results (Table 5) showed only a partial mediating effect of organizational culture in this relationship.

Table 5. Mediating (Direct / Indirect) effects of organizational culture (CULT)

Variable	Direct Effect		Indirect Effect		VAF	Comments
	(β, p)	Remarks	(β, p)	Remarks		
BST \rightarrow OAT	$\beta = 0.456$ $p = 0.000$	Significant	$\beta = 0.272$ $p = 0.000$	Significant	37%	Partial Mediation H3 Not-supported

DISCUSSION AND IMPLICATIONS

The concept of organizational privacy, a relatively less explored subject in information systems research was studied in this work. We predominantly focused on the internal mechanism by which organizational culture affects assimilation of information privacy in response to external institutional forces.

Our findings show that senior management participation is a key internal factor that mediates the impact of external forces on privacy related business strategy. It is observed that the influence of coercive forces on business strategy is fully mediated by senior management participation. This full mediation suggests that privacy being a multi-dimensional concept, would be difficult to interpret by technology organizations, particularly the legal aspects, unless mediated by senior management. We can also notice partial mediation of senior management participation for mimetic and normative forces on business strategy.

Our findings also show that organizational culture is a key internal factor that mediates the impact of external forces on privacy activities. It is observed that the influence of coercive and normative forces on privacy activities is fully mediated by organizational culture. This suggests special focus on organizational culture to ensure information privacy assimilation within organizations. We also notice partial mediation of organizational culture for mimetic forces on privacy activities. This direct influence of mimetic forces on organizational privacy activities could be due to mimetic behavior of employees, not necessarily mediated through organizational culture. It's also observed that no significant influence (only partial mediation) of organizational culture in mediating the strategy to organizational activities. These findings are important for senior managers in understanding the nature of institutional forces, and tweak them for effective privacy assimilation (business strategy and activities) within IT organizations.

CONCLUSION

This study treats information privacy as a distinct dimension separate from information security. It has produced some interesting results useful for theory and management practice. In our study, organization culture emerged as a significant influencing factor, mediating the external forces for organizational privacy activities.

Notwithstanding the insights generated by this study, there are some limitations that must be highlighted. Our study followed quantitative data analysis following non-probability sampling. As such the results may not generalize to population, however the results are useful in driving similar studies further. Though the study helps to identify appropriate privacy measures from an IT organization's view point, the influence of the business domain (healthcare, banking etc.,) was not given focus. Finally, the qualitative sample used in the study is limited to US organizations with operations expanding to India and Indian organizations predominantly working within US regions. Lack of organizations from the European region in the sample geographically limits the study.

Privacy concepts are dynamic in nature, parallel to evolving culture and perceptions and have to be revisited periodically. Future work will include administering the survey to large samples in different geographic regions and types of industries, for generalizing the validity of the proposed research model. Wider industry samples across the globe can yield more generalizable results that will be useful for senior managers across the industry.

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APPENDIX A - ALTERNATE MODEL (SMARTPLS SCREEN SHOT)

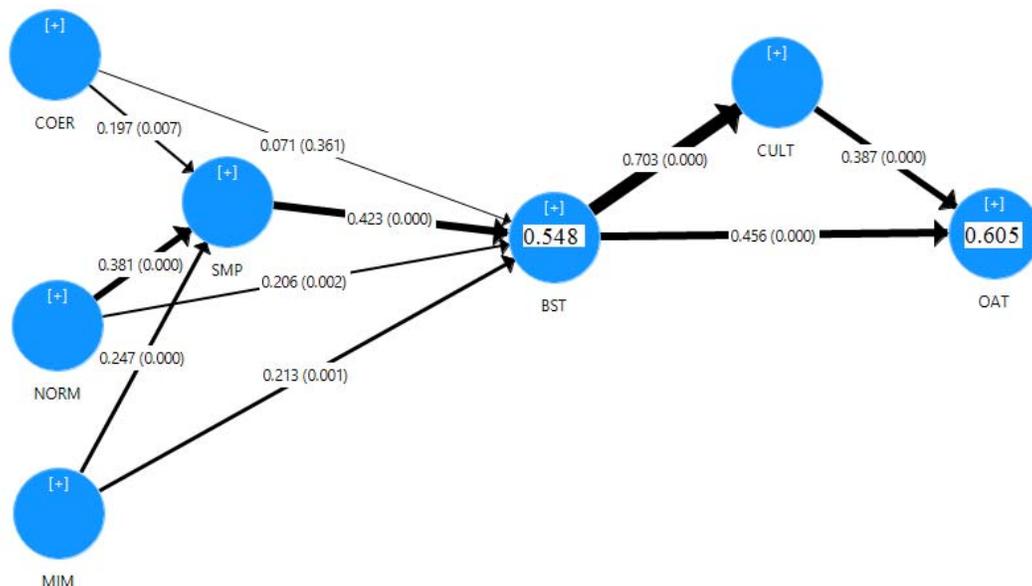


Figure 2. Alternate Model - Bootstrap (5000 sample) result in SmartPLS-3

APPENDIX B – THEMES FOR QUESTIONNAIRE

Indicator	Themes (Attili <i>et al.</i> , 2018)	Lit. Reference
COER1	Government, regulatory influence	Liang <i>et al.</i> , 2007 Johnson, 2009 Tejay and Barton, 2013 Cavusoglu <i>et al.</i> , 2015
COER2	Contracts with other businesses	
COER3	Customer expectations	
COER4	Industry association's encouragement	
NORM1	Formal education	Liang <i>et al.</i> , 2007 Johnson, 2009 Appari <i>et al.</i> , 2009 Tejay and Barton, 2013
NORM2	Dedicated privacy certified employees	
NORM3	Presence of external consultants	
NORM4	Participating in conferences, forums	
MIM1	Competitor's benefits OR failures	Bjorck, 2004 Liang <i>et al.</i> , 2007 Chen <i>et al.</i> , 2011 Tejay and Barton, 2013
MIM2	Competitor's perception in industry	
MIM3	Adoption by successful peer firms	
MIM4	Following successful peer firms	
SMP1	Tone at the top	Chatterjee <i>et al.</i> , 2002 Liang <i>et al.</i> , 2007 Hsu <i>et al.</i> , 2012 Tejay and Barton, 2013
SMP2	Strategy formulation	
SMP3	Decision making support	
SMP4	Assigns responsibilities	
CULT1	Company value and ethics	Gallivan, 2001 Bellman <i>et al.</i> , 2004 Culnan and Williams, 2009 Hsu <i>et al.</i> , 2012
CULT2	Dynamic, first with competitive actions	
CULT3	Swift in changing formal rules and policies	
CULT4	Workforce in various geographic regions	
BST1	Protecting company assets, IP	Armstrong and Sambamurthy, 1999 Chatterjee <i>et al.</i> , 2002 Johnson, 2009 Cavusoglu <i>et al.</i> , 2015
BST2	Offering new, value added customer services	
BST3	Enhancing effectiveness	
BST4	Attracting new customers	
BST5	Enhancing company image	
OAT1	Development life cycle phases	Cooper and Zmud, 1990 Fichman and Kemerer, 1997 Armstrong and Sambamurthy, 1999 Hsu <i>et al.</i> , 2012
OAT2	Audit phase	
OAT3	Third party vendors	
OAT4	Incident management	
OAT5	Proposal phase, initiation of new projects	