

# Antecedents of Information Privacy Assimilation in Indian IT Organizations: An Empirical Investigation

*Completed Research Paper*

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## Abstract

Information privacy at the organizational level is receiving increased attention due to the huge amount of personal information being stored, transmitted across national boundaries, and ownership being shared between organizations due to change in business dynamics. This study develops a framework for understanding the mechanisms of information privacy assimilation in Information Technology (IT) organizations. There is a great need for investigating the interplay between external forces and internal influencers that impact the privacy assimilation practices within an organization. To fill this gap, we empirically examined the interplay between the external forces and internal influencers following the institutional theory. Specifically, we have examined the nature and relative significance of influencing forces, and the mediating role of senior management participation. Also, the moderating effects of process capability and cultural aspects have been investigated. This study treats information privacy as a distinct dimension separate from information security. Our findings show that mediating role of senior management participation for coercive and normative forces. Mimetic forces appears to have direct impact on assimilation. Also, positive moderating effect of process capability and negative moderating effect of cultural aspects is observed for coercive forces. These findings would enable senior managers identify and respond to institutional pressures by focusing on appropriate factors within the organization.

## Keywords

Information privacy, Privacy assimilation in organizations, Neo-institutional theory.

## Introduction

Data privacy concerns in organizations have been rising over the past several decades. IDC report forecasted that 15% of the information in the world by 2020 could be part of a cloud service posing more privacy and security challenges (Gantz & Reinsel, 2012). Some recent studies have also reported that only 71% of managers consider data privacy management as very important or important to their organizations (IAAP, 2014; TRUSTe, 2015). Although there is evidence of increasing data privacy related concerns, management approach followed by organizations to data privacy protection shows a high level of variance. According to Forrester and Ernst & Young, many organizations see themselves as moderately mature when it comes to privacy (Heidi Shey & Mak, 2012; Insights, 2012). Furthermore, recent Gartner reports highlight that Organizations experience pressure in two ways: more technologies raise privacy concerns and tighter privacy regulations burden innovation (Casper, 2012, 2015).

Information privacy concerns at organizational level have become critically important, thanks to the recent developments in information technology, particularly cloud computing. Cloud services contracts are different compared to the traditional IT outsourcing agreements, since a cloud service is designed as a multi-tenant service, where computing and operating resources are shared across potentially millions of customers (Hon, Millard, & Walden, 2012). Protection of information privacy in this context has become a critical area of concern in the cloud computing industry due to concerns about how customer data may be mined (Kshetri, 2013). Also, organizations leveraging big data, which promises significant economic and social benefits also raises serious privacy concerns (Rubinstein, 2013). Organizations must find the right balance to determine which requirements are important and where to invest (Casper, 2015).

In this study we focus on privacy as part of a business strategy and seek to explain variations in privacy policy. How do organizations legitimize themselves from information privacy stand-point in response to pressures from external institutions like communities, markets and regulatory and industry bodies? What should be an appropriate approach for privacy protection in the context of inter-organizational transfer and processing of digital data? Is the significant investment made on Information Privacy resulting in assimilation leading to effective business strategy and advantage compared to peers? Drawing on the concepts provided by neo Institutional theory, we address these questions and develop a conceptual model.

## **Theoretical Background**

The review of the literature on both privacy and security at the organizational level highlights the following aspects: change in the country laws related to privacy, contributions from the auditing firms, increasing trend of focus on privacy training to minimize uncertainty in the technology landscape. These resemble coercive, normative and mimetic forces respectively that make-up the institutional theory (Attili, Mathew, & Sugumaran, 2015). Recently Information Systems (IS) researchers have used Institutional theory for security study (Bjorck, 2004; Hsu, Lee, & Straub, 2012; Hu, Dinev, Hart, & Cooke, 2012; Hu, Hart, & Cooke, 2007; Tejay & Barton, 2013). Robey and Boudreau suggest that the institutional approach is particularly well suited to addressing the “question of information technology and organizational change... conflicts among normative pressures such as efficiency, rights to privacy, and autonomy, and deeply embedded notions of bureaucratic and hierarchical structure” (Robey & Boudreau, 1999).

The privacy literature also strongly suggest to adopt the Neo-Institutional theory for our study as it may help to study privacy assimilation at an organization level (Liang, Saraf, Hu, & Xue, 2007; Saraf, Liang, Xue, & Hu, 2013; Tejay & Barton, 2013). In addition, the use of Institutional theory suggests a shift in focus from individual level to organizational level approach.

### ***Institutional Theory***

In the last few decades, institutional (neo-institutional) theory has been widely adopted and has become the dominant theoretical framework in organizational studies (P. DiMaggio & Powell, 1982; P. J. DiMaggio & Powell, 1991; Powell & DiMaggio, 2012). Institutional theory is not really a coherent system of rules, it is rather a collection of ideas that together form a consistent perspective of the mechanisms supporting and restricting social behavior (Bjorck, 2004; Scott, 2001). For the past few decades, neo-institutionalism in organization science has replaced the old, explaining how organizations tend to become alike over time through the process of isomorphism. This theory takes into account all the three drivers: coercive, mimetic and normative forces at work in the industry. In view of these three factors effectively determining the overall outcome of the privacy issue, we advance our study using the conceptual framework of this theory.

Coercive isomorphism is related to legitimacy sought by organizations amidst political influence exerted by government agencies or powerful organizations such as supervisory authorities within an industry” (P. DiMaggio & Powell, 1982). Coercive pressures can arise from government regulations and policies, industry and professional networks and associations, or in the form of competitive necessity within an industry or market segment (Liang et al., 2007; Mezias, 1990; Tolbert & Zucker, 1983). Mimetic isomorphism results as organizations respond to uncertainty by mimicking actions of other organizations. When technologies are poorly understood, or goals are ambiguous, or when the environment creates uncertainty, organizations may model themselves after other organizations perceived to be legitimate or successful (P. DiMaggio & Powell, 1982; Liang et al., 2007). This force is often associated with the bandwagon effect (Staw & Epstein, 2000). Normative isomorphism is associated with professionalism, the collective struggle of members of

an occupation to define the conditions and methods of their work, and to establish a cognitive base and legitimation for their occupational autonomy (P. DiMaggio & Powell, 1982). For a particular industry, it is argued that a pool of almost interchangeable employees is created through formal education and professional networks (Liang et al., 2007).

### **Assimilation**

Assimilation is defined as the process spanning from an organization's awareness of a practice to potentially widespread deployment (Meyer & Goes, 1988). 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 & Sambamurthy, 1999; Chatterjee, Grewal, & Sambamurthy, 2002). The privacy issue is largely unclear for practice at an organizational level, where it often faces ethical, and moral dilemmas while dealing with customer's data. Culnan & Williams (2009) investigated major privacy related incidents that led to financial losses at ChoicePoint and TJMax and provided recommendations on dealing with privacy related incidents. Further, they argue that organizations can successfully secure the personal information but still make bad decisions around subsequent use of personal information, resulting in information privacy problems (Culnan & Williams, 2009; Kim, Yim, Sugumaran, & Rao, 2016). An organizational imperative to address privacy distinct from security has emerged (Chan & Greenaway, 2005; Greenaway, Chan, & Crossler, 2015) and also emphasizes a need for its assimilation across the organization.

### **Hypotheses Development**

In this study, we focus on the concept of assimilation pertaining to information privacy in IT organizations. Building on prior literature, we regard information privacy assimilation as an important outcome of an organization's effort to leverage information privacy practices in their business activities and strategies (Armstrong & Sambamurthy, 1999). Drawing on the concepts of neo-institutional theory the following framework in Figure 1 is conceptualized to develop initial understanding about the interplay between the external and internal forces that influence information privacy assimilation.

Following the neo-institutional theory (P. DiMaggio & Powell, 1982; P. J. DiMaggio & Powell, 1991; Powell & DiMaggio, 2012), we expect that organizational assimilation of information privacy will be influenced by normative forces such as professionalization of work and pool of interchangeable employees in IT organizations (Appari, Johnson, & Anthony, 2009; Bjorck, 2004; Liang et al., 2007; Massey & Walker, 1999; Teo, Wei, & Benbasat, 2003), coercive forces like regulatory requirements and in the form of competitive necessity (Ang & Cummings, 1997; A. M. Johnson, 2009; Liang et al., 2007; Tejay & Barton, 2013), and mimetic forces such as ambiguity about technology, environment and peer organizations (Ang & Cummings, 1997; A. M. Johnson, 2009; Liang et al., 2007; Tejay & Barton, 2013; Teo et al., 2003). In prior research on IT assimilation, top/senior management support (Chatterjee, Grewal, & Sambamurthy, 2002; Hsu et al., 2012; Liang et al., 2007; McFadzean, Ezingard, & Birchall, 2011; Straub & Welke, 1998) is identified as a critical element influencing assimilation. Considering the mediating role of senior management participation, the following hypothesis are framed.

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

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

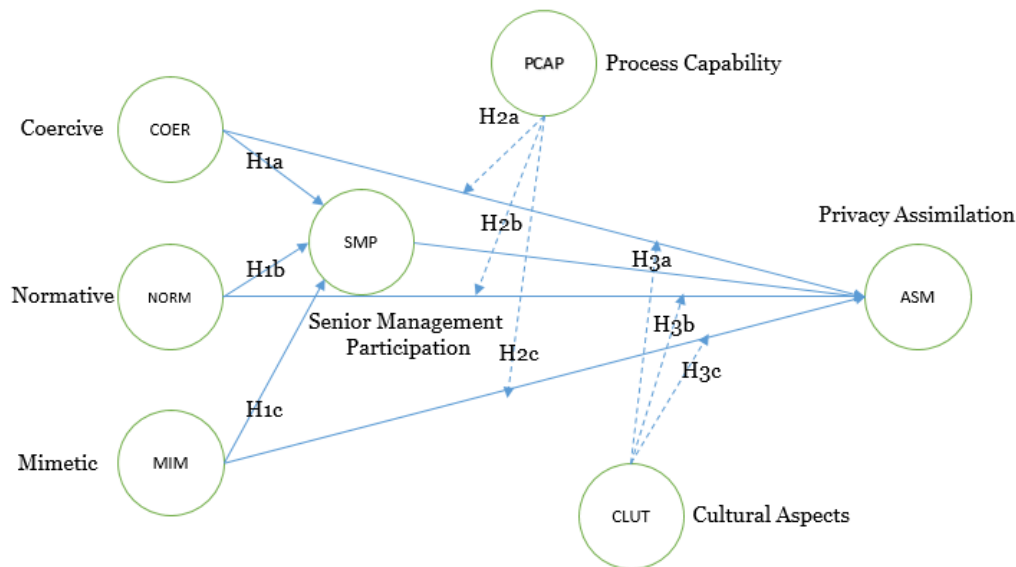
H1c: The relationship between the mimetic forces and privacy assimilation is mediated by senior management participation.

We prefer "process capability" to "absorptive capacity" (Bharadwaj, 2000; Ernest Chang & Ho, 2006; Hsu et al., 2012; Junnarkar, 1997; Tolbert & Zucker, 1983) in an organizational context as the former is more apt in privacy maturity model (E. C. Johnson, 2011). Adapting the earlier hypotheses of absorptive capacity (Saraf, Liang, Xue, & Hu, 2006; Saraf et al., 2013), the following hypotheses have been proposed.

H2a: Greater process capability within an organization will result in a stronger positive relationship between coercive forces and privacy assimilation

H2b: Greater process capability within an organization will result in a stronger positive relationship between normative forces and privacy assimilation

H2c: Greater process capability within an organization will result in a stronger positive relationship between mimetic forces and privacy assimilation



**Figure 1. Research Model**

The “tolerance of change” and “diversity of employees” have newly emerged in structured interviews. These key cultural aspects (Erez & Gati, 2004; Hsu et al., 2012; Hu et al., 2012) appear to have moderating effect and hence included in the model. More tolerance towards change leads to experimenting with new and untested technologies (like cloud). This might have a negative impact on privacy assimilation. Also, challenges related to assimilation of privacy and policies is echoed in the presence of diversified employees within organizations. Hence, we posit the following hypotheses:

H3a: Greater cultural acceptance (diversity) within an organization will result in a stronger negative relationship between coercive forces and privacy assimilation

H3a: Greater cultural acceptance (diversity) within an organization will result in a stronger negative relationship between normative forces and privacy assimilation

H3a: Greater cultural acceptance (diversity) within an organization will result in a stronger negative relationship between mimetic forces and privacy assimilation

## Research Methodology

### Data Collection & Measurement

We interviewed experts from 18 IT organizations in India and USA. Next, we conducted thematic analysis to identify appropriate measures to be used in our privacy study. Based on these measures, we developed an appropriate survey instrument by adapting similar measures that have already been discussed in the existing literature on information security and assimilation. In addition, to check for face validity, the survey instrument was reviewed by 7 experts - 5 IS professionals from the IT industry and 2 senior faculty members in the IS area and measurement scales were slightly modified based on their feedback. We utilized the key informant’s approach where the identified respondents were qualified specialists in the area of Information privacy and security (Kumar, Stern, & Anderson, 1993). We developed both online and physical copy of the survey instrument for distribution. The sample is a set of graduate students, who after graduation, have an average of 1 year IT experience (minimum 6 months) and are aware of information privacy aspects in organizations.

## Data Analysis Procedure

We received 213 responses to our survey out of which 19 cases were dropped due to incomplete responses or the respondents were not meeting the key informant criteria, resulting in 194 responses for further analysis. We used Partial Least Squares (PLS) based Structural Equation Modeling (SEM) to test our research model and used SmartPLS software V3.2.6. PLS-SEM estimation is less sensitive to sample size and does not assume normality of data (Hair Jr, Hult, Ringle, & Sarstedt, 2016). PLS uses a nonparametric bootstrapping method, involving repeated random samples, replacing from original sample to create a new set of a bootstrap sample. This bootstrap sample enables to test the significance of the path coefficients estimated (Hair Jr et al., 2016).

## 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 our measurement model and gives the item loadings and Average Variance Extracted (AVE).

Construct	Indicator	Loadings	Composite Reliability	AVE
Coercive Force (COER)	COER1	0.746	0.788	0.555
	COER2	0.674		
	COER3	0.809		
Normative Force (NORM)	NORM1	0.612	0.769	0.530
	NORM2	0.821		
	NORM3	0.736		
Mimetic Force (MIM)	MIM1	0.643	0.753	0.506
	MIM2	0.793		
	MIM3	0.690		
Senior Management Participation (SMP)	SMP1	0.708	0.831	0.552
	SMP2	0.754		
	SMP3	0.740		
	SMP4	0.771		
Process Capability (PCAP)	PCAP1	0.797	0.824	0.609
	PCAP2	0.803		
	PCAP3	0.740		
Cultural Aspects (CULT)	CLUT1	0.786	0.808	0.585
	CLUT2	0.836		
	CLUT3	0.664		
Assimilation (ASM)	ASM1	0.727	0.798	0.498
	ASM2	0.785		
	ASM3	0.656		
	ASM4	0.647		

**Table 1. Reliability and convergent validity of the measurement model**

We dropped 2 items which were designed to be part of Coercive Forces (COER), Normative Forces (NORM), Mimetic Forces (MIM), Senior Management Participation (SMP) and Process Capability (PCAP) as they had poor validity measure. Also, one item from Cultural Aspects (CULT) and 3 items from the Assimilation (ASM) were dropped due to poor validity measure. All the loadings are higher than 0.61 to be accepted as measures of the respective constructs and the values of AVE is greater than the prescribed minimum value of 0.5 (except ASM) showing that the constructs accounts at least for 50% of the variance in their respective item measures (Bagozzi & Yi, 1988; Hair Jr et al., 2016). For Assimilation (ASM), the AVE value is 0.498, which is very close to the threshold value of 0.5.

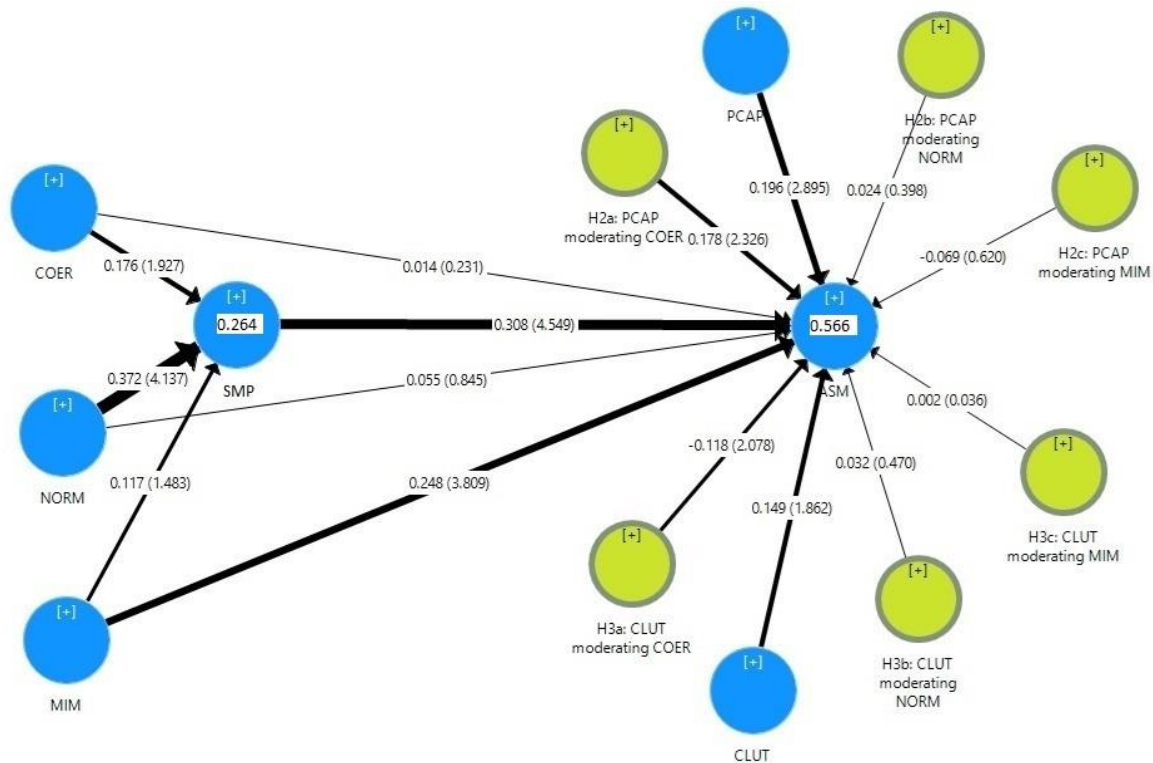
Table 2 displays the inter-construct correlations and the values highlighted in bold across the diagonal represent the square root of AVE values shared with the measures. All values across the diagonal are sufficiently greater than the desired value of 0.5 and all these values are greater than the off-diagonal values in their corresponding row and corresponding column (Fornell & Larcker, 1981). So the two tests affirm the discriminant validity of our measurement model. Table 1 shows the composite reliability coefficient values for all constructs to be above 0.7, which demonstrates good reliability indicating internal consistency among all the reflective latent constructs (Hair Jr et al., 2016).

Construct	ASM	CULT	COER	MIM	NORM	PCAP	SMP
Assimilation (ASM)	<b>0.706</b>						
Cultural Aspects (CULT)	0.549	<b>0.765</b>					
Coercive Force(COER)	0.299	0.403	<b>0.745</b>				
Mimetic Force(MIM)	0.519	0.342	0.313	<b>0.711</b>			
Normative Force(NORM)	0.454	0.422	0.193	0.485	<b>0.728</b>		
Process Capability (PCAP)	0.549	0.516	0.235	0.371	0.396	<b>0.781</b>	
Sr. Management Participation (SMP)	0.599	0.518	0.285	0.353	0.463	0.47	<b>0.743</b>

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

### Structural Model

The structural model was evaluated using standardized path coefficients, their significance level (t-statistic) and R2 estimates. Figure 2 provides details on the parameter estimates for the model and R2.



**Figure 2. PLS algorithm, Bootstrap (5000 sample) result in SmartPLS-3**

Consistent with Hair et al. (2016), bootstrapping (5000 resamples) was used to generate t-statistics and confidence intervals. The external institutional forces had an impact on senior management participation (R2 = 0.264), which further positively influenced the privacy assimilation (R2 = 0.566). Both the values are greater than the recommended threshold value of 0.10 (Falk & Miller, 1992). This indicates that exogenous variable of each construct explains 26% and 57% of variance of each construct, approximately.

### Moderating Effects

Table 3 reports the results of the hypotheses tests H2, H3 asserting a moderation effect for Institutional forces. Here only the moderation effects related to coercive forces is supported i.e. H2a and H3a. The analysis supports H2a ( $\beta = 0.178$ ,  $t = 2.326$ ,  $p < 0.05$ ) and H3a ( $\beta = 0.118$  (negative),  $t = 2.078$ ,  $p < 0.05$ ). The remaining (H2b, H2c, H3b, H3c) were rejected due to low values of  $\beta$ , t-statistics and not significant p-value.

Hypothesis	Path Coefficient	t-Value	P-value	Observation
H2a	<b>0.178</b>	<b>2.326</b>	<b>0.020</b>	Supported
H2b	0.024	0.398	0.691	Not supported
H2c	-0.069	0.620	0.535	Not supported
H3a	<b>-0.118</b>	<b>2.078</b>	<b>0.038</b>	Supported
H3b	0.032	0.470	0.638	Not supported
H3c	0.002	0.036	0.971	Not supported

**Table 3. Hypothesis related to moderating effects**

### Mediating Effects

To test the mediating hypothesis (H1a, H1b, H1c), we have applied SmaerPLS3 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 using bias corrected confidence intervals, two tailed test. Based on the significance of the direct and indirect (mediation of SMP) effects of institutional forces (COER, NORM and MIM) on privacy assimilation (ASM), the support for the hypothesis is established and listed in the Table 4.

Paths	Indirect			Direct Effects			SMP Mediation	Comments (Hypothesis)
	t-Value	P-value	Observation	t-Value	P-value	Observation		
COER -> ASM	<b>1.831</b>	<b>0.067</b>	Significant*	1.034	0.301	Non-Significant	Full mediation	H1a : Supported*
NORM -> ASM	<b>3.003</b>	<b>0.003</b>	Significant	<b>2.484</b>	<b>0.013</b>	Significant	Partial mediation	H1b : Not supported
MIM -> ASM	1.417	0.156	Non-Significant	<b>4.373</b>	<b>0.000</b>	Significant	No mediation	H1c : Not supported

\* Significant at 93.6% confidence level.

**Table 4. Hypothesis - Mediating (Indirect and direct) effects of SMP**

## Discussions and Implications

The concept of data privacy, a relatively less focused entity in the Indian context is being studied in this work. In our study we found that coercive forces' influence is less than normative and mimetic forces. This could be attributed to the cultural aspect in the Indian sub-continent. Traditionally in India, training and education has influenced the work culture and technology adoption more than the legal framework. This is unlike Europe and USA where the legal influences are driving forces. The privacy laws and enforcements are still evolving in India. This is reflected by the low impact of coercive forces. This minimal impact is in-turn affecting the mediating and moderating roles of senior management participation and process capability in influencing the privacy assimilation.

In our study, process capability (than just technology dimension) was highlighted as an influencing factor. More the process capability, stronger the positive relationship between coercive forces and privacy assimilation is observed. An interesting observation of cultural aspects, negatively influencing the relationship between coercive forces and privacy assimilation is noted. The rationale could be the presence of diversified employees within organizations resulting in more privacy assimilation challenges. Also, the

“dynamic and first with competitive actions” nature of organizations would result in experimenting with new technologies. Initial focus on new technology adoption at organization level is not often paralleled by attention to privacy.

The normative forces’ influence is shown to be very significant in our study. Indian sub-continent is famous for achieving the scale in technical education. Also, the 1.5 million engineering students graduating every year (As of 2015 statistics) is due to significant focus on the norms related to technical education. Also, we can see significant influence of mimetic nature due to uncertainty in the job market and other cultural aspects. This nature of following the successful peers is reflected in organizational practices as well. The high attrition rate of 19% in Indian IT sector facilitates more mimicking practices across organizations, and also facilitates a group of interchangeable employees. This overlap of mimetic and normative forces observed in earlier studies (Hu et al., 2007) could be the reason for their significant influence in the context of the current study.

Our findings show that senior management support is a key internal factor that mediates the impact of external forces on privacy assimilation within organizations. The complete mediation of senior management is observed for coercive forces. The partial mediation of the senior manager participation is seen for normative forces, might be in the form of encouraging and providing resources (including work-force) for privacy assimilation. Normative forces’ impact is significant even without mediation. This could be due to certification drives and focus on continuous education in the Indian IT industry (people with multiple skillsets and certification background). However, for mimetic forces, no mediation of senior manager participation is observed. It’s directly influencing the practices and assimilation of privacy due to mimetic behavior of employees.

Our research addresses information privacy as a different phenomenon from data security and develops conceptual elements and relationships specific to information privacy. The study emphasizes the interplay of external and internal factors that helps to evolve information privacy related strategies in organizations, which is not well addressed. This is critical to organizations in the information age. Our findings will also enable senior managers to identify and respond to institutional pressures by focusing on appropriate factors and invest in the right focus areas.

## **Limitations and Future Research**

The first limitation is the location of the study sample for the Indian context. This might limit the external validity of our findings. For instance, the specific geographic context may have affected our findings in terms of external forces. The second limitation is the use of student sample with an average IT experience of 1 year. The understanding and assimilation of privacy might vary with experience levels of employees, job role, business domains etc. Due to the limitation of student sample, no control variables were assumed. Future research using a more sophisticated sampling design would establish the external validity of our findings. Our future work is aimed at collecting more data across the world, with control variables to generalize the findings. Our future work will also include strengthening the scale and instrument development, administering the survey to large industry samples that include different geographic regions and types of industries. The wider industry samples will yield more statistically significant and generalizable results that will be useful for managers.

## **Conclusion**

The Indian IT industry, having an aggregate revenue of US\$147 billion (As of 2015, NASCOMM) is a key player in the global market and anticipated to grow stronger. While the IT industry is mature in India, concerns about information privacy still exists and this study has developed a framework for studying information privacy assimilation in the IT organizations. This study has produced some interesting results useful for theory and management practice. Our pilot study has shown that senior management participation has a mediating effect on the coercive and normative forces and ultimately on information privacy assimilation, while mimetic forces have a direct impact on privacy assimilation. In addition, process capability has a positive moderating effect while the cultural aspects have a negative moderating effect for coercive forces. These findings are important for senior managers in understanding the nature of institutional forces, and tweak them for effective privacy assimilation within IT organizations in the Indian context.



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