

IT CONSUMERIZATION AND THE TRANSFORMATION OF IT GOVERNANCE¹

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IT governance describes the decision rights and accountability framework used to ensure the alignment of IT-related activities with the organization's strategy and objectives. Conversely, IT consumerization refers to the process whereby the changing practices and expectations of consumers influence the IT-related activities of workers and managers in organizations. We propose that IT consumerization not only challenges the foundations of IT governance but ultimately also transforms it. To explore this research problem, we utilize the punctuated equilibrium theory and a case study of IT consumerization and the transformation of IT governance in a large global bank. Our findings suggest that the widespread adoption of digital technology in everyday life leads to "everyone's IT," which is a new set of shared beliefs among consumers that highlights democratized access and individualized use of IT. As everyone's IT beliefs begin to alter the IT-related activities of workers, the result is IT governance misalignments that ultimately lead to a punctuated transformation of IT governance that dismantles functional IT governance. The establishment of platform-based governance marks a new equilibrium period. Our mid-range theory contributes to the IS domain with the novel concept of everyone's IT and a grounded explanation of IT governance transformation in the context of IT consumerization. Our theory offers a set of significant research and practical implications.

Keywords: IT consumerization, IT governance transformation, digital transformation, punctuated equilibrium theory, case study, grounded theory method, mid-range theory

Introduction

The expectations and practices of consumers increasingly influence the activities of workers and managers in organi-

zations (Gabriel 2005; Gabriel et al. 2015; Gabriel and Lang 2015). This broader consumerization phenomenon is related to the growing direct societal impact of digital technology (Gannon 2013; Yoo 2010) and the changing patterns of technology-in-use (Gabriel 2008; Mazmanian et al. 2013). Information Systems (IS) scholars use the notion of IT consumerization (Harris et al. 2012) to examine the process whereby the changing expectations and practices of consumers, shaped by the wide adoption of digital technologies in everyday life, influence the IT-related activities of workers

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and managers in organizations. IT consumerization is associated with blurring boundaries between production and consumption, work and leisure, enterprise IT and consumer IT. Thus, one of the first thought pieces on IT consumerization highlighted the “dual use” of IT by both businesses and consumers (Moschella et al. 2004).

One important but overlooked facet of IT consumerization is that *consumers* can be both workers and customers. As noted by Gabriel et al. (2015), “workers are consumers in their own right, swapping hats continuously and frequently wearing two hats at the same time” (p. 639), while there has also been “the rise of customer sovereignty...occurring in the name of the collective mass of consumers” (p. 635). However, the previous IT consumerization literature has focused exclusively on workers as consumers and overlooked consumers as customers (Harris et al. 2012). Nonetheless, this apparently minor oversight is imperative for our understanding of the IT consumerization phenomenon.

An unaddressed but seminal question for IS scholars is how IT consumerization impacts IT governance, the decision rights and accountability framework used to ensure the alignment of IT-related activities with the organization’s strategy and objectives (Brown and Grant 2005). By encouraging desirable behavior in using IT, IT governance had arguably been the main source of influence on the IT-related activities of workers and managers in an organization. However, the rise of customer sovereignty and worker empowerment highlights IT consumerization as a competing influence on this behavior. This highlighting raises the question of whether IT consumerization leads to the transformation of IT governance.

The previous IS research has focused either on the transformation of the IT function, wherein IT governance is viewed as simply one component of an IT function profile (Gregory et al. 2015; Guillemette and Paré 2012b), or on evolutionary changes of IT governance. In this latter category, studies on IT governance change explored the shifting locus of IT decision making (Olson and Chervany 1980), the evolution of IT governance modes (George and King 1991; King 1983; Williams and Karahanna 2013), and the contingency conditions that influence their adoption (Sambamurthy and Zmud 1999; Tiwana and Kim 2015). However, we know little regarding how more profound shifts in IT governance unfold and, most importantly, what role IT consumerization plays in such transformations.

To explore the interplay between IT consumerization and IT governance, we use the grounded theory method (Birks et al. 2013) to rigorously analyze data collected at a large bank, GlobalBank. Consistent with the idea that fieldwork is done with an “open mind” but not with an “empty head” (Dey

1999), we utilize the meta-theoretical lens of punctuated equilibrium theory (Tushman and Anderson 1986; Tushman and Romanelli 1985) and view IT governance as a part of an organization’s deep structure, that is, a set of fundamental choices an organization has made concerning the basic organizing parts and activity patterns that maintain its existence (Gersick 1991). We address the following research question: *How and why does IT consumerization transform IT governance in large organizations?*

Addressing this research question is important due to the growing evidence that IT consumerization vastly expands the scope of IT use in organizations (Leclercq-Vandelannoite 2015) and bridges the knowledge gap between IT professionals and end-users, including employees (Jarrahi et al. 2017) and customers (Zureik and Mowshowitz 2005). This finding puts in question the ability of the IT function, the primary unit of analysis to date (Guillemette and Paré 2012a), to manage and lead all IT-related activities in a firm. The focus shifts to governing IT across organizational boundaries; thus, the importance of IT governance in today’s organizations transcends that of the IT function (Peppard 2018). Indeed, as the editors of the special issue on IT and organizational governance in the *Journal of Management Information Systems* note:

Information technology (IT) has spawned previously infeasible forms of organizational governance, and these new logics have simultaneously amplified the need for effective IT governance...[while] emergent governance arrangements have altered the conventional notions of organizational boundaries (Tiwana et al. 2013, p. 7).

To fully understand what drives these changes in organizational boundaries and IT governance forms, one needs to consider IT consumerization, the associated changes in IT-related activities of key organizational stakeholders, and the ensuing transformation of structural arrangements.

In this paper, we develop a mid-range theory that contributes to the IT governance literature (e.g., Tiwana et al. 2013) with a compelling explanation of how IT consumerization leads to IT governance transformation in large organizations. Furthermore, our concept of “everyone’s IT,” highlighting the democratization of IT access and the individualization of IT use, extends the emerging body of literature on IT consumerization (e.g., Jarrahi et al. 2017). In what follows, we provide an overview of IT governance evolution and the literature on IT consumerization, introduce the punctuated equilibrium meta-theoretical lens, describe our research process, present key findings from the case study, construct the mid-range

theory propositions, and discuss their implications for theory and practice.

Background

IT Governance: A Historical View

IT governance is defined as the decision rights and accountability framework deployed through a mix of structural, processual, and relational mechanisms and used to ensure the alignment of IT-related activities with the organization's strategy and objectives (Sambamurthy and Zmud 1999; Tiwana and Kim 2015; Wu et al. 2015). On the basis of the special issue on IT governance (Tiwana et al. 2013) and our analysis of the IS governance literature (see Table A1), we identified three key dimensions of IT governance that map closely onto its definition: (1) *focus* of IT governance (what to govern), which refers to what IT-related activities and artifacts must be aligned with organizational strategy and objectives; (2) *scope* of IT governance (who to govern), which refers to which actors and stakeholders are held accountable for ensuring IT's contribution to the organization; and (3) *patterns* of IT governance (how to govern), which refers to what mechanisms are put in place to ensure "desirable" IT-related activities and outcomes. In what follows, we provide a brief historical overview of the evolution of IT governance along these three dimensions.

While the term *IT governance* did not become prominent in the literature until the second half of the 1990s (Sambamurthy and Zmud 1999), studies of related concepts, such as computer systems management controls and control of information systems (Olson and Chervany 1980), existed in the late 1960s and early 1970s. At the time, the focus of what would later become IT governance was centered on organizational IT assets, such as mainframes, to facilitate data processing and task automation. The scope of IT governance was bounded to the "computing inner circle" of individuals with specialized technical skills who held exclusive rights to access and operate enterprise IT (Niederman et al. 2016). During this period, the first IT (a.k.a. data processing or computer services) departments were formed, and the relationship between IT and business leaders began to formalize (Porra et al. 2006). Hardware was expensive; hence, concerns over how to optimize its utilization dominated the agenda (Gannon 2013).

From the late 1970s to the early 1990s, the use of IT in organizations exploded, broadening the focus of IT governance to accommodate the emergence of minicomputers and later

personal computers (Markus and Bjørn-Andersen 1987; Niederman et al. 2016). While the autonomy of end-users grew significantly during this time, IT professionals ultimately needed to do more, not less, work (Porra et al. 2006). Thus, the scope of IT governance remained largely confined to the IT function, which was responsible for user support as well as the design, development, and maintenance of IT systems (Niederman et al. 2016).

With the rising complexity and costs of managing IT in alignment with organizational objectives, structural arrangements defining IT decision rights and accountabilities became a key pattern of IT governance (Olson and Chervany 1980) (see Table A1). Centralization allowed for control, efficiency, and reliability in the utilization of IT assets, while decentralization afforded flexibility, innovation, and responsiveness to changing requirements (George and King 1991; King 1983). Striking a balance between centralization and decentralization required establishing formal processes that ensured the alignment of IT access and use with the organization's strategy and objectives, as well as relational mechanisms that facilitated communication, coordination, and shared understanding between business and IT stakeholders (see Table A1).

In the 1990s and early 2000s, the use of organizational IT continued to grow. Complex projects concerning enterprise-wide transactional systems and cross-organizational information systems (e.g., supply chain management and e-commerce applications) further broadened the focus of IT governance. With the IT function continuing to bear prime responsibility for these large projects, the scope of IT governance did not fundamentally change. Achieving synergies and economies of scale had become paramount (Tiwana and Kim 2015; Wu et al. 2015; Xue et al. 2008), reinforcing the need to govern the IT function.

The IT governance concept began to expand with the emergence of a new archetype of governance outside of large organizations with established IT functions, as reflected in the changing focus, scope, and patterns of IT governance investigated by the IT governance literature (see Table A1). The focus was shaped by evolving digital infrastructures (Tilson et al. 2010), sharing of IT assets (Hanseth and Lyytinen 2010), and new business logics focused on platform-based value creation (Grover and Kohli 2012; Selander et al. 2013; Tiwana et al. 2010; Wareham et al. 2014). Patterns of governance also changed with the rise of new forms of IT delivery (Winkler and Brown 2013). Finally, the scope of governance began spanning organizational boundaries (Huber et al. 2017; Tiwana et al. 2013; Wareham et al. 2014).

As illustrated by the discussion above, over much of its historical evolution, IT governance in large organizations remained fairly homogeneous across all three dimensions of focus, scope, and patterns. We refer to this archetype of IT governance as *functional IT governance*. However, recently, more profound changes, affecting all three dimensions, originated in the realm of digital platforms and infrastructures and began to spill into traditional organizations. An open question addressed in this paper is what role IT consumerization plays in this transformation.

IT Consumerization

IT consumerization has been narrowly defined as the adoption of consumer devices and applications in the workforce (Harris et al. 2012). However, we believe that our research question warrants a more comprehensive conceptualization; hence, we begin by examining the broader phenomenon of consumerization, which recently garnered significant focus in the management and sociology literature. At the core of the debate lies the idea that consumers increasingly play a central role in today's organizations. Indeed, as one of the (seminal) papers argues:

For much of its life, the study of organizations was dominated by two central characters, the manager and the worker.... In recent years, however, there has been a substantial movement to change the two-actor show into a three-actor show.... The newcomer to the stage has been the consumer, a character whose whims, habits, desires and practices are no longer seen as "impacting on" the activities of managers and workers from the outside, but increasingly as defining them (Gabriel et al. 2015, p. 630).

Despite its much broader scope, the literature on consumerization establishes a direct connection to what has been the focus of IT consumerization researchers, in particular, the wide adoption of digital technologies in everyday life (Yoo 2010). Thus, Gabriel et al. (2015) argue:

The global spread of consumer capitalism, massively underpinned by the rise of the Internet and instant access to information... has made old-fashioned distinctions between work and leisure, production and consumption, producer and consumer, untenable (p. 630).

The abovementioned blurring of organizational boundaries is similarly a central theme in the research on digital technology-in-use (Gabriel 2008; Mazmanian et al. 2013), as well as recent IT consumerization studies (Jarrahi et al. 2017; Leclercq-Vandelannoitte 2015).

Consumerization has far-reaching consequences not only for how workers and managers interact but also for the broader foundational principles on which today's organizations are based. Gabriel (2005) offers a metaphor of replacing the *iron cage*, an organization that entraps employees, managers, and customers in "the inflexibility of formal procedures" and "a brutal logic of constraint stifling creativity," with the *glass cage*, an organization that promises more openness and "ambivalence" of experiences by deploying more subtle forms of surveillance through "constant exposure to each other's critical gaze." Gabriel argues further that the metaphor of glass also suggests the fragility of today's organizations. The perspective clearly hints at the connection between consumerization and organizational transformation, which lies at the core of our research question.

Integrating key arguments from the broader consumerization literature, we define *IT consumerization* as the process whereby the changing practices and expectations of consumers, shaped by the wide adoption of digital technologies in everyday life, will influence the IT-related activities of workers and managers in organizations. To help explicate how such influences materialize, we build upon Gabriel's double-barreled argument that

Today's consumers are the figures who put traditional employees under pressure in new ways. They represent the market forces to which employees in consumer capitalism are exposed particularly directly today... [and] workers are consumers in their own right... frequently wearing two hats at the same time" (p. 639).

Accordingly, we distinguish between consumer-workers and consumer-customers. *Consumer-workers* are employees whose expectations and work practices are shaped by their experiences with digital technologies in everyday life (Yoo 2010). We define *consumer-customers* as clients whose expectations and interactions with the firm are shaped by their experiences with digital technologies in everyday life (Yoo 2010).

As noted previously, to examine how IT consumerization transforms IT governance in large organizations, we utilize the punctuated equilibrium theory (see Appendix B for details on meta-theoretical anchoring).

Punctuated Equilibrium Theory

The punctuated equilibrium theory is based on the key idea that relatively long periods of stability in an organization's basic patterns of activity are punctuated by relatively short bursts of fundamental change (Romanelli and Tushman 1994).

The three main concepts are deep structure, equilibrium periods, and revolutionary periods (Eldredge and Gould 1972; Gersick 1991; Tushman and Anderson 1986; Tushman et al. 1986; Tushman and Romanelli 1985).

Deep structure is the set of fundamental choices an organization has made of the basic organizing parts and activity patterns that will maintain its existence (Gersick 1991). IT governance includes key structural organizational arrangements (e.g., IT rights and IT policies) that comprise an “organization logic” (Sambamurthy and Zmud 2000; Schwarz and Hirschheim 2003). Thus, IT governance forms a part of the deep structure insofar as it defines a fundamental set of choices that influence IT-related activities and “rules many options out, at the same time as it rules mutually contingent options in” (Gersick 1991, p. 16). Many prior studies (Guillemette and Paré 2012b; Sabherwal et al. 2001) operationalize the deep structure as an ideal profile or archetype, a pattern of mutually supporting organizational elements that reflect a single interpretive scheme (Ambos and Birkinshaw 2010).

Equilibrium periods are characterized by the persistence of the deep structure, which limits and actively prevents radical change (Gersick 1991). Evolutionary change during such periods takes the form of incremental adjustments (i.e., changes affecting only select archetype elements) that serve to reinforce the internal coherence of the deep structure, ensuring stability (Guillemette and Paré 2012b). Thus, an IT governance framework remains stable during equilibrium periods, reinforced by strategic alignment (Sabherwal et al. 2001), and prevents broader IT-related organizational transformation (Besson and Rowe 2012).

Revolutionary periods are characterized by radical change that affects all elements of the archetype (Tushman and Anderson 1986; Tushman et al. 1986; Tushman and Romanelli 1985). These periods are typically triggered by environmental shifts, sustained declines in organizational performance, and influential outsiders (Gersick 1991), as well as perception transformation, or what Ambos and Birkinshaw (2010) call a collective cognitive dissonance among key stakeholders. Concerning this latter trigger, both Sabherwal et al. (2001) and Guillemette and Paré (2012b) show how a significant change in the senior management’s understanding of IT may facilitate a revolution. The outcomes of revolutionary periods may vary; however, in most cases, one observes the dismantling of the existing deep structure (i.e., IT governance framework) and the establishment of a new one (Gersick 1991).

In sum, we examine how and why IT consumerization transforms IT governance in large organizations through the lens of the punctuated equilibrium theory. Before presenting our findings, we describe our research methodology and process.

Research Methodology

This phenomenon-driven theory development study emerged out of a longer-term engaged scholarship relationship with GlobalBank (Van de Ven 2007). We launched the project in 2013 to study IT consumerization and the entailed organizational changes. Based on emergent findings, the focus of our study shifted to explaining IT governance transformation in large organizations. The observed IT governance transformation formed a key part of GlobalBank’s broader digital transformation journey and occurred from 2013 to 2017. Data collection and analysis across multiple points in time during this five-year transformation period, in addition to five years of retrospective data collection and analysis to cover the antecedent equilibrium period, enabled our longitudinal single-case design (Gerring 2007).

The starting point of our study was immersing ourselves deeply into the field (i.e., our case site) to understand the context (Johns 2006) and driving force for IT governance transformation. The immersion led us to develop an in-depth understanding of the novel yet poorly understood phenomenon of IT consumerization, using the grounded theory method (Birks et al. 2013; Urquhart 2013; Walsh et al. 2015), resulting in the novel concept of everyone’s IT that became central for our theory development. To elevate our grounded theory, we utilized the punctuated equilibrium theory. Appendix B explains the process of meta-theoretical anchoring in our study. In sum, the punctuated equilibrium theory was chosen because (1) transformation of IT governance in our case followed a “discontinuous, fast, and systemic” pathway (Besson and Rowe 2012, p. 104), (2) the change was clearly revolutionary for we observed profound shifts along all three dimensions of an IT governance framework (i.e., focus, scope and patterns), and (3) our findings about the interrelationship between everyone’s IT and IT governance transformation were consistent with the idea in the punctuated equilibrium theory of a “perception transformation” setting off a revolutionary transformation of the organization’s deep structure (Ambos and Birkinshaw 2010; Guillemette and Paré 2012b; Sabherwal et al. 2001). Overall, adopting the punctuated equilibrium lens provided us with a lever to increase the generalizability of our study.

We selected banking because our theory development target and research question required a field setting where stringent IT governance requirements coexisted with rapid environmental changes driven by IT consumerization and the associated market changes. Large banks, such as GlobalBank, must comply with increasingly complex and strict regulatory requirements to contain business risks. Achieving such compliance creates a need for massive IT investments and robust governance of complex IT infrastructure and activities imple-

mented within the bank. At the same time, banks also encounter rapid environmental changes driven by the developments in consumer technologies, such as mobile banking and payments, and peer-to-peer lending (Sia et al. 2016), which reshape customer expectations and the competitive landscape. In this context, one would expect a growing mismatch between the rigid IT governance and high environmental volatility to set the stage for punctuated change.

Data Collection and Immersion into the Field

Deep immersion into the field involved both informal and formal face-to-face interactions with key informants from our case organization. In formal interactions, we engaged our participants in joint reflective conversations by applying the techniques of intensive interviewing (Charmaz 2006), including focusing our initial questions on experiences that participants could relate to easily and immediately. Example questions included:

- Have you noticed any important technological changes lately that have affected your work and organization without your control? (Request examples)
- Why, in your opinion, do employees bring their own devices and consumer technologies to work? What consequences of this behavior have you noticed? (Request examples)
- Have you heard of the term *consumerization* before? What does it mean to you? How have you personally reacted to consumerization? How has your organization responded to consumerization so far?

Table 1 provides an overview of the primary data generated and used for this study. The average length of interviews was approximately 75 minutes. These data were complemented by an in-depth understanding of the history and evolution of IT inside GlobalBank based on previous research projects by the lead author. The transcribed interview material resulted in over 550 pages of qualitative data that was coded and analyzed as soon as possible after each interview and reanalyzed multiple times based on reviewer feedback.

Use of Theorizing Techniques

We utilized the techniques of grounded theory development (Birks et al. 2013). First, our focus was on theory development in accordance with our use of the classic conceptualist grounded theory approach (Glaser 1978; Glaser and Strauss 1967). In particular, our research question reflected the objective of building an explanatory IS theory (Gregor 2006).

Consequently, our analysis focuses on a process theorization of the interplay between events associated with the enactment of everyone's IT by consumer-workers and consumer-customers (the key IT consumerization mechanisms identified in this paper) and functional IT governance. We discover the shift to platform-based governance in our case and, based on our findings, construct an explanation of IT governance transformation in large organizations.

Second, applying constant comparison and iterative coding (Birks et al. 2013), the theory development in our study proceeded through many iterations of data coding, analysis from different perspectives (e.g., business and IT practitioners, managers and operational workforce), and concept development using different techniques and types of memos. We transcribed all our extensive notes and recordings from interviewing in due time and initially spent a large amount of time on open coding our data and constantly comparing data slices to identify patterns and generate tentative categories (e.g., "individualization of IT").

Third, we applied theoretical sampling and ensured an inextricable linkage between data collection and analysis (Birks et al. 2013). Theoretical sampling depicts the idea of deciding on analytic grounds where to sample from next (Urquhart 2013). We used two different approaches of theoretical sampling, substantiation and extension. Substantiation focuses on theoretical sampling to "collect further indicators for the substantiation and definition of a particular category" (Gregory et al. 2015, p. 62). For example, substantiating our emergent findings regarding the individualization of IT through additional data collection and analysis made us conceptualize one dimension of everyone's IT (see Table 1). Extension focuses on theoretical sampling to build adjacent categories to "explore the boundaries of an emerging theory" (Gregory et al. 2015, p. 62). For example, by exploring the boundaries of behavioral changes observed in the internal organizational context of enacting everyone's IT, we realized through additional data collection and analysis that everyone's IT also reshaped the bank-customer relationship, prompting responses involving the bypassing of IT governance.

Fourth, during the entire process of theory development, we *managed our preconceptions* to avoid forcing-fitting existing theory onto our data (Birks et al. 2013). This management involved treating the previous empirical research, concepts, and frameworks on IT governance more similar to additional slices of data to compare with our own data rather than allowing prior works to drive our data analysis. Eventually, we developed the core category of everyone's IT in accordance with the principle of emergence where concepts earn their relevance through the systematic generation and conceptualization of data (Glaser and Strauss 1967).

Table 1. Primary Data

Data	Description			
Primary data: 39 interviews	<i>Position/Role of Interviewee</i>	<i>Responsibilities/Profile of Interviewee</i>	#	
	Senior business/IT leader	Responsible for the bank's overall IT strategy in alignment with business as well as the following: the bank's IT governance; the bank's digital services platform; the digital transformation of the bank, including customer experience and digital banking services offered in the market.	7	
	Business/IT leader	Responsible for: the design, implementation, and maintenance of the bank's digital services platform; IT in bank branches; strategic sourcing of IT services from providers; IT-based retail banking innovation; retail banking digital transformation; digital business development; online and mobile banking units; customer experience and sales.	13	
	Business/IT project and product managers	Project managers working on the implementation of the digital services platform; product managers working on new product development and business innovation building onto the digital services platform, including mobile banking services.	10	
	Business/IT internal staff	Members of business units, the IT function, "special regime groups" or the "digital factory" with specialized expertise in a particular business domain or IT area, such as IT infrastructure technology, database architecture, applications and services, particular products built onto the digital services platform, IT-related working methodologies, as well as rules, standards, and policies governing the use of IT within the organization.	11	
	External consultant/partner	A senior consultant for "digital finance" and the CEO of a provider of banking/IT automation solutions, both of whom have worked with the bank on the digital transformation, including the design of the digital services platform.	2	
	Total # of people interviewed			33
	Total # of interviews (selected key informants were interviewed at multiple points in time)			39
Primary data: additional fieldwork	Primary interview data was complemented in our case with detailed observations collected during field visits to the headquarters of the bank. In particular, the lead author spent half a day shadowing the business and IT staff and product managers working in the bank's digital factory. In addition, he visited the bank's design thinking and retail banking innovation lab. Further insights were obtained from multiple informal meetings and spontaneous interactions with a product manager with responsibilities for the bank's mobile app, the head of design thinking, and dinners/lunches with other managers involved in the digital transformation of the bank. All these observations resulted in additional field notes that were used as additional slides of data for constant comparisons and the development of the grounded theory.			

Table 2. Functional IT Governance		
Dimension	Description	Selected Codes/Indicators
Focus (what to govern)	The primary focus of functional IT governance is proprietary and sourced IT assets; the underlying assumption is exploiting IT assets fully controlled by the firm.	<ul style="list-style-type: none"> • Making significant investments in enterprise IT assets in the two domains of IT applications and IT infrastructure • Ensuring that enterprise IT assets are exploited for efficiency gains • Centralizing IT decision-making to the extent possible to create cross-unit synergies • IT function delivering proprietary IT assets for secure internal use by employees • Outsourcing IT and business processes to reduce costs • IT function members refer to systems under their command and control as "my baby"
Scope (who to govern)	The primary scope of functional IT governance is the IT function; the underlying assumption is relying on the specialized expertise of IT professionals.	<ul style="list-style-type: none"> • Allocating IT rights and responsibilities to authoritative managers in the IT function • Depending on the contribution of the IT function with its specialized skills and expertise • Governing the IT function to ensure the alignment of IT activities with business priorities defined by senior management • IT function views business units as customers and is held accountable by them • Business units hold the IT function accountable for providing IT services and executing IT projects • Senior management equates governing IT with governing the IT function
Patterns (how to govern)	The patterns of functional IT governance primarily include (1) functional structural arrangements, (2) formal processes, and (3) relational mechanisms, which are based on the underlying assumption of achieving coordination among multiple internal stakeholders through complex organizing.	<ul style="list-style-type: none"> • (1) Centralizing IT decision-making to create cross-unit synergies • (1) Decentralizing IT decision-making to create flexibility for local business units • (1) IT function governing IT-related activities in the two domains of IT applications and IT infrastructure • (2) Controlling IT expenditures through the yearly allocation and revision of IT budget given to the IT function • (2) Following formal processes for how business and IT stakeholders work together and make IT investment decisions • (2) Defining procedures and standards concerning prioritization, funding, acquisition, deployment, use, and retirement of enterprise IT assets • (3) Business leaders participating in IT project control activities and acting as co-leaders to ensure business-IT alignment • (3) Seeking recommendations and advice from IT function leaders on key digital trends • (3) Business units seeking regular interactions with IT staff to define business requirements, facilitate shared learning with IT leaders, and exercise control

In addition to our use of grounded theory, we used process theorizing techniques. In analyzing our data, we focused on the sequencing of events on the case timeline, delineated phases, and identified transition triggers (see Figure 2) (Langley 1999; Van de Ven 2007). Finally, at the stage of theoretical integration, we utilized the meta-theory of organizational transformation as punctuated equilibrium (Gersick 1991; Guillemette and Paré 2012b) to integrate our emergent findings into a mid-range theory of IT consumerization and IT governance transformation in large organizations (see also Appendix B).

Everyone’s IT and Shifts in IT Governance at Globalbank

We observed how IT consumerization led to the transformation of IT governance at GlobalBank. The starting point for the process we observed was an equilibrium period of functional IT governance (see Table 2).

IT Consumerization and the Enactment of Everyone's IT

In our case, IT consumerization manifested as the enactment of everyone's IT mindset, that is, a set of shared beliefs that highlight the democratization of IT access and the individualization of IT use (see Figure 1) by consumer-workers and consumer-customers.

Everyone's IT Leads to the Emergence of Consumer-Workers

GlobalBank's early exposure to everyone's IT dates back to 2002 when, in response to demands from senior business managers, select employees were provided with BlackBerry phones. Striving to cope with long working hours, these employees hoped that constant connectivity afforded by the BlackBerry phones would provide them with greater work autonomy and flexibility to balance high demands in their work and private lives. While the devices remained the property of the enterprise, their use during and outside work hours signaled the emerging integration of digital technologies into the everyday life of workers across the production-consumption divide (see *embeddedness* in Figure 1). Furthermore, the ability to use the devices anytime and anywhere allowed individual workers to establish more flexible work routines that fit their personal preferences (see *personalization* in Figure 1).

In making smartphones available to workers, IT managers emphasized the utmost importance of data and IT security in accordance with the existing IT governance framework (see Table 2). Certain device features were restricted, limiting the employees' ability to individualize the use of digital technology. Thus, the IT-related behaviors of workers remained largely in accordance with the established requirements of functional IT governance (see Table 2), making IT managers feel content and in control. An IT department member stated:

In 2002, we started to buy BlackBerries. We sealed and secured them and handed them over to business users....everybody was happy.

The launch of the iPhone in 2007, followed by the rapid diffusion of smartphones and mobile apps among general consumers, changed the equation. The seamless usability, attractive design, and high customizability of these mobile technologies led many workers at GlobalBank to believe that consumer technologies were more powerful than their enterprise counterparts (see *common availability* in Figure 1), setting off a "snowball" adoption of consumer technologies in the workplace. A member of the IT function explained:

At first, a few colleagues began using noncorporate technology solutions at work as they considered them more productive. Others took note and started to demand the same kind of solutions, saying that these were more powerful, easier to use, and, ultimately, just way cooler.

The intuitive user experience of consumer mobile devices drastically shortened the learning curve, while easy access to the vast array of apps made their affordances nearly unlimited (see *low complexity* in Figure 1). Workers felt increasingly self-confident to experiment with the individualized use of digital technologies across the home-work divide (see *experience* in Figure 1). Thus, the workers began to develop strong preferences regarding technology usage and began transferring expectations concerning the use of digital technology outside of work to the enterprise context, effectively swapping roles as workers and consumers, evolving into *consumer-workers*. A business user pondered:

Take electronic to-do lists. If I use those in my private life, I also expect to be able to use them at work. Similarly, if I use social media like Twitter in my private life, I should be able to use it in a business context.

The emergence of consumer-workers within the bank, with their demands to make technology easy-to-use, personalized, flexible, available, and enjoyable (see Figure 1), placed IT managers in uncharted territory. For the first time, the IT-related behaviors of workers were shaped by a set of considerations different from those stipulated by the functional IT governance framework. These new considerations, which were embodied in everyone's IT beliefs, challenged the IT function's perceived ability to maintain control over the selection, procurement, provisioning, and use of IT in strict alignment with the bank's strategy and objectives (e.g., efficiency and security). One IT manager expressed his concerns:

The initial moment of IT consumerization is when employees do something with consumer IT that is quicker and easier than adhering to the norms and standards inside the bank, thinking that tasks on the job can be performed this way.

Not only did consumer-workers begin making decisions about what technology to use, they often expressed their preferences very forcefully, exacerbating the strain on IT managers. A member of the IT function explained:

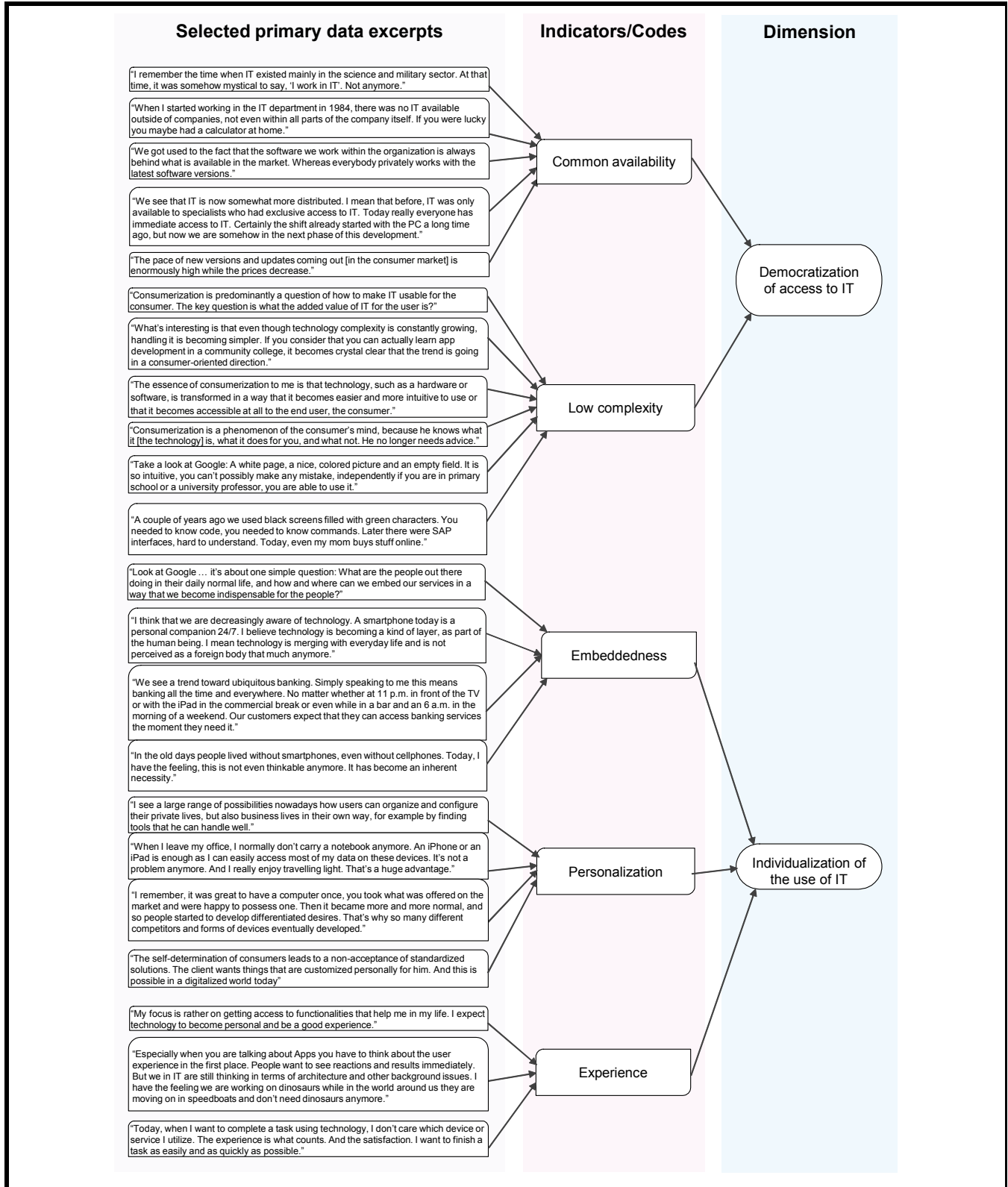


Figure 1. Everyone's IT

[Sometimes users would complain] “BlackBerry’s functionalities are quite limited” [and] we would always respond “But it is secure. End of debate.” We frequently have this discussion, even with [business] managers, and it had never been a problem. But when iOS came, that logic suddenly didn’t apply anymore. The [business] managers said: “OK, if it is not secure, then make it secure.” And this had become a requirement.

Consumer-Customers Enact Everyone’s IT, Putting Workers under Pressure

In parallel with the emergence of consumer-workers, GlobalBank began to experience manifestations of everyone’s IT among its customers. Similar to consumer-workers, the bank’s customers also enjoyed broad exposure to powerful consumer technologies (see *common availability* in Figure 1); they grew confident in their everyday application (see *low complexity* in Figure 1) and developed strong preferences for various aspects of the user experience (see *personalization* and *experience* in Figure 1). Thus, customers evolved into *consumer-customers*. Having developed everyone’s IT beliefs initially in the nonbanking context by experiencing services offered by the GAFAs (Google, Apple, Facebook, and Amazon) companies, consumer-customers began to translate these beliefs into new demands and expectations, affecting their interactions with GlobalBank.

In enacting everyone’s IT beliefs, consumer-customers demanded that the bank offer more user-friendly mobile banking services. A business manager reflected on the origin of these demands (see *common availability* and *low complexity* in Figure 1):

Why do they need these services so badly? Because they have experienced them in their private life. In the past, IT impacted the customer at home rather indirectly through the enterprise, because the enterprise had more money and could afford the best technology. Today, this is reversed. If such a customer visits a bank branch today, she says: “I would like to see GlobalBank be as up-to-date as I am.” And this [to us] is somehow also consumerization.

Consumer-customers also expected banking services to become more personalized and seamlessly integrated into their everyday life (see *embeddedness*, *personalization*, and *experience* in Figure 1). An employee responsible for customer experience explained:

An important concept to us is “ubiquitous banking.” What I mean by this is banking services that promote an integrated customer experience—services that are always on, available at any place, and omnichannel.... We used to design customer channels and told our customer which channel to use in which context. This is changing today as the markets are inverting to the demand side. Our customers have very particular needs and expect us to accommodate these through the interface of their choice, be that a face-to-face financial advisory on Saturday morning or at-home interaction over a telephone.

The fast-changing expectations of consumer-customers, amplified by consumer technologies (e.g., social media) and the new competition eager to appease these demands, created significant pressures on workers throughout GlobalBank. To be able to respond to these pressures, workers needed to alter their IT-related practices. A new implementation approach with a short time-to-market and the possibility to accommodate constantly changing requirements was sorely needed, as indicated by an interviewee:

We told ourselves: mobile is so important today that we cannot afford to release updates only once or twice a year, as we did in the past. We now focus on offering customers something new every eight weeks, not just small updates and bug fixes, but really new features that add value.

In accordance with GlobalBank’s functional IT governance framework (see Table 2), many of the worker groups initially approached the IT function with requests to work jointly to respond to the new demands of consumer-customers. The inability of the IT function to meet these requests resulted in criticisms of IT managers being “too slow and inefficient.” The head of the e-finance unit, responsible for developing mobile banking solutions, shared his frustration:

Our experiences of working with our internal IT provider show that they just don’t know how to do it. You have to conduct a preliminary study, which costs heaps of money. If the study is successful, you can eventually start the development but only under the condition that you agree on a reasonable budget. On this last point, we had a number of projects where we ended up throwing up our hands in horror as we recognized that the pricing offered to us was unreasonably high.

The customer experience manager quoted earlier offered an additional insight:

For two years, I had been trying to get IT leadership to recognize the need to respond to the consumerization of customer demands. The final word I got, which ultimately made me quit my job, was the following: “Yes, we know, but right now this is not our priority. We don’t have the budget and there are several other IT projects that are more important and must be finished first. Perhaps, in two years we will free up capacity.”

Thus, the development and enactment of everyone’s IT beliefs by workers and customers of GlobalBank led to the emergence of consumer-workers and consumer-customers. The former spanned the home–work divide by attempting to align their IT-related behaviors in the workplace with the beliefs and expectations developed outside the firm. The latter led to new demands that originated outside the banking industry on their interaction with GlobalBank, thus putting workers under significant market pressure and forcing them to begin altering their IT-related behaviors and practices. In both instances, everyone’s IT beliefs (see Figure 1) influenced the IT-related behaviors of workers, which, in turn, began to clash with functional IT governance (see Table 2). These developments triggered local adaptation responses by managers, which we explain next.

IT Governance Misalignments and Local Adaptation of Functional IT Governance

The enactment of everyone’s IT by consumer-workers and consumer-customers, as described in the previous section, produced discrepancies between “desirable” behaviors in using IT, as stipulated by the existing functional IT governance framework, and the actual behavior of workers in the organization. We refer to these discrepancies as *IT governance misalignments*. To address the misalignments, managers at GlobalBank activated two types of local organizational responses, *IT governance force-fitting* and *bypassing*, targeting the adaptation of functional IT governance.

IT Managers Implement IT Governance Force-Fitting

As the adoption of nonenterprise digital technologies in the workplace and the enactment of everyone’s IT beliefs by consumer-workers gained momentum, IT managers responded by invoking traditional arguments of security and cost and activating technical means to control worker behavior. A manager in charge of end-user technology recalled:

A classic example of IT consumerization to me

involves exchanging files between corporate and private email accounts. This behavior creates a security threat and, of course, it is not supposed to happen. Even though everyone signed a user agreement, we quickly realized that we needed to close the loophole at the technical level. That meant, for example, blocking access to services like Gmail at work.

However, such openly coercive measures failed to alleviate the discrepancies in the IT-related behavior of consumer-workers, forcing IT management to employ a subtler adaptive approach. In 2010, in response to demands from senior business managers, the IT infrastructure group at GlobalBank implemented a formal Bring-Your-Own-Device (BYOD) policy. The policy allowed employees to access selected corporate IT systems and data, such as email, on their personal devices in exchange for users accepting restrictions and certain conditions. In particular, a number of popular mobile applications (e.g., Skype and Gmail) were blocked, while the IT function was granted rights to remotely delete all corporate information in case the device was lost. These limitations left employees with mixed feelings. As highlighted by a business user, many believed the policy failed to accommodate the changing IT beliefs and behaviors, which were once again sacrificed to satisfy formal objectives of functional IT governance, such as those of lowering costs (see Table 2):

You would think that BYOD contributes to consumerization, while in fact it is to a large extent an old idea from the corporate IT world: “Oh, I no longer have to pay for end-user devices as the employee already has one of her own.” In reality, BYOD is not about convenience for the user but about a reduction in IT expenditures.

As the quote above illustrates, the introduction of the BYOD policy was an attempt by IT managers to *force-fit* functional IT governance onto the emerging IT-related behaviors and expectations of consumer-workers (see Figure 1). By introducing incremental alterations to the current IT policies and standards, IT managers sought to minimally expand the repertoire of legitimate IT-related practices available to consumer-workers, while retaining the core of the functional IT governance framework (see Table 2) intact.

Senior Business Managers Authorize IT Governance Bypassing

The enactment of everyone’s IT by consumer-customers created significant market pressures on select worker groups, such as the mobile banking unit, and ultimately led to a

different type of local organizational response, which we refer to as IT governance *bypassing*. Scrambling to avert potential declines in organizational performance (e.g., increased customer churn rates), the affected worker groups sought the means to develop and offer differential products and services that would meet and exceed the expectations of consumer-customers that were shaped by everyone's IT. To resolve the impasse described earlier, senior managers at GlobalBank decided to establish a "special regime," allowing worker groups under strain to *bypass* the corporate IT function and work directly with consumer-customers and external technology partners to increase agility. The manager of the e-finance unit explained:

We were able to negotiate an informal agreement with our management that allowed us to bypass the internal IT provider under certain conditions...In our group, we develop a lot of pilots, prototypes, etc. ...that we test directly with our clients. This way a lot of things emerged that wouldn't have been possible under the conventional scenario—that is, if we had to go through our IT department.

Therefore, bypassing afforded additional autonomy to select workers within GlobalBank by allowing them, for a given scope of activities, to engage in behaviors that laid outside the repertoire stipulated by the existing functional IT governance framework. Consequently, the development process not only became faster but also more flexible, having incorporated frequent iterations and ongoing feedback. The e-finance manager elaborated:

We can now produce results in two weeks' time. We, from business, meet with the contracted IT guys...every single week to discuss the next iteration of the product, review the previous one, assess what's good and what's bad. This way, development continues on the fly. Both sides fuse; the developer is not locked up in a separate office, writing code on his own. Instead, he is now sitting at our table, sharing his thoughts about the product with us, and getting constant feedback from my team and the client. This looks more very much like a hand-in-hand process, and the final result is way, way better and aligned with what the customer really needs.

As the quote highlights, bypassing often involved the integration of different perspectives and close ongoing collaboration among workers, external technology developers, and customers, thus further blurring the boundaries between consumption and production. However, insofar as bypassing

allowed only a small percentage of workers at GlobalBank to modify their IT-related behaviors to align them with everyone's IT beliefs, similar to force-fitting, it remained a local response targeting the adaptation of functional IT governance.

In sum, managers at GlobalBank employed distinct approaches to accommodate the enactment of everyone's IT beliefs by consumer-workers and consumer-customers. However, only the enactment of everyone's IT beliefs by consumer-customers created sufficient anxiety of organizational failure to obtain resources from the environment, leading senior managers to reassess the underlying assumptions of functional IT governance (see Table 2) and embrace everyone's IT beliefs (see Figure 1), which we discuss below.

IT Governance Misalignments and the Transformation of Functional IT Governance

The accumulation of force-fitting and bypassing across GlobalBank elevated the awareness of IT governance misalignments by the bank's senior business and IT managers. The managers' primary focus was on misalignments caused by the enactment of everyone's IT by consumer-customers, viewed at the time as a source of rapid environmental change. Conversely, the misalignments caused by the enactment of everyone's IT by consumer-workers garnered relatively minor focus, for these were deemed to be largely taken care of by the new BYOD policy and other force-fitting measures. A senior IT manager recalled:

We sat together, several years ago, and really debated...I remember that the original idea or trigger was that we analyzed the environment and realized it is completely chaotic, not organized...What made the difference was changes in expectations of our customers. Before, we treated consumers with their new expectations as "beggars." Banks have to accept that the beggars have become customers and that they, the banks, are suddenly in a position with less power.

In reflecting upon the need to create more personalized offerings to serve the evolving needs of consumer-customers, certain managers began to question the oftentimes reactive stance of the IT function seeking to maintain functional IT governance intact. A manager of a small group spanning traditional business and IT functional boundaries commented:

A strategy that had proved successful for IT in the past 20 years was to "sit by the window" and watch others fail with their "change the bank" projects.

The CIO was only punished for failing but not for doing nothing. The question is whether this strategy is still viable in today's competitive landscape characterized by a large number of small agile players.

Another manager shared a concern of imminent market changes, comparing the bank and its legacy IT to a "dinosaur" increasingly incapable of coping with the market that was "coming at us with speedboats, these new technologies, overtaking us, leaving us behind." This sense of urgency and the ensuing feeling of uncertainty promulgated by the growing dissonance between the "whims" of the market, the collective consumer-customer, and the established practices guiding IT-related activities at GlobalBank led managers to reassess certain core assumptions and beliefs underlying functional IT governance. Consequently, in addition to the traditional arguments of efficiency and reliability (anchored in the assumption of *exploiting IT resources the firm fully controls*; see Table 2), considerations of speed and flexibility began to enter managerial discourse. And, perhaps for the first time in the bank's history, managers in earnest discussed the use of technology to create products and services that were enjoyable and engaged customers at an emotional level (see *experience* in Figure 1). A senior IT manager closely involved in the process explained:

We focused on three things, I recall, how to become more efficient, reduce complexity, and increase reliability, and on the basis of that also become more agile in serving new customer demands. And underlying our thinking process, but perhaps not explicitly formulated back in the day, was this idea that we needed to connect to emotions.

Accomplishing the goals of speed and flexibility to build solutions that met the expectations of consumer-customers required a significant change in the repertoire of IT-related behaviors available to workers. The establishment of special regime groups through bypassing was the first step in that direction; however, it was greatly insufficient regarding scaling the solutions to serve large populations of customers. Scalability required the integration of the solutions into the bank's core transactional systems, which, in turn, entailed considerations of security, stability, and regulatory compliance. Thus, to move forward, managers needed to find a means to resolve two competing sets of assumptions and beliefs guiding IT-related behavior of workers: that of functional IT governance (see Table 2) and that of everyone's IT beliefs (see Figure 1). One of the interviewees recalled:

We thought: how could we rebuild the bank's architecture so that we are able to address the new requirements? We understood we needed to become

more agile, but at the same time build this bridge, to also achieve greater efficiency and so on.

The initial idea, devised jointly by business and IT leaders with input from an external technology provider, was to relax the assumption that *business units rely on the specialized expertise of IT professionals* (see Table 2). Instead, workers and external developers would be able to utilize IT infrastructure directly through unmediated access to a catalog of services that could be used and reused in an intuitive and flexible manner to address customer needs at hand (see *common availability* in Figure 1). A manager involved in this effort explained:

We are building a digital services platform that allows business customers to access IT services directly. The platform offers a catalog of service descriptions and standards, but it does not specify the underlying technologies.

To make the vast array of banking IT components accessible to workers and external developers, the complexity of coordinating their use and integration needed to be addressed. Doing so through traditional approaches, based on the assumption of *achieving coordination through complex organizing* (see Table 2), appeared dubious. A senior manager explained:

When you look at it from a perspective of complexity, we got thousands of applications in the bank. If each of those is then built for the defined setup in a unique way, there's an exponential combination of process flows...that will be next to impossible to manage...Let's say I define policies, I would have to define a policy for that scenario and that scenario and that scenario, so your policies explode. We will have so many policies that it becomes impossible for anybody to know what the right thing to do is.

An alternative approach was to encapsulate and transform IT components into services. Each service included a precise description and rules for what inputs were required, what outputs were expected, and how it could be combined with other services to accomplish a particular business outcome, such as opening of bank account. Such an approach would allow reduction in complexity for business users (see *low complexity* in Figure 1) in a more automated, nonovert manner. The CEO of the external technology provider explained:

At the end of the day, all IT components get interfaces, which transform them into services. Once you create an interface, you know what inputs need

to go in, what transformation will occur, and what outputs will come out. You can also start thinking about how to combine different services, and we offer recommendations in this regard. We do this for everything, no matter how small or big the thing is: installing software, opening a bank account, resolving an incident, or reviewing customer's tax records. And by the way, services can be accessed and operated on by a human or a machine, by internal IT or business staff or, if need be, by an external vendor.

According to our interpretation, the developments described above mark the beginning of the revolutionary transformation of functional IT governance. The accumulation of IT governance misalignments caused by the enactment of everyone's IT by consumer-customers led to the feeling of uncertainty and imminent market threat by IT and business managers at GlobalBank, forcing them to reassess the underlying assumptions of functional IT governance (see Table 2). Thus, the managers embraced the idea of using technology to build personalized and enjoyable solutions for customers (*individualization of IT use*; see Figure 1) by providing workers with direct, unmediated access to a diverse catalog of IT services (*democratization of IT access*; see Figure 1). This approach effectively legitimated the influence of everyone's IT beliefs on the IT-related activities of workers at GlobalBank and eventually paved the path for the institution of platform-based governance.

Digital Services Platform and the Institution of Platform-Based Governance

Over the next five years, the initial vision of providing workers with direct access to IT services matured into an implementation of a digital services platform within GlobalBank. The platform changed the nature and repertoire of IT-related activities of workers in the bank, altered the traditional arrangement of how workers engaged in these activities, and ultimately modified the manner in which managers controlled their engagement.

The platform was built on principles of modular architecture and consisted of three interconnected layers. The infrastructure layer, called "Fabric," was created through the mass conversion of core banking IT components into services, as discussed above, which, in turn, led to what a senior manager called "consumerization" of the banking IT infrastructure:

The infrastructure layer of the platform, we call it Fabric. It is based on OpenShift and Docker containers. What does it do? It makes the consumeriza-

tion of infrastructure possible....Consuming infrastructure at will, so to say....Through the Docker container, I am able to make infrastructure directly...[so that] one can draw on it...[and] within minutes...configure a set of containers through a portal, and then deploy an app on top.

An integration layer, called "Glue," established a loosely coupled connection between core infrastructure and front-end services and content. The main goal of the loose coupling was to ensure the efficient exploitation of the bank's internal IT resources while at the same time allowing for the exploration of diverse emerging technologies to build solutions for consumer-customers. This integration layer also served as a buffer that reconciled the different speeds at which the infrastructure and services layers evolved. A manager explained:

The Glue layer we introduced encapsulates backend components that evolve slower and change less frequently [e.g., regulation, stability requirements]... it serves as a buffer for agile teams to create new functions or features, for example highly personalized, pack it into the Glue layer so to say, like a temporary folder, so that you can roll out the new frontend feature in an agile way while subsequently taking it from this middle layer, translating and integrating it into the core banking platform [e.g., for reuse]...that way, we basically decouple agile product development from the core banking world.

The "services and content" layer at the top of the stack touched the end customers and allowed workers and partners to experiment with new ideas and scale quickly to bring new solutions to market, which was not possible before. A product team lead shared:

With [the digital services platform], I can flexibly book and add extra capacity, for example storage, or application server, for my app, depending on the user growth.

GlobalBank's managers also insisted on referring to front-end customer solutions not as applications, the traditional inward-looking term, but as services, highlighting the focus on consumer-customers. A senior manager shared his view:

We need to bring these platform components to our end customers, and to do that, we need to extend our governance upward by two layers. With the top layer, I don't refer to applications, because customers are not interested in applications per se. The customer is interested in services. So, ultimately, it is the services and content layer.

To foster new types of IT-related activities on the digital services platform, GlobalBank established a “digital factory,” a new organizational unit where business and IT workers worked side by side in autonomous colocated cross-functional teams to design, build, and deploy new digital solutions for consumer-customers. The IT-related activities at the factory often extended beyond the boundaries of the bank and involved external partners, such as FinTech startups, to address demand niches. A product team lead shared an example:

Through the platform, it is possible for us to quickly bring solutions from the market...[For example] we now have a new financial advisory app on the market. It was developed by an external firm, it still has its own brand, ...but by leveraging our API, all the app transactions [of our customers] run through our platform.

The implementation of the GlobalBank’s digital services platform and the new patterns of IT-related activities that emerged in and around the digital factory ushered in profound shifts in IT governance along all three dimensions of focus (what to govern), scope (who to govern), and patterns (how to govern), suggesting a revolutionary change. A summary of these shifts is presented in Table 3.

The *focus* of IT governance (what to govern) expanded from a narrow emphasis on exploitation of *proprietary and sourced IT assets* (see Table 2) to include *exploration of diverse combinations of technologies through the use, reuse, and combination of digital services* (see Table 3). A clear illustration of this shift was the involvement of partners, such as FinTech startups, with their technological solutions. This involvement was a strategic priority of the digital factory:

We are now increasingly inviting FinTechs to develop a proof-of-concept and develop new functionalities in cooperation with us, whether it is drawing on our own API or their APIs....All of this is aligned with the factory’s goals, including the desire to cooperate more with FinTechs.

Furthermore, the shift in focus led to a diminishing emphasis on controlling the inner workings of technology and an increased importance of managing technology outcomes:

Ten years ago, we had to have our proprietary database engineering function. We had database experts in the bank....Today, database technology has advanced so much that I actually just want to source a database service. The implication for governance is a shift away from controlling database

stacks, storage, computing, networks etc. ...away from specialized in-house expertise to saying basically “okay, what are my requirements, my KPIs, objectives, quality and cost criteria?” Of course, you still need some level of expertise, but my governance of technology and people has been elevated by one level of abstraction. [Senior business manager]

Similarly, as exploring the diverse configurations of digital technologies required more freedom in the day-to-day IT-related activities of workers, the focus shifted away from how the activities were executed to what outcomes they produced. A senior manager explained:

A lot of the governance increasingly focuses on quality control...if the basic platform services are consumed [by workers] in the right way, then the only thing I need to worry about is whether the end product built on top of the platform actually works.

The *scope* of IT governance (who to govern) similarly changed from governing the *IT function* (see Table 2) to governing workers spanning functional and organization boundaries. The changing scope manifested in the establishment of *autonomous cross-functional teams* (see Table 3) consisting of business and IT workers and bearing full responsibility for the entire life-cycle of digital solutions. A senior member at the digital factory explained:

We are...establishing teams with end-to-end responsibilities, from [business] product ownership all the way to [technical] implementation and rollout. Not like in the past, when we separated responsibilities across different functions.

This change, as discussed earlier, sharply contrasted with the prior assumption whereby business staff provided requirements and needed *to rely on the expertise of IT professionals* to develop solutions. The new assumption was that workers could be granted direct unmediated access to IT resources to convert their deep understanding of customer needs into personalized solutions. Consumerization of the core banking IT infrastructure, as explained by a business manager, served as a key enabler of this approach:

We have to develop the platforms and tools so that people can directly interface with these without training. It’s intuitive. You can walk up and use it in a similar way that Apple, when they give you the phone, doesn’t give you an instruction manual this thick.

Table 3. Platform-Based Governance

Dimension	Description	Selected Codes/Indicators
Focus (what is governed)	The primary focus of platform-based governance is the use, reuse, and combination of digital services; the underlying assumption is exploring flexible combinations of diverse digital technologies and resources from the external environment.	<ul style="list-style-type: none"> • Diverse digital resources, some controlled & owned and some open and shared, are recombined as services for value generation • Ensuring that platform users have the flexibility to explore new technology combinations and business opportunities • Creating reusable digital services on the basis of functionalities and user data • Integrating and tapping into the data from users on open digital platforms • Ensuring the quality of products assembled from digital services on the platform • Fostering an outside-in mindset whereby decisions to draw on technological means are driven by end customer needs • Workers refer to products built on top of the platform as “my baby”
Scope (who is governed)	The primary scope of platform-based governance is autonomous cross-functional teams; the underlying assumption is allowing direct unmediated access to IT by non-IT staff.	<ul style="list-style-type: none"> • Building a digital services platform by hiding IT systems complexity, encapsulating IT components, and turning them into services • Embracing the shift to cloud computing and providing workers access to digital services through an easy-to-use self-service “store” • Enabling an agile and experimentation-based solutions development approach • Holding business and IT workers jointly accountable for the success of products built on top of the digital services platform • Creating autonomy for IT decision-making to the extent possible to respond to fast-changing customer demands • Partnering with external firms and developers in IT value cocreation activities
Patterns (how is governed)	The patterns of platform-based governance primarily include (1) platform standards, (2) automated processes, and (3) multilayered architecture arrangements, which is based on the underlying assumption of achieving automated coordination among internal and external stakeholders through platform design.	<ul style="list-style-type: none"> • (1) Embodying governance rules and standards into the digital services platform • (1) Platform standards serving as mechanisms for nonovert control • (1) Ensuring sufficient variety of standardized interfaces while avoiding complexity • (1) Enforcing the use of platform standards and increasing reuse of platform services • (2) Ensuring desirable access and use of IT through automated processes • (2) Automating coordination between business and IT stakeholders to the extent possible • (2) Monitoring continuously according to quality and cost of service standards as well as service-level agreements • (2) Using digital controls for monitoring platform use according to quality & cost of service standards and service-level agreements • (3) Discriminating decision rights according to the different layers of the platform • (3) The platform allowing for a simple partitioning of decision-making rights • (3) Distinguishing between global and local arrangements for platform-related decision-making rights • (3) Separating responsibilities for establishing standards from the specification of what features are needed

Finally, *patterns of governance* (how to govern) shifted away from relying on *structural arrangements, formal processes, and relational mechanisms* (see Table 2) and toward employing *standards, automated processes, and platform architecture* to ensure the coordination of the diverse stakeholders involved (see Table 3). This new approach sought to integrate governance rules directly into the IT-related activities of workers by converting the policies into platform standards. A business manager explained:

How do you reduce complexity? ...The answer is to go on a standard platform. We will define how our database should look. Everybody should follow that standard. I don't care about your performance issue or your "this or that." You're going to come on this standard. That way...I don't need the database administrator on every team. I use one small pool of administrators to manage the entire platform.

Similarly, automation was increasingly used to facilitate various phases of the software development process, providing further coordination and ensuring consistency:

I just came out of a steering committee meeting, and what I think we already implemented quite well is the idea of automated deployment [of software solutions]. We also put in place an automated testing cycle that is followed. [Senior manager]

Structural arrangements for the allocation of IT rights and responsibilities continued to play a role but now were aligned with the architectural layers of the digital services platform instead of with the traditional functional boundaries. A senior manager explained:

These structural arrangements still play a role today. Decisions about standards, for example, that are made across different layers of the banking platform. The question is: Who holds the responsibility for standards on a certain platform layer? Making standardization decisions for a global network, for instance, will reside in a global role.... The more the decision affects stability, efficiency etc. of global networks, or data centers, for example, the more likely it will be centralized. The more you get away from this core, the more it is modularized, then you can decentralize it.

In sum, platform-based governance constituted the new equilibrium period at GlobalBank, concluding a five-year revolutionary period that was triggered by IT consumerization. Asked explicitly about the outcome and state of the transformation, a senior manager involved during the entire transformation period reflected:

You have many colleagues who have fully assimilated the change. [Manager X] for example, has understood how far IT has come to influence his business, and he is now focused on designing and building products on top of the platform. Others as well.

However, he also admitted that colleagues remained who had not yet fully embraced the change, highlighting the challenges of institutionalizing platform-based governance inside a large incumbent organization.

Discussion and Theoretical Integration

Our key contribution to the IS field is an explanation of how and why IT consumerization leads to the transformation of IT governance in large organizations. Thus, we utilize the findings from our in-depth case study and the punctuated equilibrium meta-theoretical lens to develop a mid-range theory including a set of propositions (see Figure 2). In what follows, we discuss the model and its propositions in detail and integrate our emergent theorizing into the prior literature.

As explained earlier, we view IT consumerization as a process whereby changing practices and expectations of consumers, shaped by the wide adoption of digital technologies in everyday life, influence the IT-related activities of workers and managers in organizations. To capture these new practices and expectations, we developed a grounded category of everyone's IT, a set of shared beliefs that highlight the democratization of IT access (i.e., IT is commonly available and exhibits low complexity) and the individualization of IT use (i.e., IT is personalized, seamless, and joyful) (see Figure 1). Our data suggest that consumers develop everyone's IT beliefs through common experiences with digital technology gained in a variety of everyday-life contexts. Over time, the increasingly blurred boundaries between production and consumption, personal and professional, home and work bring everyone's IT beliefs to bear on the IT-related activities of workers and managers in organizations. These findings are consistent with prior studies that suggest an interplay between the use of digital technology across boundaries and structural changes at the level of day-to-day organizing (see Gabriel 2008; Mazmanian et al. 2013).

In developing our theory, we chose to make a distinction between consumer-workers and workers. We define consumer-workers as employees whose expectations and work practices are shaped by their experience with digital

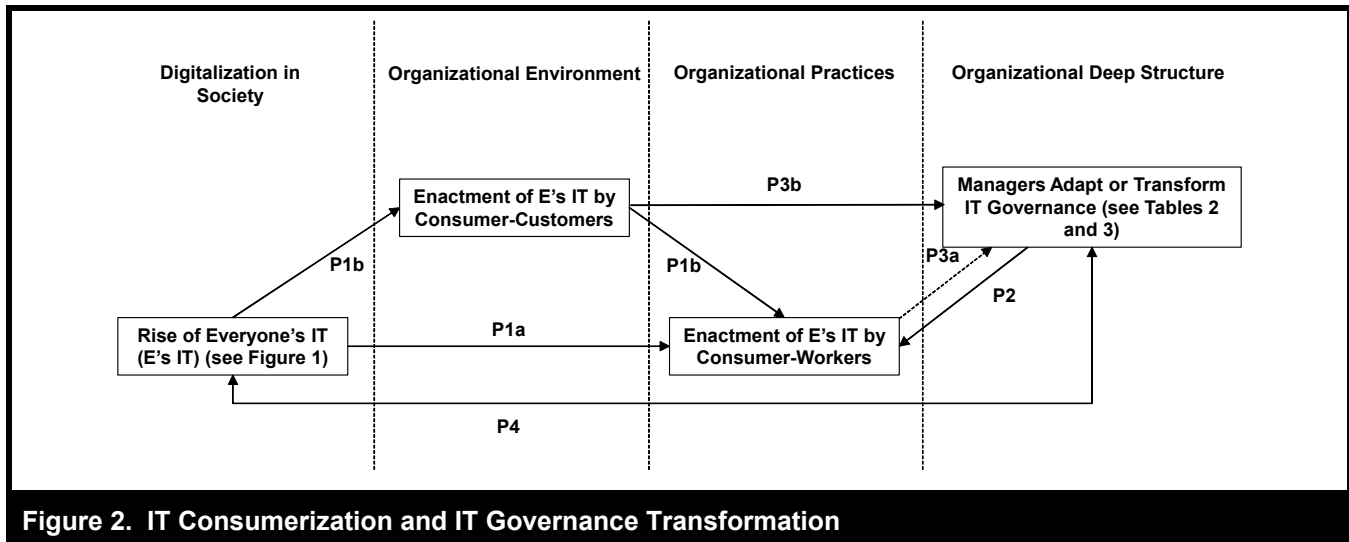


Figure 2. IT Consumerization and IT Governance Transformation

technologies in everyday life. Accordingly, every consumer-worker is also a worker; however, not all workers are necessarily consumer-workers. We identified two mechanisms whereby everyone's IT influences the IT-related activities of workers (see Figure 2). The first mechanism, the enactment of everyone's IT beliefs by consumer-workers, captures our case observation that, as workers escalate their engagement with consumer digital technologies (Mazmanian et al. 2013), they start bringing consumers judgments and behaviors into the workplace and eventually take on a dual role of consumer-workers (Gabriel et al. 2015). This dynamic is perhaps best illustrated in our case by the "Bring-Your-Own-Device" movement, wherein consumer-workers altered their behaviors in using IT by appropriating nonenterprise digital technologies to personalize the conduct of work. This finding relates to the prior IS literature on IT consumerization that explains bottom-up IT adoption dynamics by employees' desire to improve productivity, optimize time, gain autonomy, or overcome general dissatisfaction with corporate IT (Leclercq-Vandelannoitte 2015).

The second mechanism, the enactment of everyone's IT beliefs by consumer-customers, is less studied yet plays a crucial role in influencing IT-related activities of workers in organizations. In turn, this mechanism captures the observation that the collective dynamic of escalating engagement with consumer digital technologies (Mazmanian et al. 2013) is not limited to the organizational context but instead originates at the societal level, directly affecting households (Brown et al. 2006) and extending beyond the control of any individual institution (Yoo 2010). This finding leads to consumer empowerment and the increasing importance of consumer-shaped market forces in the digital society (Gabriel

et al. 2015; Zureik and Mowshowitz 2005). Accordingly, based on our findings, we argue that the democratization of IT access vastly amplifies consumer sovereignty (i.e., the ability of consumers to determine what goods and services are produced), placing workers throughout the organization under immense pressure to satisfy customer demands for personalized, joyful, and embedded technology-mediated solutions. To meet these demands and to offset new competition ready to fill the void, consumer-workers must expand their existing repertoire of IT-related activities and engage in experimentation with diverse enterprise and consumer digital technologies. On the basis of these findings, we propose

Proposition 1a: *The enactment of everyone's IT beliefs by consumer-workers directly alters the IT-related activities of workers in organizations.*

Proposition 1b: *The enactment of everyone's IT beliefs by consumer-customers indirectly alters the IT-related activities of workers in organizations.*

As shown in our case, the emerging IT-related activities of workers shaped by the enactment of everyone's IT often lie outside the repertoire stipulated by the functional IT governance framework, which forms a part of the organization's existing deep structure (see Guillemette and Paré 2012b; Silva and Hirschheim 2007). Insofar as managers are vested with rights and responsibilities to uphold reproduction of the framework to ensure that IT-related activities of workers are aligned with strategic organizational goals (see Table 2; also see Brown 1997; Brown and Magill 1998; Sambamurthy and Zmud 1999; Tiwana and Kim 2015; Xue et al. 2008), managers are forced to respond. This finding echoes recent

studies suggesting that IT consumerization leads to governance problems by weakening the IT function's ability to control the use of IT and to align usage behaviors with the firm's overall objectives (Furstenau et al. 2016; Koch et al. 2014; Weiß and Leimeister 2014).

Our findings suggest that the initial responses of managers target local adaptation, that is, incremental change that alters only isolated elements of the deep structure and does not entail "breaking" of the underlying assumptions on which it is based (Ambos and Birkinshaw 2010). These initial responses take the form of either *IT governance force-fitting* or *IT governance bypassing* and constitute an aspect of IT consumerization wherein everyone's IT beliefs for the first time influence IT-related activities of managers.

IT governance force-fitting introduces changes to the existing functional IT governance framework to accommodate the changing behaviors of workers throughout the organization but does so in a peripheral evolutionary manner. We find that the changes typically affect the *focus* dimension of functional IT governance (what to govern; see Table 2) and involve extending the range of allowed technology artifacts and activities beyond the IT resources closely controlled by the firm. In our case, implementation of the BYOD policy offers a clear example of IT governance force-fitting. By introducing a modified set of rules and policies allowing for the restricted employee use of consumer technologies, IT managers sought to strike a delicate balance between accommodating the changing expectations of consumer-workers and preserving the functional IT governance status quo. Prior studies on IT consumerization offer evidence of similar managerial responses, particularly in regard to consumer-workers, arguing that organizations seek to balance the benefits and risks of BYOD by "regulating" their practices (Leclercq-Vandelannoitte 2015) often via reactionary and top-down approaches aimed at preserving the status quo (Jarrahi et al. 2017).

IT governance bypassing achieves adaptation by allowing select worker groups to engage, within a predefined scope of activities, in IT-related behaviors that clearly lie outside of the repertoire stipulated by functional IT governance. We find that similar to IT governance force-fitting, bypassing also constitutes an incremental evolutionary change to the existing functional IT governance framework for it only modifies one of its dimensions, the *scope* dimension (who to govern; see Table 2). The scope is altered by offering partial relief to select worker groups from the accountability and control prescribed by functional IT governance. In our case, bypassing was evident in the establishment of the special regime wherein a few groups of workers were able to develop IT

solutions by collaborating directly with customers and external partners to respond swiftly to the evolving demands of consumer-customers. The current literature implicitly acknowledges the possibility of bypassing in the context of IT consumerization by suggesting that, when firms expect significant benefits from BYOD, they may deliberately overlook its risks (Leclercq-Vandelannoitte 2015) by "weaving policies" to allow for organic and bottom-up change (Jarrahi et al. 2017). However, once again, the focus remains exclusively on the influence of consumer-workers, while that of consumer-customers is being largely overlooked. Based on the discussion above, we propose

Proposition 2: *Changes in the behaviors of workers enacting everyone's IT that lie outside the repertoire stipulated by functional IT governance will likely trigger IT governance force-fitting or bypassing as initial responses.*

As discussed above, our findings suggest that the enactment of everyone's IT by consumer-workers and consumer-customers alters the IT-related activities of workers in a manner that creates substantial discrepancies between the actual behaviors of workers in using IT and those prescribed by functional IT governance. We refer to these discrepancies as IT governance misalignments and report, based on the case data, that the misalignments often spur clashes between workers and managers. The extant literature corroborates this view by observing that placing

empowered individuals into a strictly regulated IT environment will drive them away from the IT department and towards their own IT solutions and inevitably to noncompliance (Györy et al. 2012, p. 1).

Similarly, it was shown that empowered workers or "IT champions" (Beath 1991) plagued with organizational inertia and struggling to respond to new demands of consumer-customers may take a pragmatic approach and enact new behaviors that clash with existing policies and norms (Jarrahi et al. 2017).

The accumulation of misalignments across the organization, and the corresponding ramp-up of force-fitting and bypassing, elevate awareness of the discrepancies among business and IT managers and, as observed in our case study, lead to a collective cognitive dissonance (Festinger 1957). Prior management studies showed that cognitive dissonance between the existing interpretive scheme held by managers and the emerging reality plays a crucial role in spurring revolutionary transitions in the deep structure (Ambos and Birkinshaw

2010). A related argument in the IS literature suggests that perception transformations concerning the role of IS in an organization act as an important trigger for a revolutionary change of the strategic IS management profile (Sabherwal et al. 2001) and the IS function profile (Guillemette and Paré 2012b). Integrating our findings with these prior insights, we posit that an unresolved collective cognitive dissonance by managers in the context of IT consumerization triggers a revolutionary transformation of functional IT governance.

In our case, managers experienced collective cognitive dissonance due to contradictions between the assumptions of functional IT governance (see Table 2) and key tenets of everyone's IT beliefs (see Figure 1), which grew increasingly salient in shaping worker behaviors in the organization. In particular, while everyone's IT beliefs render IT access as democratized (i.e., characterized by common availability and low complexity), functional IT governance views it as exclusive (i.e., IT assets are controlled by the firm and require specialized expertise due to high complexity). Similarly, the portrayal of IT use through the lens of everyone's IT beliefs as individualized (i.e., personalized, seamless, and joyful) clashes with the view embodied in functional governance that IT use must be prescribed through a complex web of formal policies and procedures.

However, we find that not all IT governance misalignments lead to a type of cognitive dissonance that triggers the fundamental redesign (Sabherwal et al. 2001) or frame-breaking (Ambos and Birkinshaw 2010) of the core assumptions of functional IT governance by managers. In particular, cognitive dissonance caused by governance misalignments that stem from the enactment of everyone's IT by consumer-workers (scenario A) is often resolved without such redesign; however, cognitive dissonance caused by IT governance misalignments that stem from the enactment of everyone's IT beliefs by consumer-customers (scenario B) typically requires it. We explain our reasoning below.

In scenario A, the cognitive dissonance experienced by managers is typically contained and ultimately resolved through the local adaptation responses of force-fitting and bypassing. In the case of GlobalBank, the introduction of the BYOD policy reinforced key assumptions of functional IT governance, such as those of controlled IT access and prescribed IT use, allowing only for minor modifications in the workers' behavior of using IT. Therefore, this act of IT governance force-fitting effectively transferred the state of cognitive dissonance from managers to workers, who were deeply frustrated but needed to comply. In certain instances, where affected consumer-workers possess significant power in the organization, managers may choose to address

emerging IT governance misalignments through bypassing. Under this scenario, which we observed at GlobalBank (e.g., business executives demanding IT staff find a means to make iPhone use possible) and that is also evident in prior studies (Weiß and Leimeister 2014), a small number of consumer-workers are granted an exception to engage in behaviors of using IT that lie outside the formal norms and requirements. However, as these instances affect only a small number of consumer-workers in any given organization, including GlobalBank, the ensuing IT governance misalignments will not achieve sufficient scale to cause a severe cognitive dissonance by managers; thus, it will not trigger the revolution. Accordingly, we propose

Proposition 3a: *IT governance misalignments caused by the enactment of everyone's IT beliefs by consumer-workers will likely be resolved through IT governance force-fitting or bypassing and therefore not lead to the transformation of functional IT governance.*

In contrast, in scenario B, the cognitive dissonance experienced by managers cannot be resolved through local adaptation and leads to the frame-breaking revision of the core assumptions of functional IT governance. This finding is primarily because the vast market power of today's consumers (Gabriel et al. 2015; Zureik and Mowshowitz 2005) threatens the ability of nonresponding firms to obtain resources from the environment (Gersick 1991), thus breeding great anxiety among the firm's managers and spurring a protracted debate regarding how to avoid failure. Such anxiety, signaling high levels of cognitive dissonance, could be observed in the GlobalBank case. Indeed, senior managers described the environment as "completely chaotic" and "not organized." At least one senior manager in charge of customer experience departed the bank because of a deep frustration over the perceived inability to meet the demands of consumer-customers and prevent the rising churn rates.

As noted above, local adaptation responses of IT governance force-fitting and bypassing cannot resolve the cognitive dissonance growing among the firm's managers. While we did not directly observe instances of force-fitting in response to the enactment of everyone's IT beliefs by consumer-customers, we know from prior studies that the inability to establish appropriate governance mechanisms that embrace rather than control digital innovation only expedites organizational failure in meeting customer demands (Svahn et al. 2017). At the same time, IT governance bypassing, while offering short-term relief and aiding the organization's goal of exploring new opportunities through digital innovation (see Nambisan et al. 2017), similarly is insufficient for resolving

the disconnect between the expectations of the market, the collective consumer, and the core assumptions of functional IT governance shared by the firm's managers. As our case shows, the special regime groups at GlobalBank failed to engage the remainder of the organization to help scale new digital solutions as subunit managers resisted change seeking to "maintain a complex network of commitments and relationships" (Romanelli and Tushman 1994, p. 1144) encoded in the organization's IT governance framework. Thus, confronted with the inability to ignore demands of the consumer-customers, managers have but one choice to resolve the cognitive dissonance, to fundamentally revise the core assumptions of functional IT governance; thus, they set the organization on a path of revolutionary change along all three dimensions of the governance framework, *viz.*, focus, scope, and patterns. Therefore, we propose

Proposition 3b: *Accumulation of IT governance misalignments caused by the enactment of everyone's IT beliefs by consumer-customers will likely lead to the transformation of functional IT governance, requiring radical changes in its focus, scope, and patterns.*

Consistent with the punctuated equilibrium theory, our findings suggest that the unresolved cognitive dissonance acts as a trigger releasing significant energy to drive the deep structural change of functional IT governance (Ambos and Birkinshaw 2010; Guillemette and Paré 2012b). A variety of revolutionary period dynamics, including engagement of outsiders and shared learning of diverse organizational stakeholders, unfold to help advance fresh search activities by the managers (Gersick 1991). We observed many of these dynamics in our case as inputs into the fresh search efforts of senior managers at GlobalBank originating from a variety of internal sources (e.g., a boundary-spanning IT unit that actively engaged with the special regime business groups) and external sources (e.g., an external consulting firm specializing in bank automation that supported GlobalBank's initiative of building a digital services platform). Ultimately, a fresh search leads to the development of a critical insight suggesting that the new governance framework must be aligned with everyone's IT beliefs, which marks the point of perception transformation among the managers (Sabherwal et al. 2001) and provides a foundation for the institution of platform-based IT governance.

The transition from functional IT governance to platform-based governance indeed constitutes a revolutionary transformation for significant changes can be observed along all three dimensions of the governance framework, *viz.*, focus, scope, and patterns (see Table 2 and Table 3 for comparison).

The underlying assumptions of the emerging new deep structure, platform-based governance, in each of the three dimensions, exhibit clear connections to the key elements of everyone's IT beliefs. In particular, the assumption that IT governance *focus* centers on exploring flexible combinations of diverse digital technologies serves to legitimate and enable consumer beliefs that IT use must be personalized and embedded. This finding also echoes recent calls for an IT governance framework that allows for greater flexibility in IT-related activities to achieve strategic agility in meeting new customer demands for personalized experiences (Tiwana and Kim 2015).

Similarly, the assumption that IT governance *scope* allows for direct unmediated access to IT supports consumer beliefs that common availability and low complexity of technological solutions democratize IT access. Again, this finding is aligned with prior IT governance studies that point to the rise of digital technology and new delivery models as key drivers that defy the focal role of the IT function in managing IT delivery (Winkler and Brown 2013). What follows from this behavior is the need to bring business and IT knowledge and workers together to create business value for consumers (Peppard 2018).

Finally, the assumption that IT governance *patterns* are exercised by achieving coordination through platform design (e.g., standards, automation, and architecture) implies the integration of non-overt control mechanisms directly into the IT-related activities of workers; therefore, it aligns well with the consumer belief that technology must be seamlessly embedded into the everyday activities and contexts. Again, this finding connects to previous studies that suggest a possibility of governing *via* IT (Drnevich and Croson 2013) by establishing appropriate platform architecture design choices (Tiwana et al. 2010; Tiwana et al. 2013) and establishing enterprise architecture standards (Boh and Yellin 2006).

Such a fundamental revision of the underlying assumptions of IT governance leads to the dismantling of functional IT governance and the institution of a new platform-based governance framework. This development, in turn, removes the cognitive dissonance for managers and workers and leads to the new equilibrium period. Hence, we propose

Proposition 4: *If managers develop the critical insight that IT-related activities of workers must be aligned with consumer expectations rooted in everyone's IT beliefs, managers will likely dismantle functional IT governance and institute platform-based governance.*

Theoretical Implications and Future Research

Our research offers several theoretical contributions and implications for research on IT consumerization, IT governance, and digital transformation.

IT Consumerization

Our contribution to the IT consumerization literature (e.g., Leclercq-Vandelannoitte 2015) is a novel conceptualization of IT consumerization in organizations that invites and provides analytical tools for a much broader inquiry into the impact of the emerging consumer beliefs about IT access and use (i.e., everyone's IT) on a wide range of IT-related behaviors of workers and managers. In particular, our findings (see P1a/b in Figure 2) highlight that everyone's IT alters IT-related activities of workers in organizations through two distinct consumerization mechanisms, *viz.*, the enactment of everyone's IT by consumer-workers and consumer-customers, respectively, suggesting at least two important implications.

First, the extant literature views IT consumerization as the adoption of consumer devices and applications in the workforce (Harris et al. 2012). We argue that this perspective does not fully recognize an important development that today's workers increasingly become consumer-workers, that is, employees whose expectations and work practices are shaped by their experience with digital technologies in everyday life. Acknowledging this distinction is critical because it invites broadening the inquiry of IT consumerization beyond the organizational boundary. Indeed, while earlier studies characterize the collective dynamic of escalating engagement with consumer technologies as an organizational phenomenon (Mazmanian et al. 2013), our study highlights the need to consider the broader context in which such engagement originates, the context of digitalization in society (see Figure 2). IS scholars previously began to explore this broader context by examining the technology adoption in households (e.g., Brown et al. 2006), the ubiquitous computing era (e.g., Lyytinen and Yoo 2002; Niederman et al. 2016), and the fusion of IT within firms' environments (e.g., El Sawy 2003; Woodard et al. 2013). These efforts currently need to be integrated with studies of IT consumerization in organizations (e.g., French et al. 2014; Köffer et al. 2014; Ostermann et al. 2017) to better understand the antecedents, nature, and consequences of how workers "swap hats" with consumers to become consumer-workers.

Second, the IT consumerization literature (e.g., Harris et al. 2012) overlooks consumers as customers. We define

consumer-customers as clients whose expectations and interactions with the firm are shaped by their experiences with digital technologies in everyday life. Furthermore, we show that consumer-customers and consumer-workers develop the same set of shared everyone's IT beliefs, highlighting the blurring lines between consumption and production. Incorporating the consumer-customer, as this study advocates, completes the manager-worker-consumer triad and helps redirect scholarly attention from a narrow focus on how IT consumerization shapes the interactions between managers and workers (e.g., the investigation by Mazmanian et al. of the autonomy paradox) to a more holistic inquiry regarding the role of consumer technologies in ushering in more fundamental changes in organizations, such as the rise of consumer sovereignty (Gabriel et al. 2015) and the ensuing shift to the demand-side view on strategy (Priem et al. 2013). In the IS context, the triad view also invites fresh theorizing about how consumer empowerment (Zureik and Mowshowitz 2005) shapes the diffusion of IT knowledge within the firm, ultimately leading a fundamental rethinking of organizational IT beyond the IT function (Peppard 2018).

IT Governance Transformation

Our theory contributes to the literature by establishing a theoretical relationship between IT consumerization and IT governance change. We show that such change follows a punctuated equilibrium trajectory (Ambos and Birkinshaw 2010; Eldredge and Gould 1972; Gersick 1991; Romanelli and Tushman 1994; Tushman and Anderson 1986; Tushman et al. 1986; Tushman and Romanelli 1985) and offer novel insights into the inner workings and contextual drivers of the transformational process.

Addressing the implications of P2 in our model (see Figure 2), we identify IT governance bypassing and force-fitting as important adaptation dynamics that precede the revolutionary transformation of IT governance. In previous studies, force-fitting was associated with IT department-user conflicts and stakeholder attempts to reinforce their role and purpose (Koch et al. 2014; Markus and Bjørn-Andersen 1987) through reactionary and top-down responses to IT consumerization (Jarrahi et al. 2017). Conversely, bypassing was characterized as a pragmatic and bottom-up response (Jarrahi et al. 2017) and discussed in the context of the increased workplace autonomy, the flexibility afforded by digital technology, and the enactment of digital innovation practices by empowered agents (Beath 1991; Behrens 2009; Lyytinen and Newman 2015; Quinn et al. 1996). Our research builds upon and extends these prior studies by highlighting that both bypassing and force-fitting lead to misalignments between the actual behaviors of workers in using IT and those prescribed by

functional IT governance. In future work, it would be useful to unpack the organizational tensions arising in the context of IT governance bypassing and force-fitting (e.g., convenience versus security and IT-based exploration versus exploitation) because their resolution plays a key role in fomenting or preventing radical transformation of the organization's deep structure.

Another key finding of our study, captured in P3a and P3b, posits that not all IT governance misalignments lead to a radical transformation of IT governance, that is, a transformation encompassing the focus, scope, and patterns dimensions of IT governance (see Tables 2 and 3). We argue that misalignments stemming from the enactment of everyone's IT by consumer-workers are an insufficient condition for the revolutionary change (see the dotted arrow next to P3a in Figure 2), while misalignment originating from the enactment of everyone's IT by consumer-customers are typically sufficient (see a solid arrow next to P3b in Figure 2). An important implication of this finding for research on IT governance (e.g., Tiwana and Kim 2015; Williams and Karahanna 2013; Wu et al. 2015) is that intra-organizational research designs (i.e., those limited to organizational practices and deep structure domains in Figure 2) will likely be insufficient in detecting or explaining revolutionary change in IT governance. To study such a change, scholars will need to extend their inquiry beyond the organizational boundary to encompass the organizational environment and, most importantly, the digitalization in society domains (see Figure 2).

The broadening of the inquiry into IT governance beyond the organizational boundary underlines another important implication of our theory. We observe that the enactment of everyone's IT by consumer-customers (organizational environment domain in Figure 2) creates unresolved cognitive dissonance among managers and eventually leads to a fundamental redesign (Sabherwal et al. 2001) or frame-breaking (Ambos and Birkinshaw 2010) of the assumptions underlying the IT governance framework. This observation highlights the vast empowerment of consumers (Gabriel et al. 2015; Zureik and Mowshowitz 2005) and suggests that an organization's IT governance framework (deep structure domain in Figure 2) must be aligned not only with managerial objectives, but also with shared beliefs regarding IT access and use held by consumers (digitalization in society domain in Figure 2).

This new type of alignment suggested in P4 of our model (see Figure 2) engages the nascent insight in the literature that digitalization of society and the distributed approach to innovation it ushers in inverts the firm's locus of value creation from internal to external (Priem et al. 2013). In other words, contemporary organizations must focus as much on

coordinating value creation activities outside the firm's boundary as they do on governing activities occurring within (Parker et al. 2017). Building upon this argument, we propose that future research extend our theory of IT governance transformation and explore the nature of IT governance alignment not only with everyone's IT beliefs held by consumer-workers and consumer-customers but also with a broader set of such beliefs enacted by developers as well as other digital innovation agents in the wider ecosystem of the firm (Selander et al. 2013).

Platform-Based Governance in Large Incumbent Organizations

The abovementioned need to align the IT governance framework with everyone's IT beliefs leads to a fundamental shift from functional IT governance (see Table 2) to platform-based governance (see Table 3), as captured in P4 of our model (see Figure 2). This finding indicates that platform-based governance, previously associated exclusively with digital ecosystems (e.g., Huber et al. 2017; Wareham et al. 2014), is now being incorporated into large incumbent organizations. Indeed, this development is to be expected because the blurring of the lines between consumption and production forces such organizations to partly shift the locus of value creation from inside to outside the firm. Several important implications concerning the three dimensions of IT governance follow.

First, our model highlights the need to expand scholarly inquiry with regard to the *focus* of IT governance beyond the current emphasis on proprietary and sourced IT assets to include the use, reuse, and combination of diverse digital services. The former view, based on the assumption that firms exploit IT assets they fully control (e.g., Sambamurthy and Zmud 1999), is being challenged today by the rise of everyone's IT, which calls for exploring the flexible combinations of digital technologies and resources from the external environment. The ensuing shifts, from proprietary and closed to shared and open digital artifacts, as well as from the goals of exploitation and efficiency to those of exploration and flexibility, have been observed elsewhere (e.g., Drnevich and Croson 2013; Svahn et al. 2017; Winkler and Brown 2013), reinforcing the need to revisit the focus of IT governance research.

Second, with regard to the *scope* of IT governance, previous studies tended to focus narrowly on the IT function (e.g., Brown and Magill 1998). Based on the underlying assumption of the reliance on the specialized expertise of IT professionals (e.g., Xue et al. 2008), this approach again runs counter to everyone's IT beliefs and the associated assump-

tion of direct, unmediated access to IT by non-IT staff. Accordingly, our work posits that the new scope of IT governance be centered on autonomous self-managing teams. A number of studies have previously made inroads in this direction (e.g., Tiwana and Kim 2015; Williams and Karahanna 2013); however, the continued diffusion of digital technologies and IT knowledge across the organization (Peppard 2018) calls for greater breadth and depth of such inquiries (Tiwana et al. 2013). Future research should explore how IT governance can enable greater organizational agility (Sambamurthy et al. 2003), that is, how to allow for on-demand reconfiguration of IT-related activities at the level of autonomous teams and, at the same time, to ensure alignment of these activities with organizational goals and objectives.

Third, we argue that the shifts in focus and scope of IT governance are typically accompanied by the introduction of new governance *patterns*, completing the revolutionary transformation of functional IT governance along all three dimensions. We have identified platform standards, automated processes, and multilayered architecture arrangements as the three main patterns of platform-based governance in large firms. These findings suggest the need to replace the increasingly outdated assumption of achieving coordination among multiple internal stakeholders through complex organizing (e.g., Xue et al. 2008) with the alternative assumption of achieving automated coordination among internal and external stakeholders through digital platform design (e.g., Yoo et al. 2010). By incorporating key ideas associated with digital platforms within incumbent firms, this view invites more studies at the intersection of IT governance, digital innovation (Yoo et al. 2010), and digital business strategy (Bharadwaj et al. 2013). Thus, Drnevich and Croson (2013) examined governance in the context of digital business strategy and highlighted the importance of governance *via* IT as opposed to governance *of* IT. Similarly, in a study of digital innovation in incumbent firms, Svahn et al. (2017) identified “innovation governance” that relied on new patterns to balance integration and control with flexibility and autonomy. In accordance with this body of work, we invite more studies into how patterns of IT governance can be aligned with digital innovation practices to help incumbents meet changing demands shaped by everyone’s IT.

Finally, our study points to the important differences between the establishment of platform-based governance in digital ecosystems and that inside large incumbent organizations. In particular, we show that, in the latter context, radical transformation in the IT governance framework is typically accompanied by a broader organizational transformation, often referred to as “digital transformation” (Kohli and Johnson 2011). For example, embedding patterns of platform-based governance (e.g., the use of APIs and other

standards) in the day-to-day activities of workers across functional silos necessitates fundamental changes in other elements of the firm’s deep structure, such as the organizing parts and activity patterns connecting various business and IT stakeholders. Accordingly, we recommend future research consider the transformation of IT governance as but one element of the broader organizational transformation (Besson and Rowe 2012) unleashed by everyday life computing (Yoo 2010; Yoo et al. 2010) and the rise of everyone’s IT, as well as investigate the impact of this transformation on organizational performance.

Implications for Practice

First, our work suggests that the IT-related behaviors of customers and workers are increasingly driven by the same set of consumer beliefs, which we termed everyone’s IT. Accordingly, managers need to align internal organizational norms with practices the workers have become accustomed to in their everyday lives. Establishing such a work environment will increase the attractiveness of the organization among younger workers and allow the firm to take full advantage of the workers’ deep understanding of consumer preferences to help create new digitally enabled products and services that customers value.

Second, our findings with regard to bypassing and force-fitting call for a strategic use of these adaptation dynamics by managers. Indeed, with full awareness that such dynamics are precursors to radical transformation, shrewd managers can deploy bypassing and force-fitting selectively to resolve local misalignments in IT practices to meet urgent business needs while preparing the organization for a more profound change.

Finally, we suggest that many incumbent firms will observe their existing functional IT governance frameworks being transformed into those based on platform-based governance. Thus, IT and business managers may want to use the key principles summarized in Table 3 as a high-level blueprint to help design frameworks that fit their respective organizations. In particular, our recommendations to broaden the focus of governance to include proprietary, partner-owned and public digital resources, to anchor the scope in distributed self-managing teams, and to rely on standards, automation, and platform architecture to embed governance in everyday work all offer actionable items for managers to utilize.

Limitations

Our case analysis suggests that IT governance transformation in the context of consumerization is accompanied by a trans-

formation of the IT function from the provider to broker or coordinator role (Guillemette and Paré 2012a). A limitation of our study is that we did not undertake a rigorous analysis of this interplay, which we propose for future research. An additional limitation is our choice of the punctuated equilibrium theory. Adopting competing theoretical lenses (as those highlighted in Appendix B) in future studies may lead to new additional insights regarding the functioning and outcomes of IT governance transformation.

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IT CONSUMERIZATION AND THE TRANSFORMATION OF IT GOVERNANCE

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Appendix A

IT Governance Literature Review

Table A1. Review of IT Governance Literature		
Study	Definition of IT Governance	Dimension of IT Governance
Olson, M. H., and Chervany, N. L. 1980. "The Relationship between Organizational Characteristics and the Structure of the Information Services Function," <i>MIS Quarterly</i> (4:2), pp. 57-68.	"What degree of control over the information services function should be exercised by its users, and how much control should be retained in a centralized department?" (p. 57)	Patterns: • Structural arrangements defining IT decision rights and accountabilities (structural arrangements)
King, J. L. 1983. "Centralized Versus Decentralized Computing: Organizational Considerations and Management Options," <i>Computing Surveys</i> (15:4), pp. 319-349.	"Centralization versus decentralization of control concerns the locus of decision-making activity in the organization. Centralization implies the concentration of decision-making power in a single person or small group; decentralization implies that decisions are made at various levels in the organizational hierarchy." (p. 321)	Patterns: • Structural arrangements
Brown, C. V. 1997. "Examining the Emergence of Hybrid IS Governance Solutions: Evidence from a Single Case Site," <i>Information Systems Research</i> (8:1), pp. 69-94.	"IS governance forms....The separation of decision-making authority for the management of systems operations from decision-making authority for the management of systems development" (p. 70)	Patterns: • Structural arrangements
Sambamurthy, V., and Zmud, R.W. 1999. "Arrangements for Information Technology Governance: A Theory of Multiple Contingencies," <i>MIS Quarterly</i> (23:2), pp. 261-290.	"IT governance arrangements ... represent an organization's IT-related authority patterns." (p. 262)	Patterns: • Structural arrangements

Table A1. Review of IT Governance Literature (Continued)		
Study	Definition of IT Governance	Dimension of IT Governance
Weill, P., and Ross, J. W. 2004. <i>IT Governance: How Top Performers Manage IT Decision Rights for Superior Results</i> , Boston: Harvard Business School Press.	"We define IT governance as specifying the decision rights and accountability framework to encourage desirable behavior in using IT" (p. 2)	Patterns: <ul style="list-style-type: none"> • Structural arrangements
Weill, P. 2004. "Don't Just Lead Govern: How Top-Performing Firms Govern IT," <i>MIS Quarterly Executive</i> (3:1), pp. 1-17.	"IT governance represents the framework for decision rights and accountabilities to encourage desirable behavior in the use of IT...governance is about systematically determining who makes each type of decision (a decision right), who has input to a decision (an input right) and how these people (or groups) are held accountable for their role." (p. 3)	Patterns: <ul style="list-style-type: none"> • Structural arrangements
Peterson, R. 2004. "Crafting Information Technology Governance," <i>Information Systems Management</i> (21:4), pp. 7-22.	"IT governance describes the distribution of IT decision-making rights and responsibilities among different stakeholders in the enterprise, and defines the procedures and mechanisms for making and monitoring strategic IT decisions." (p. 7)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes ensuring desirable access and use of IT in alignment with organizational needs (formal processes) • Relational mechanisms facilitating communication, coordination, and shared understanding between business and IT stakeholders (relational mechanisms)
Tanriverdi, H. 2006. "Performance Effects of Information Technology Synergies in Multibusiness Firms," <i>MIS Quarterly</i> (30:1), pp. 57-77.	"this study measured IT governance mode as a categorical variable assessing whether a multibusiness firm uses a centralized, decentralized, or hybrid locus of IT decision-making authority." (p. 64)	Patterns: <ul style="list-style-type: none"> • Structural arrangements
Boh, W. F., and Yellin, D. 2006. "Using Enterprise Architecture Standards in Managing Information Technology," <i>Journal of Management Information Systems</i> (23:3), pp. 163-207.	"We focus on horizontal IT governance mechanisms, which are mechanisms designed to facilitate cross-unit collaboration with regard to setting and using EA [Enterprise Architecture] standards. Setting EA standards is a task that requires coordination across business units, so as to increase the likelihood that the standards will be used and followed in the organization." (p. 168)	Focus: <ul style="list-style-type: none"> • Setting enterprise architecture standards Scope: <ul style="list-style-type: none"> • Business units Patterns: <ul style="list-style-type: none"> • Horizontal/Relational mechanisms facilitating communication, coordination, and shared understanding between business and IT stakeholders (horizontal/relational mechanisms)
Bowen, P. L., Cheung, M.-Y. D., and Rohde, F. H. 2007. "Enhancing IT Governance Practices: A Model and Case Study of an Organization's Efforts," <i>International Journal of Accounting Information Systems</i> (8:3), pp. 191-221.	"this paper views IT governance as the IT related decision making structure and methodologies implemented to plan, organize, and control IT activities." (p. 194).	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes
Xue, Y., Liang, H., and William, R. B. 2008. "Information Technology Governance in Information Technology Investment Decision Processes: The Impact of Investment Characteristics, External Environment, and Internal Context," <i>MIS Quarterly</i> (32:1), pp. 67-96.	"To ensure alignment with the firm's overall vision and goals, IT governance is the practice that allocates decision rights and establishes the accountability framework for IT investment decisions (Weill and Ross 2004)...the allocation of final decision rights is only part of IT governance; while decision rights may be allocated by the organization a priori, the actual patterns of IT governance are contingent on contextual factors." (p. 68)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes

Table A1. Review of IT Governance Literature (Continued)

Study	Definition of IT Governance	Dimension of IT Governance
De Haes, S., and Van Grembergen, W. 2009. "An Exploratory Study into IT Governance Implementations and its Impact on Business/IT Alignment," <i>Information Systems Management</i> (26:2), pp. 123-137.	"IT governance consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategy and objectives." (p. 123)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms
Tiwana, A., and Konsynski, B. 2010. "Complementarities Between Organizational IT Architecture and Governance Structure," <i>Information Systems Research</i> (21:2), pp. 288-304.	"IT governance decentralization: The degree to which IT specification and IT implementation decisions are made by the line functions vis-à-vis the IT department. IT specification decisions pertain to what business processes in the line functions IT must support, the associated constraints (schedule, budget, quality), objectives, priorities, and performance expectations (e.g., service levels). IT implementation decisions pertain to the methods, programming languages, platforms, definition of IT standards and policies, and IT sourcing." (p. 294)	Patterns: <ul style="list-style-type: none"> • Structural arrangements
Huang, R., Zmud, R. W., and Price, R. L. 2010. "Influencing the Effectiveness of IT Governance Practices through Steering Committees and Communication Policies," <i>European Journal of Information Systems</i> (19:3), pp. 288-302.	"The goal of IT governance is to direct and oversee an organization's IT-related decisions and actions such that desired behaviors and outcomes are realized. The design of IT governance systems involves three primary issues: determining which IT-related decisions are to be addressed through governance mechanisms, determining which individuals are allocated decision rights for these decisions and the nature of the decision rights, and determining how associated decision processes are to be orchestrated such that the appropriate individuals are involved and that these individuals understand the implications of possible actions to all stakeholders." (p. 289)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes
Tiwana, A., Konsynski, B., and Bush, A. A. 2010. "Platform Evolution: Coevolution of Platform Architecture, Governance, and Environmental Dynamics," <i>Information Systems Research</i> (21:4), pp. 675-687.	<p>"Design rules refers to the rules that platform owners expect module developers to obey to ensure interoperability with the rest of the ecosystem...platform owners face a challenge in how to make design rules stable enough to sufficiently constrain developers, yet versatile enough not to overly constrain them." (p. 679)</p> <p>"Decision rights partitioning refers to how decision-making authority is divided up between the platform owner and module developers." (p. 679)</p> <p>"Control refers to the formal and informal mechanisms implemented by a platform owner to encourage desirable behaviors by module developers, and vice versa." (p. 680)</p>	Patterns: <ul style="list-style-type: none"> • Architectural design rules • Decision rights partitioning • Formal and informal controls

Table A1. Review of IT Governance Literature (Continued)		
Study	Definition of IT Governance	Dimension of IT Governance
Prasad, A., Heales, J., and Green, p. 2010. "A Capabilities-Based Approach to Obtaining a Deeper Understanding of Information Technology Governance Effectiveness: Evidence from IT Steering Committees," <i>International Journal of Accounting Information Systems</i> (11), pp. 214-232.	"IT governance specifies the decision rights and accountability framework to encourage desirable behavior in the use of IT (Weill and Ross 2004). It also includes the foundational mechanisms in the form of the leadership, and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives" (p. 216).	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms
Xue, L., Ray, G., and Gu, B. 2011. "Environmental Uncertainty and IT Infrastructure Governance: A Curvilinear Relationship," <i>Information Systems Research</i> (22:2), pp. 389-399.	"IT governance refers to the pattern of decision making for IT-related activities such as strategic IT planning, IT infrastructure management, and application development." (p. 389)	Patterns: <ul style="list-style-type: none"> • Formal processes
Bradley, R. V., Byrd, T. A., Pridmore, J. L., Thrasher, E., Pratt, R. M., and Mbarika, V. W. 2012. "An Empirical Examination of Antecedents and Consequences of IT Governance in US Hospitals," <i>Journal of Information Technology</i> (27:2), pp. 156-177.	"The study defines IT governance as the capacity of top management to control the formulation and implementation of the IT strategy via organizational structures and processes that produce desirable behaviors, which will ensure that IT initiatives sustain and extend the organization's strategy and objectives." (p. 157)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes
Prasad, A., Green, P., and Heales, J. 2012. "On IT Governance Structures and Their Effectiveness in Collaborative Organizational Structures," <i>International Journal of Accounting Information Systems</i> (13:3), pp. 199-220.	"IT governance, focusing on information and IT assets, specifies the decision rights and accountability framework to encourage desirable behavior in the use of IT (Weill and Ross, 2004). This behavior relates to the form of the leadership, and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives (IT Governance Institute, 2007). IT governance essentially places structure around how organizations IT strategy aligns with business strategy. This IT-business alignment will ensure that organizations continue to achieve their strategies and goals, and implementing ways to evaluate its performance." (p. 201)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes
Grover, V., and Kohli, R. 2012. "Cocreating IT Value: New Capabilities and Metrics for Multifirm Environments," <i>MIS Quarterly</i> (36:1), pp. 225-232.	"The <i>governance layer</i> [of multi-firm value cocreation ecosystems] focuses on setting up a control structure that reduces transaction costs and incentivizes new value cocreation. This is typically done through contracts and formal economic safeguards. However, social and informal controls can also play a major role and are arguably less costly in facilitating cocreation of value. The governance layer can be viewed as the layer that integrates the assets, complementary capabilities, and knowledge exchange layers." (p. 228)	Focus: <ul style="list-style-type: none"> • New value cocreation activities and outcomes Scope: <ul style="list-style-type: none"> • Multiple developers and firms within a business/technology ecosystem Patterns: <ul style="list-style-type: none"> • Formal/contractual mechanisms • Social/informal mechanisms • Integration mechanisms

Table A1. Review of IT Governance Literature (Continued)

Study	Definition of IT Governance	Dimension of IT Governance
Tiwana, A., Konsynski, B., and Venkatraman, N. 2013. "Special Issue: Information Technology and Organizational Governance: The IT Governance Cube," <i>Journal of Management Information Systems</i> (30:3), pp. 7-12.	"Information technology (IT) has spawned previously infeasible forms of organizational governance, and these new logics have simultaneously amplified the need for effective IT governance...emergent governance arrangements have altered the conventional notions of organizational boundaries...such IT governance arrangements defy conventional dichotomizations such as centralization/ decentralization or insourcing/outsourcing of IT activities...the IT Governance Cube...offers a simple framework for broadening the research conversation. It encompasses three dimensions along which IT governance research can be positioned." (p. 7-8)	Focus: <ul style="list-style-type: none"> • IT artifacts • Content • Stakeholders • Scope: • Project • Firm • Ecosystem • Patterns: • Decision rights • Control • Architecture
Williams, C. K., and Karahanna, E. 2013. "Causal Explanation in the Coordinating Process: A Critical Realist Case Study of Federated IT Governance Structures," <i>MIS Quarterly</i> (37:3), pp. 933-964.	<p>"Our research...suggests that <i>governing</i> is a negotiated coordinating process that unfolds over time and that governance structures are themselves evolving and negotiated." (p. 961)</p> <p>The consensus-making mechanism "is the tendency of participants to engage in the creation of common meanings and shared understanding for what the coordinating effort is to accomplish, how the purpose is to be accomplished, and the language used to accomplish these." (p. 952)</p> <p>The unit-aligning mechanism "refers to the tendency of autonomous units to engage in, or to resist, processes that bring unit and enterprise objectives and resource allocations into alignment." (p. 953)</p>	Focus: <ul style="list-style-type: none"> • Shared core services and central IT investments • Customer IT services and spending Scope: <ul style="list-style-type: none"> • Central IT function • Autonomous units Patterns: <ul style="list-style-type: none"> • Horizontal/Relational mechanisms • Negotiating formal processes of aligning units with organizational needs
Tallon, P. P., Ramirez, R. V., and Short, J. E. 2013. "The Information Artifact in IT Governance: Toward a Theory of Information Governance," <i>Journal of Management Information Systems</i> (30:3), pp. 141-178.	"We use a framework developed by Peterson (2004) to divide IT governance practices into three types: structural (practices for assigning responsibilities for supervising, directing, and planning IT governance), procedural (practices for shaping user behaviors through IT value analysis, cost control, and resource allocation), and relational (practices that shape involvement in IT governance through business-IT partnerships, IT knowledge sharing, idea exchange, communications, and conflict resolution)." (p. 144)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms
Winkler, T. J., and Brown, C. V. 2013. "Horizontal Allocation of Decision Rights for On-Premise Applications and Software-as-a-Service," <i>Journal of Management Information Systems</i> (30:3), pp. 13-48.	<p>"We define application governance as the locus of decision rights for a business application." (p. 17)</p> <p>"We define IT governance as the locus of application-related decision rights (i.e., on business application needs, IT investment, and IT architecture) at the level of the overall IT function." (p. 19)</p>	Focus: <ul style="list-style-type: none"> • Business applications • IT investments • IT architecture Scope: <ul style="list-style-type: none"> • Application owners • IT function Patterns: <ul style="list-style-type: none"> • Structural arrangements
Drnevich, P. L., and Croson, D. C. 2013. "Information Technology and Business-Level Strategy: Toward An Integrated Theoretical Perspective," <i>MIS Quarterly</i> (37:2), pp. 483-509.	There is a difference between "governance of IT" and "governance <i>via</i> IT, a business-strategy level issue." (p. 492)	Focus: <ul style="list-style-type: none"> • Business/IT strategy execution Scope: <ul style="list-style-type: none"> • Any organizational stakeholder Patterns: <ul style="list-style-type: none"> • Governance <i>via</i> IT

Table A1. Review of IT Governance Literature (Continued)		
Study	Definition of IT Governance	Dimension of IT Governance
Buchwald, A., Urbach, N., and Ahlemann, F. 2014. "Business Value through Controlled IT: Toward an Integrated Model of IT Governance Success and its Impact," <i>Journal of Information Technology</i> (29:2), pp. 128-147.	"[IT governance] as a responsibility of the board of directors and executive management" and "is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives" (p. 129)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms
Wareham, J., Fox, P. B., and Cano Giner, J. L. 2014. "Technology Ecosystem Governance," <i>Organization Science</i> (25:4), pp. 1195-1215.	"In technology ecosystems, we identify three main dimensions across which the stability–evolvability equilibrium must be managed: (i) outputs, (ii) actors, and (iii) identifications. For technology ecosystem governance, we argue as follows. <ul style="list-style-type: none"> • Stability and evolvability in outputs is achieved through (a) variance-reducing mechanisms to ensure standards and (b) variance-increasing mechanisms to generate variety. • Standard and variety in outputs is realised by actors whose actions and behaviour must be simultaneously controlled and autonomous. This is enabled by (c) variance-reducing mechanisms to control actors and (d) variance-increasing mechanisms to leverage the autonomy of actors for innovative responses to client requirements. • Achieving an appropriate balance between controlled and autonomous behaviour by actors is enabled by a combination of individual and collective identifications, where (e) collective identifications reduce undesirable variance toward contributions to the social goods of the ecosystem and (f) individual identifications increase desirable variance to encourage explorative and entrepreneurial responses." (p. 1199) 	Focus: <ul style="list-style-type: none"> • Executing technology ecosystem strategies Scope: <ul style="list-style-type: none"> • Multiple developers and firms within a business/technology ecosystem Patterns: <ul style="list-style-type: none"> • Achieving balance between stability and change/evolvability through combinations of various variance-reducing and variance-increasing mechanisms
Wu, S. P.-J., Straub, D. W., and Liang, T.-P. 2015. "How Information Technology Governance Mechanisms and Strategic Alignment Influence Organizational Performance: Insights from a Matched Survey of Business and IT Managers," <i>MIS Quarterly</i> (39:2), pp. 497-518.	"IT governance can be deployed via a mix of <i>structures, processes, and relational mechanisms</i> . Structures involve clearly defined roles and responsibilities and a set of IT/business committees such as IT steering committees and business strategy committees. Processes refer to formal processes of strategic decision making, planning, and monitoring for ensuring that IT policies are consistent with business needs ... Finally, relational mechanisms, which include business/IT interaction and shared learning and communication, are crucial to the IT governance framework." (p. 502)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms
Schlosser, F., Beimborn, D., Weitzel, T., and Wagner, H.-T. 2015. "Achieving Social Alignment between Business and IT—An Empirical Evaluation of the Efficacy of IT Governance Mechanisms," <i>Journal of Information Technology</i> (30:2), pp. 119-135.	"IT governance pertains to the locus of IT decision making authority covering organizational issues regarding differentiation and the division of responsibilities on the one hand, and integration mechanisms on the other...We distinguish between formal integration mechanisms concerning the formal organization structure (e.g., liaison function) and formal coordination as part of the way processes are organized (e.g., regular meetings); and informal integration mechanisms concerning the development of network relationships by supporting working toward a common goal and increasing dependency among team members (e.g., cross-functional events and cooperative activities)." (p. 121)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms

Table A1. Review of IT Governance Literature (Continued)		
Study	Definition of IT Governance	Dimension of IT Governance
Tiwana, A., and Kim, S. K. 2015. "Discriminating IT Governance," <i>Information Systems Research</i> (26:4), pp. 656-674.	"IT app governance refers to how decision rights for IT apps are divvied between the line functions and the IT unit...IT infrastructure governance refers to how decision rights for IT infrastructure decisions are divvied between the line functions and IT unit." (p. 660)	Focus: <ul style="list-style-type: none"> • IT applications • IT infrastructure Scope: <ul style="list-style-type: none"> • Business/line functions • IT unit/function Patterns: <ul style="list-style-type: none"> • Structural arrangements
Constantinides, P., and Barrett, M. 2015. "Information Infrastructure Development and Governance as Collective Action," <i>Information Systems Research</i> (26:1), pp. 40-56.	A polycentric approach to governing information infrastructures "is characterized by multiple governing units at differing scales rather than a monocentric unit. Each unit within a polycentric system exercises considerable independence to make norms and rules within a specific domain (such as a group of primary care centers, a regional government, or a national government). This translates into the nesting of governance into a broader network of institutions, in which governance is broken down into a series of layers. This distributes decision making across all stakeholders, with each layer dealing with similar types of issues but at a progressively larger scale and lesser level of detail." (p. 52)	Focus: <ul style="list-style-type: none"> • Developing a shared information infrastructure Scope: <ul style="list-style-type: none"> • Multiple units/stakeholders at differing scales/layers of a complex system Patterns: <ul style="list-style-type: none"> • A nested structure of distributed decision-making authorities across stakeholders and layers of the system
Dawson, G. S., Denford, J. S., Williams, C. K., Preston, D., and Desouza, K. C. 2016. "An Examination of Effective IT Governance in the Public Sector Using the Legal View of Agency Theory," <i>Journal of Management Information Systems</i> (33:4), pp. 1180-1208.	"IT governance...concentrates on transforming information technology to meet the current and future demands of the business as well as the needs of the business customer...how organizations define accountability for IT governance and how well they formalize and communicate it." (p. 1183)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms
Svahn, F., Mathiassen, L., and Lindgren, R. 2017. "Embracing Digital Innovation in Incumbent Firms: How Volvo Cars Managed Competing Concerns," <i>MIS Quarterly</i> (41:1), pp. 239-253.	" <i>Innovation governance: control versus flexibility.</i> Firms must develop managerial practices and systems that recognize creativity and differentiation at the expense of prevailing authority structures and integration arrangements. Accordingly, managers must negotiate a balance between control and flexibility to afford exploration of digital options." (p. 240)	Focus: <ul style="list-style-type: none"> • Managerial practices • Systems Scope: <ul style="list-style-type: none"> • Cross-functional and interorganizational IT/business app development groups Patterns: <ul style="list-style-type: none"> • Balancing integration/control and flexibility/autonomy
Benaroch, M., and Chernobai, A. 2017. "Operational IT Failures, IT Value Destruction, and Board-Level IT Governance Changes," <i>MIS Quarterly</i> (41:3), pp. 729-762.	"IT governance is...an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives." (p. 730)	Patterns: <ul style="list-style-type: none"> • Structural arrangements • Formal processes • Relational mechanisms
Huber, T. L., Kude, T., and Dibbern, J. 2017. "Governance Practices in Platform Ecosystems: Navigating Tensions Between Cocreated Value and Governance Costs," <i>Information Systems Research</i> (28:3), pp. 563-584.	"Governance is seen as a problem of designing effective ecosystem-wide mechanisms....In the context of enterprise software, such ecosystem-wide governance mechanisms include <i>rules</i> that uniformly regulate how and under what conditions complementors are granted access to the platform owner's resources as well as <i>values</i> that are supposed to serve as the guiding principles for cocreating value with complementors in the ecosystem." (p. 563)	Patterns: <ul style="list-style-type: none"> • Rules regulating access to platform resources • Values guiding cocreation of value

Appendix B

Meta-Theoretical Anchoring in Our Study

Grounded theory work must be done with an “open mind” but not with an “empty head” (Dey 1999).¹ Accordingly, a key guideline for grounded theory studies in IS suggests the need to “scale up” the emerging “low level theory” by relating it to the broader literature to increase its generalizability (Urquhart et al. 2010, p. 369). The focus is on “type ET generalizability,” that is, “generalizing from description to theory” (Lee and Baskerville 2003, p. 235). To elevate what initially is a more descriptive grounded theory to a mid-range level (a substantive grounded theory) and to sharpen researchers’ theoretical sensitivity (Glaser 1978), it is common to utilize a meta-theoretical lens (e.g., Gregory et al. 2015; Levina and Vaast 2008; Orlikowski 1993).

In this paper, we followed best practice recommendations for grounded theory research by (1) identifying and examining a novel yet poorly understood phenomenon (i.e., IT consumerization) by employing key principles and tools of engaged scholarship (Van de Ven 2007), case study research (Gerring 2007), and grounded theory (Glaser and Strauss 1967); (2) establishing a relationship between our emerging, initially more descriptive, theory and a substantive scholarly conversation (i.e., IT governance); and (3) drawing upon a meta-theoretical lens (i.e., punctuated equilibrium theory) to define the target contribution and achieve generalizability.

A defining moment in this process was the identification of the punctuated equilibrium theory (Gersick 1991) as a meta-theoretical lens to increase the generalizability of our explanation for how and why IT consumerization transforms IT governance. This process of meta-theoretical anchoring, in our case, was greatly aided by the valuable feedback provided by the review team.

Applying the heuristic of “immersing deeply” (into the field) yet “reading broadly” (across the IS and neighboring disciplines), we had chosen several competing meta-theoretical lenses according to the following criteria. All the evaluated lenses had to be of a “process meta-theory” type and focus on organizational change (Van de Ven and Poole 1995) insofar as the goal of our study was explaining the transformation of IT governance. In addition, the type of IS theory we aimed to develop was a theory for explaining. As suggested by Shirley Gregor, such theories typically focus on how and why phenomena occur, providing “explanations of how, when, where, and why events occurred ... giving rise to process-type theory” (Gregor 2006, p. 624).

The theories we ended up considering and contrasting were (1) situated change perspective (e.g., Orlikowski 1996), (2) punctuated equilibrium theory (e.g., Guillemette and Paré 2012), and (3) institutional theory (e.g., Mignerat and Rivard 2009, 2012). Besson and Rowe’s (2012) valuable overview of the alternative theoretical perspectives concerning IT-related organizational transformation provided additional guidance. Finally, prompted by the reviewer feedback, we also considered the dialectics theory (Benson 1977).

At the end of the evaluation process, we chose the punctuated equilibrium theory as a meta-theoretical lens that fit the patterns emerging from our data best. Several considerations contributed to this decision. First, transformation of IT governance in our case followed a “discontinuous, fast, and systemic” pathway (Besson and Rowe 2012, p. 104), pointing to a punctuated rather than situated, dialectical, or other type of evolutionary organizational change trajectory. The revolutionary transformation from functional IT governance to platform-based governance in our case unfolded in a relatively short time period of approximately 5 years, while the original equilibrium period of functional IT governance stretched over multiple decades, dating back to the historical establishment of the IT function at GlobalBank in the late 1970s.

Second, our emerging findings concerning the IT governance framework at GlobalBank supported by a comprehensive literature review (see Table A1) highlighted the usefulness of analyzing IT governance in terms of archetypes or “ideal profiles” (Greenwood and Hinings 1993). We defined three core dimensions of IT governance, *viz.*, focus, scope, and patterns, that captured much of the variation concerning IT governance considerations in our case study data as well as in the extant literature. The concept of archetype is closely linked to the punctuated equilibrium theory (Ambos and Birkinshaw 2010) in that incremental change is operationalized as relative minor shifts in isolated elements of the archetype, while revolutionary change encompasses deep shifts along all archetype dimensions (see Guillemette and Paré 2012; Sabherwal et al. 2001). Applying this lens, we were able to see that in our case the change was clearly “revolutionary” for we observed profound shifts along all three dimensions of the IT governance framework. This further solidified confidence in choosing punctuated equilibrium theory as a meta-lens with the best fit.

Finally, studies drawing on the punctuated equilibrium theory often identify “perception transformation” (i.e., shifts in shared beliefs, understandings, and interpretive schemas of the key stakeholders) as an important condition that sets off revolutionary transformation of the

¹We would like to thank an anonymous reviewer for pointing out this important consideration to us.

organization's deep structure (Ambos and Birkinshaw 2010; Guillemette and Paré 2012; Sabherwal et al. 2001). Our emerging grounded category of everyone's IT similarly pointed to the importance of shared beliefs and the ensuing enactment of these beliefs by customers and employees in creating a collective cognitive dissonance among managers at GlobalBank and, ultimately, leading to a radical IT governance transformation. Once again, adopting the punctuated equilibrium lens provided us with a significant lever to increase generalizability of our emerging findings.

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