

# THE STRATEGIC RELEVANCE OF IT-ENABLED ORGANIZATIONAL VIRTUES

*Research-in-Progress*

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## **Abstract**

*Inspired by recent calls for a greater infusion of ethics into business organizations, this research-in-progress paper proposes an ethical perspective to the development of organizational capabilities. Drawing upon Pavlou and El Sawy's (2010) recent work, it recognizes that organizations need both dynamic and improvisational capabilities in order to be successful. This paper proposes that certain ethical characteristics of organizations, notably organizational virtues, influence these dynamic and improvisational capabilities. The paper also recognizes the salience of IT, in terms of organizational IT affordances, in engendering such virtues. Specifically, certain core organizational IT affordances are theorized to influence the development of such organizational virtues. Overall, this paper contributes by articulating the strategic usefulness of organizational ethicality (in terms of virtues) and the important role IT plays in this mix. The theory presented here is the first step in this research and will guide the future empirical study.*

**Keywords:** Virtue Ethics, Organizational Virtues, Capabilities, IT affordances

## Introduction

The recent economic meltdown and spate of corporate scandals (e.g., Satyam Computer Services in 2009, and Lehman Brothers in 2010) have increased the relevance of research exploring the importance of ethics within business organizations (e.g., De Cremer et al. 2010). Ethics is relevant to organizations because arguably, it enhances organizational creativity, work processes, and adaptation and innovation (Dutton et al. 2010). The strategic relevance of ethics in improving economic performance has often been recognized in prior works (e.g. Godfrey 2005; Chatterjee et al. 2009a). As Culnan and Williams (2009) have aptly summarized, “ethics is good business” (p. 682).

In particular, the IS research community has also reiterated the need for focusing on ethical organization practices (e.g. Bryant et al., 2009). The development, implementation, and management of IT in today’s IT-enabled organizations carry significant ethical connotations (Chatterjee et al. 2009b; Mingers and Walsham, 2010). Therefore, IT management needs to engage in “ethical practices and priorities with responsibility, probity, and integrity” (Bryant et al. 2009, p. 785).

Business ethics scholars (e.g. Collier 1998; Wright and Goodstein 2007; Chun 2005; Solomon 2003; 2004) have argued that virtue ethics represents a promising and relevant lens for understanding organizational ethicality. Consequently there have been calls to explicate the notion, relevance, and implications of virtue ethics to organizations (e.g. Wright and Goodstein 2007; Moore and Beadle 2006). This research addresses this call by exploring the relationship between organizational virtues, organizational capabilities, and IT. Specifically, we focus on two research questions: 1) *what is the strategic relevance of organizational virtues to organizational capabilities?* and, 2) *how does IT influence such organizational virtues?*

As a first step, this research-in-progress paper develops the theory to guide further empirical work, and proceeds as follows. We first review the notion of organizational virtues and their strategic usefulness. Then, we review the concept of IT affordances (e.g., Yoo 2010). Next, we present our theoretical model. Finally, we conclude with the contribution of this research-in-progress paper.

## Literature Review

### ***Organizational Virtues and their Strategic Relevance***

Virtue ethics draws from the works of Aristotle (1985), who described certain characteristics or “virtues” (e.g., wisdom, courage, etc.) that entities should possess. Virtues can be best understood in the context of social communities, and can be described as a quality that is acquired and “*the possession and exercise of which tends to enable us to achieve those goods which are internal to [community of] practices and the lack of which effectively prevents us from achieving such goods*” (MacIntyre, 1985, p. 191). Conceptualizing organizations as such communities of practice, past research has attributed them with virtuous characteristics (Collier, 1998; Chun, 2005; Moberg, 1999), emphasizing the need for them to “conduct themselves as moral actors” (Paine, 2003, p. x) and be responsible for their actions (Gowri, 2007; Moberg, 1999; Moore, 2005). Virtues are also considered important for the well-being of a business organization (Crisp and Slote, 1997; Whetstone, 2001; Weaver, 2006) in terms of “profitability, productivity, innovation, quality, customer retention, and employee loyalty” (Caza et al., 2004, p. 174).

Recent research (e.g., Peterson and Seligman 2004; Chun 2005) delineates key virtues relevant to an organization. Notable amongst those organizational virtues are: *wisdom, courage, justice, and temperance* (these are defined later), representing the *core* virtues of Aristotle’s ethics (Dyck and Kleyson 2001; Solomon 1992). It is also important to understand that these virtues have multiple associated dimensions (Peterson and Seligman 2004; Chun 2005). This allows them to be relevant in wider contexts, and carry flexible connotations and implications. For example, the virtue of courage has a bravery dimension (more applicable in a military context) as also a “smart” dimension (Solomon 1992) - more applicable in a business context. This demonstrates the beauty and flexibility of the virtue-based approach to ethics (Flynn 2008).

We argue that organizational virtues are *strategically useful*, because 1) they are key to organizational excellence (Solomon 1992; Cameron 2003; Cameron 2010; Luthans et al. 2008; Cameron et al. 2004); 2) they provide a framework for the organization to advantageously differentiate itself from competition (Moberg, 1999; Solomon, 1992; Moore and Beadle, 2006). Virtues are typically functions of the situation (Ross and Nisbett 1991; Merritt 2000) - they are therefore adaptive and acquire different connotations in different contexts. This makes them *malleable, dynamic, and flexible* enough to fit into the changing environments both within and external to the organizations (Solomon, 2004; Arjoon, 2000). Virtues, due to their adaptability to both homogeneity (within a context) and heterogeneity (different connotations across multiple contexts) (Heugens et al. 2008), help organizations develop strategic capabilities to compete in the modern business environment, which is characterized by dynamic changes (Huy 2002).

### ***IT Affordances and Organizational Virtues***

Given that IT “is the “glue” that binds the enterprise together, and has an impact on every aspect of organizational life” (Agarwal and Lucas 2005, p. 390), we contend that IT has an important role to play in the development of organizational virtues. Virtues are defined within a community of practice (COP) and it is important to note that when organizations develop virtues, they behave as COPs (Moore and Beadle 2006; Thompson 2005). Existing literature has identified three primary features of organizational COPs: 1) The existence of a *knowledge domain* (Wenger et al. 2002; Thompson 2005); 2) The existence of *cooperation and collaboration* (Brown and Duguid 1991; Brown and Duguid 1998); and 3) the *management of processes* within the COP (Adler and Heckscher 2006; Lave and Wegner 1991; Wenger 1998; 2000; Roberts 2006; Wenger et al. 2002). One can argue that the “virtuous characteristics” of the COP are generated by leveraging these features. These features therefore present an avenue to gain insight about the role of IT vis-à-vis organizational virtues. In other words, characteristics of IT that enable these features could very well be instrumental in developing the organizational virtues within the COP.

A perspective that aligns itself readily with this line of argument is that of organizational IT affordances, which underpins the relevance of IT to organizations (e.g. Leonardi 2011; Zammuto et al. 2007; Markus and Silver 2008). IT affordances is defined as how the materiality of IT “favors, shapes, or invites, and at the same time constrains, a set of specific uses” within an organizational context (Zammuto et al., 2007, p. 752). These affordances arise at the confluence of social and material agencies of an organization (Leonardi 2011) - at the interaction of IT and “organizational expertise, processes, procedures, controls, and social capacities” (Zammuto et al. 2007, p. 752). They represent “what the [IT] artifact allows humans to do” (Yoo 2010, p. 222). Within the scope of our investigation, the implication is that IT affordances allow the promotion of critical features of the organizational COP- thereby generating certain virtuous characteristics.

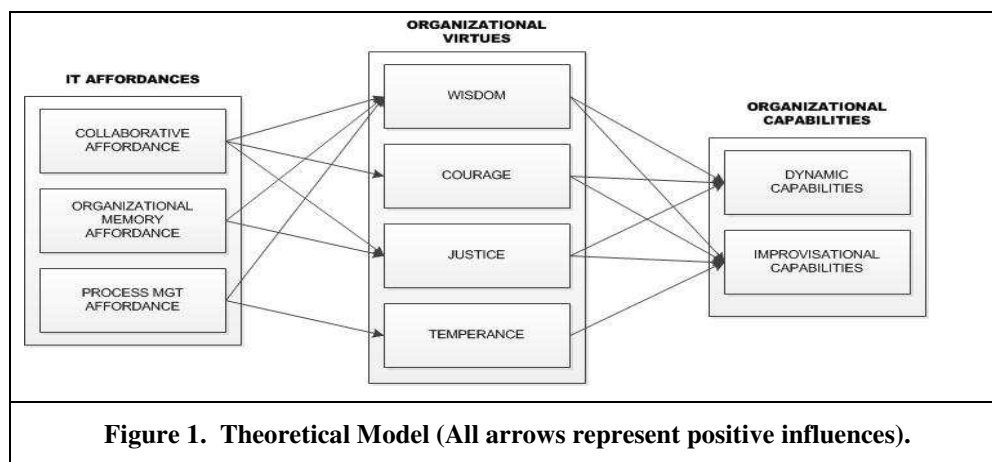
Reviewing the literature, we find three core IT affordances that align nicely with the salient characteristics of the organizational COPs and thus arguably, influential in developing organizational virtues. They are 1) *organizational memory affordance*, which is the ability of IT to create, store, transform, refine, access, mobilize, apply, and exploit organizational knowledge (Pentland and Feldman 2007; Dodgson et al. 2007; Kane and Alavi 2007); 2) *collaborative affordance*, which is the ability of IT to instill cooperation amongst an organization, both collocated and virtually, on a one-to-one or a many-to-many basis (Zammuto et al. 2007); and 3) *process management affordance*, which is the ability to design, visualize, prioritize, and monitor work processes; and allocate and manage appropriate resources in order so as to achieve desired process outcomes (Zammuto et al. 2007; Pavlou and El Sawy 2010).

### **Theorizing the influence of Virtues on Capabilities**

Virtues define the moral competence of the entity (Macaulay 2006; Haidt and Joseph 2007; Mele 2008), which in our case is the organization. Haidt and Joseph (2007) conceptualize virtues as abilities to perceive morally-relevant information in order to be fully responsive to one’s specific socio-moral context (Haidt and Joseph 2007). In other words, virtues define the *moral capabilities* of an organization. In addition to being moral capabilities the core strategic relevance of virtues lies in their ability to influence certain other capabilities (Bertland, 2009; Nussbaum, 2000; Merritt 2000; Buchholz and Rosenthal 2005). Aristotle argued that virtues are important insofar as they stimulate/enhance capabilities of their

possessor (Merritt 2000). For example, virtues have been argued to enhance the *ability* to counter organizational stress (Cameron 2003; Dutton et al. 2002) and increase an organization’s *ability* to respond to unexpected and challenging situations (Cameron 2003; Gittel 2000).

Building upon such perspectives, one of the fundamental premises of this research is that virtues (as moral capabilities) influence salient strategic capabilities organizations need to thrive in changing and turbulent environments. In other words, moral competence influences strategic competence. Pavlou and El Sawy (2010) note two distinct capabilities that organizations need to survive and prosper- dynamic and improvisational capabilities. Dynamic capabilities are “specific capabilities by which organizations reconfigure existing operational capabilities into new ones to better match the environment” (Pavlou and El Sawy, 2010, p. 444). Improvisational capabilities are those that enable organizations to react to market turbulence and uncertainty without formal planning in many cases (Pavlou and El Sawy, 2010). Given the space constraints, we encourage the reader to see Pavlou and El Sawy (2010) for an extended discussion on these capabilities. The strategic relevance of organizational virtues can be aptly showcased by exploring how they can enable these capabilities. In this section we theorize how organizational virtues influence both these strategic capabilities. Subsequently, we theorize how IT affordances influence organizational virtues. Figure 1 shows the entire theoretical model.



### Organizational Wisdom

Literature notes that “the judgment, selection and use of specific knowledge for a specific context is what we term organizational wisdom” (Bierly et al. 2000, p. 597) and it involves “the collection, transference, and integration of individuals’ wisdom and the use of institutional and social processes (e.g., structure, culture, leadership) for strategic action” (Kessler 2006, p. 297).

Organizational wisdom therefore helps an organization to pick up cues from the environment and proactively navigate courses of strategic action by anticipating ensuing challenges and outcomes (Barbuto and Wheeler 2006). Further, organizational wisdom, encompasses characteristics like open-mindedness (Peterson and Seligman 2004) which provides an organization with a “willingness to question current thinking and practice, to be receptive to emerging possibilities, to share ideas, and to consider differing perspectives” (Neill et al. 2007, p. 734) and thus helps actively scan the market environment (Day, 1994). Ultimately, the possession of this virtue enables an organization’s ability to sense, learn, and strategically act- key dimensions of dynamic capabilities (Tece 2007). Therefore:

#### P1. Organizational wisdom positively influences dynamic capabilities.

Improvisational capabilities embed the ability to address “urgent, unpredictable, and novel environmental situations” (Pavlou and El Sawy 2010, p. 443). We argue that wisdom greatly facilitates the ability of the organization to sustain itself in an environment of sudden change, competition, and uncertainty (Hays 2007). Organizational wisdom enables organizations to be competitive in “the realities of a business climate that is increasingly complex, diverse, fluid, and interdependent” (Kessler 2006, p. 297) and is

therefore key to the development of organizations' capability to "shape and reshape identity through the ongoing construction/reconstruction of self" (Brown and Starkey 2000, p. 113). Given that organizational improvisation involves simultaneous contemplation and action (Crossan et al. 2005; Weick 1996), we contend that wisdom influences an organization's ability to improvise and proactively deal with sudden environmental changes (Nonaka and Toyoma 2007). Therefore:

**P2. Organizational wisdom positively influences improvisational capabilities.**

***Organizational Courage***

In an organizational context, courage often means simply being smart and accepting challenges and risk of failure so as to achieve organizational goals (Killman et al. 2010; Solomon 1992). Courage subsumes characteristics such as persistence, zest, and goal-orientation (Sekerka et al. 2009; Chun 2005; Peterson and Seligman 2004).

Courage plays a key role in organizational learning - the ability to acquire and exploit knowledge. Learning can obviously be undertaken by an entity which is zestful and exudes excitement in learning and leveraging new knowledge. Organizations increasingly find themselves in a dynamic environment and needs to act "mindfully and appropriately" "despite the possible negative consequences" (Killman et al. (2010, p. 22). They therefore need to act courageously to better adapt to a competitive dynamic environment. Prior research has also argued that dynamic capabilities are enabled by organizations' *challenging* outmoded traditions and work practices (Gibson and Brikshaw 2004; Wang and Ahmed 2007) in order to "respond quickly to changes in the market and evolve rapidly in response to shifts in its business priorities" (Wang and Ahmed 2007, p. 37). It can be argued that challenging existing traditions can only occur in presence of courage. Therefore:

**P3. Organizational courage positively influences dynamic capabilities.**

"Improvising is a risky enterprise" (Kamoche et al., 2003, p., 2029) and "requires a culture of risk-taking and experimentation" (ibid, p., 2031), resulting in extemporization without formal planning (Pavlou and El Sawy, 2010). Such risk taking requires courage (Brown and Gioia, 2002). Further, courage represents a necessary condition for a trusting culture (Hosmer 1994), considered critical in an organization's ability to improvise (McKnight and Bontis 2002). Courage is the willingness to act in the face of risk of failure (Woodard and Pury 2007; Brown and Gioia 2002). Since organizational improvisation is essentially characterized by such possibilities, courage arguably, influences the ability of an organizational to contemplate improvisation and enact it. Therefore:

**P4. Organizational courage positively influences improvisational capabilities.**

***Organizational Justice***

Organizational justice comprises of distributive justice, procedural justice, and interactional justice (Greenberg and Colquitt 2005). Distributive justice focuses on the fairness of outcome distributions, procedural justice focuses on the fairness of organizational processes, and interactional justice refers to fairness of interpersonal relations (e.g. Greenberg and Colquitt 2005).

Organizational justice influences dynamic capabilities because it enables trust (Turel et al. 2008; Aryee et al. 2002), a key component of social capital (Leana and van Buren 1999; Nahapiet and Ghoshal 1998). Social capital in turn enables dynamic capabilities because it "enables resource management—a defining aspect of such a capability," allowing organizations "to acquire, integrate, recombine, and release resources" (Blyler and Coff 2003, p. 679). In essence, social capital provides environmental conditions for dynamic capabilities related to resource allocations and task assignments (Brandon and Hollingshead, 2004). This occurs through an "increased understanding of the social context" (Schneider 2002, p. 217), and social structures (e.g. of teams) considered critical for optimal allocation of tasks and resources (Kamoche et al. 2003). Given that organizational justice is a key enabler of social capital, we argue:

**P5: Organizational justice positively influences dynamic capabilities.**

Social capital also influences improvisational abilities (Vera and Crossan 2005) making organizational justice, in turn, salient to the same. Perceptions of procedural and interactional justice are known to be

influential in fostering a culture of change and experimentation (Kickul et al. 2002). These are key drivers of improvisational capabilities in an organization (El Sawy and Pavlou 2008).

In general, improvisational capabilities of organizations are rooted in social capital, because organizational improvisation is in many ways a “collaborative creation” depending upon relational trust, shared goals, shared responsibilities, and a shared common mind that incorporates relational aspects of a social system (Vera and Crossan 2005). Indeed, the social aspect of improvisation is firmly articulated by Boudreau and Robey (2005) who note that “human agency is also inherent in discussions of improvisation, which portray actors deviating creatively from plans” (p. 5). In a collective context, sensemaking, coordination, or integration in spontaneous manner- key characteristics of improvisation (Barrett 1998; Pavlou and El Sawy 2010) - cannot be achieved without the existence of collective social capital.

So, organizational justice, by enabling social capital within organizations (as argued earlier), also influences improvisational abilities. It is also worthwhile to note that Weick and Quinn (1999) argue that rebalancing- one key aspect of improvisation (Mirvis 1998) - involves engagement with justice. Therefore:

**P6: Organizational justice positively influences improvisational capabilities.**

### ***Organizational Temperance***

Organizational temperance (or self-control) is the critical ability to control emotions and impulses (Dyck and Kleyson, 2001) in situations of organizational stress and turbulence (Kirkpatrick and Locke, 1991). An example of such situations could be that of radical change within an organization (Huy, 1999), something often associated with organizational improvisation (Brown and Eisenhardt 1997; Plowman et al. 2007).

A critical aspect of managing radical change (i.e. improvisation) is the capability of an organization to retain some essence of stability (Huy 1999; 2002). This is because such “fundamental change in personnel, strategy, organizational identity, or established work roles and interests often triggers intense emotions” (Huy 2002, p. 32). In such radical change contexts, it thus becomes important to avoid extreme reactions (i.e. practice temperance) in order to optimally enact the improvisation (Mantere et al. 2007). Therefore, an organization that is characterized by temperance possesses the wherewithal to improvise because it is capable of not giving in to upheavals of anxiety, panic, and despair (Huy, 1999; 2002).

The well-known jazz metaphor for organizational improvisation (e.g. Barrett 1998; Weick 1998; Tsoukas and Chia 2002), also provides a relevant lens to understand the importance of organizational temperance to improvisational capabilities. In jazz improvisation, the amount of adjustment must be optimum- that is, while it deviates from a strict pattern to “incorporate new experiences” (Tsoukas and Chia 2002), it should still play out in a harmonious manner by balancing consonance and dissonance, to create the ultimate harmony (Mantere et al. 2007). Likewise, in the case of organizational improvisation, organizational temperance achieves this balance- by optimizing and balancing rapid change with continuity (Huy 2002). Therefore:

**P7: Organizational temperance positively influences improvisational capabilities.**

## **Theorizing the influence of IT Affordances on Virtues**

### ***Collaborative affordance***

Collaborative affordance refers to the ability of individuals to work together and share, convey, and integrate each other’s knowledge, often through virtual media (Zammuto et al. 2007). Collaborations can manifest in terms of virtual teams, online electronic networks of practice, or other new patterns of collaboration (ibid). Such collaboration can be embodied as many-to-many collaboration (e.g. via the internet), or one-to-many collaboration, through, for example, list servers (ibid).

This affordance promotes dialogue in virtual and distributed settings where members have not physically met each other (Tan et al. 2000). Such organizational dialogue, enabled by IT, can “serve to socialize individuals to a set of values and norms or engender collegial and *collaborative* [emphasis added]

relationships” (Kirsch 2004 p. 377). Barge and Little (2002) further suggest that such dialogue, represents a “communicative practice that enhances collective thinking” (p. 385). In fact, to engender wisdom, organizations need to engage in “conversational coordination” (ibid p. 386) and such dialogical collaborative endeavors are important in developing collective wisdom (Baltes and Staudinger 2000). Therefore, the collaborative affordance of IT, promotes “interaction in a collective setting that results in mutual learning upon which the organization can act” (Dixon 1994, p. 83). In other words, the collaborative affordance of IT facilitates sharing, contributing, and co-creating of information and values across virtual and networked organizations, thereby giving rise to collective wisdom (Dutton 2008; Surowiecki 2004). Therefore:

**P8: Collaborative affordance in organizations positively influences organizational wisdom**

The collaborative affordance of IT also has strong implications for organizational justice because IT-supported collaborations often “engenders the structural elements of procedural justice” (Kurland and Egan 1999 p. 506). In fact Kurland and Egan (1999) note that the information sharing, access, and dissemination related to organizational processes that characterize such interactions help engender both procedural and interactional justice.

Further, organizational justice is a shared perception (Greenberg and Colquitt 2005; Luo 2005) so, unless this perception is shared systematically across the organization, it would hard to create justice within the organizational collective. In other words, for justice perceptions to systematically arise within a collective entity such as an organization, there should be affordances that allow for seamless and efficient collaborative sharing of goals, perceptions, and information across the collective (Luo 2005). We posit that the collaborative affordance of IT, by allowing interactions that promote such collaborative sharing (especially in a virtual setting), influences this systematic implementation and perception of organizational justice. Therefore:

**P9: Collaborative affordance in organizations positively influences organizational justice.**

Finally, this particular IT affordance also influences courage. As noted by Kilmann et al. (2010), the observation and knowledge of other employees has a conducting effect on organizational members. For example, tales of courage influenced others to act in a similar way (Haidt, 2003). Arguably such tales of courage diffuse through organizations because individuals engage in IT-enabled interactions and collaboration with one another, especially in distributed and virtual settings. Sekerka and Bagozzi (2007) note that courage within organizations is often a function of subjective norms of referent others. In a virtual or distributed setting, knowledge of such subjective norms can be gathered only through the interactions that such an affordance provides. Therefore:

**P10: Collaborative affordance in organizations positively influences organizational courage.**

***Organizational Memory Affordance***

Organizational memory affordance describes the ability of IT to create, store, transform, refine, access, mobilize, apply, and exploit organizational knowledge (Pentland and Feldman 2007 ; Kane and Alavi 2007). The ability of IT to promote the creation and implementation of knowledge structures codified within an organizational memory (Zack 1999) plays an important role in the realization and active utilization of this affordance (Leonardi 2011).

This affordance has implications for organizational wisdom. Beirly et al. (2000, p. 597) define organizational wisdom as “the judgment, selection and use of specific knowledge for a specific context.” Rooney and McKenna (2008) highlight two important characteristics of wisdom: 1) it is based on observation 2) it is informed by past experience. Given that “organizational memory is the means by which knowledge is stored for future use” (Huber 1991, p. 90) it thus becomes important in the further use of this knowledge. If organizational knowledge is not created, mobilized, shared, refined, or stored, then it cannot be used in future to inculcate organizational wisdom and act *wisely*. Therefore:

**P11: Organizational memory affordance positively influences organizational wisdom.**

Continuing on a similar note, organizational justice is often related to reports or observations of fairness within an organizational setting (Kray and Lind 2002). Practice and perceptions of justice are also influenced by how organizational events and their resolutions are stored in the organizational memory and then recollected at a later point of time (Roberson and Stevens 2006). Therefore, this affordance, through its ability to store information, about past organizational events, leads to a promotion of organizational justice. In fact, especially when past events relate to organizational injustice, having them stored in the organizational memory allows the organization to not repeat the same mistakes (ibid). Simply put, IT-based organizational memory often incorporates organizational rules and procedures (Olivera 2000) which help implement organizational justice (Gilliland 1993). Therefore:

**P12: Organizational memory affordance positively influences organizational justice.**

### ***Process Management affordance***

This affordance is defined as the ability of IT to design, prioritize, coordinate, implement, and monitor work processes in order to enable action and decision making that lead to desired process outcomes (Zammuto et al. 2007; Pavlou and El Sawy 2006; 2010). It empowers organizations to assign and coordinate individuals and tasks in order to effectively achieve the final goal (Jennings 2000).

Managing organizational processes is a multifaceted endeavor (Hackman and Wageman 1995) and there are many ways in which this affordance influences organizational virtues. For example, this affordance allows the “ability to visualize the entire process in action from “end to end,” representing it through language, imagery, or physical artifacts to make decisions about next steps when alternative actions can be taken” (Zammuto et al. 2007, p. 753). Supported by technological developments such as business process management tools, this affordance helps provide real time work status, or an enterprise system and thus builds *business intelligence* (ibid). Business intelligence is an important constituent of organizational wisdom (Jones 2005). Again, this affordance helps makes sense of process interdependencies (Barki and Pinsonneault, 2005), thus fostering knowledge and thus organizational wisdom (Farmer et al., 2003; Drazin et al., 1999). It also involves the ability to combine/configure processes so as to create an environment for collective sensemaking and a sense of “what we are doing” (Zammuto et al., 2007). It thus balances, integrates, and coordinates processes and resources- salient issues related to organizational wisdom (Rooney and McKenna 2008). Therefore:

**P13: Process management affordance in organizations positively influences organizational wisdom.**

We argue that this affordance has other implications too. For example, the process management affordance also involves conducting IT simulated what-if scenarios that provides empowerment to challenge past assumptions (Zammuto et al. 2007)- thus paving the way for organizational change. It also regulates this change through an *optimization* of business processes, along with their constituents such as tools, resources, roles, and tasks (Zammuto et al. 2007)- thus allowing the organization to not overreact or under-react (i.e. be temperate) in volatile environments (Massey and Wu 2005). Therefore:

**P14: Process management affordance in organizations positively influences organizational temperance.**

### **Proposed Empirical Approach**

At this point, our methodological approach is still in a formative stage. Our proposed approach is a quantitative survey-based approach. This approach first entails developing/adapting/reusing measures for each construct based on existing literature. Measures for many of our constructs are available in prior literature. For example, measures for dynamic capabilities and improvisational capabilities can be adapted from the work of Pavlou and El Sawy (2010). Virtues at the organizational level, measures will be adapted/reused from prior works (e.g. Chun 2005; Cameron et al. 2004). Again, Lee (2010) provides guidance on how to measure IT affordances. Measures which are not directly present in existing literature will be developed and/or adapted using well documented instrument development processes (e.g. Moore and Benbasat 1991). Following the development of the survey instrument, we plan to administer the survey to an appropriate sample of organizational managers. The data analysis will be done using



structural equation modeling (SEM) techniques. Within this statistical framework, the measurement model will be evaluated to assess the validity of the instrument, while the structural model will provide the basis for testing our theory. The SEM goodness of fit metrics will be used to evaluate the overall appropriateness of the model. In addition a path analysis will be conducted to test the individual hypothesis. Significance of paths corresponding to the respective hypotheses will indicate statistical support for the hypothesis.

Alternately, one could also pursue a qualitative approach in the form of a positivist case study (Lee 1989; Dubé and Paré 2003). In this approach, semi-structured interviews of personnel (e.g. high level company executives, mid-level managers, and operational level employees) and documents (e.g. emails, organizational strategic communications) from a selected organization would form the basis of the empirical case data. Such data collection will be guided by conceptualization of our constructs based on existing literature. For example, definitions of IT affordances would draw on Leonard (2011) and definitions of dynamic and improvisational capabilities from the work of Pavlou and El Sawy (2010). Operational definitions of the dimensions of organizational virtues will be derived from the works such as Chun (2005) and Cameron et al. (2004). Our data analysis will be guided by Popper's (1985) logic of falsification and will procedurally follow the "pattern matching" recommended by Sarker and Lee (2003), wherein the aim would be to identify patterns in the empirical text to find corroborating or disconfirming evidence related the theoretical patterns proposed in our model.

## **Contributions to Theory and Practice**

A fundamental theoretical contribution of this research has been the development of a detailed theoretical model that explicitly positions organizational virtues as a key strategic element crucial to the success of an organization. In doing so, we not only reinforce existing theoretical arguments regarding the positive effects of developing an ethical organization (e.g. Dutton et al 2010; Godfrey 2005; Chatterjee et al. 2009a) but also extend such research by explicitly arguing how a specific ethical perspective (e.g. organizational virtues) can be influential in developing key strategic capabilities (e.g. dynamic and improvisational capabilities).

The second important contribution, especially from an IS viewpoint, is that we provide a perspective on how these key organizational virtues can themselves be developed by harnessing salient affordances provided by an organization's IT infrastructure. In fact, we believe that this particular aspect of our theorization also adds to research on the strategic relevance of IT by recognizing its continued importance to the development of organizational capabilities.

Finally, the third important contribution is that we put forward the perspective that organizational virtues represent a distinct set of organizational moral capabilities that are conceptually different from (yet related to) other strategic organizational capabilities (e.g. dynamic and improvisational capabilities). We believe that this understanding of organizational virtues provides a novel lens for examining the influence of organizational ethics on multiple other organizational aspects such as mergers & acquisitions, employee retrenchment, and organizational marketing (to name a few). Such investigations will enhance our understanding of the role of moral competence as it been a hitherto under-researched arena.

From a practical perspective our contribution lies in developing a framework that will allow organizations to appreciate the importance of cultivating virtues and realize how to properly implement and appropriate IT (e.g. by building an appropriate culture) to achieve that objective. The salience of such virtues for organizations is manifold. For example, virtues such as wisdom and temperance could guard against extreme reactions to challenging times (such as engaging in extreme layoffs as recourse to economic crisis). Again, organizations may market their virtues to promote a positive brand image to gain long term positive outcomes in terms of consumer relations (Van de Ven 2008). Also, virtues such as courage influence mergers & acquisitions (Chun 2009), while a focus on maintaining justice could calm the troubles related to post-merger situations (Seo and Hill 2005). Finally, since leaders influence the ethicality of organizations (Brown et al. 2005), organizational leaders need to cultivate virtues and guard against vices that destroy threaten such virtues (Moore and Beadle 2006).

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