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# The Role of Motivational Affordances and Institutional Logics in IS-enabled Organizational Sustainability Transformations - A Research Agenda

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# The Role of Motivational Affordances and Institutional Logics in IS-enabled Organizational Sustainability Transformations -
# A Research Agenda*

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## Abstract

Exisiting research has tried to explore how organizations can encourage their employees to act pro-environmentally in the workplace, but neglected the role of structures and insitutions. Given our emphasis on organizational sustainability transformations, we seek to explain factor that motivate employees to behave pro-environmental by addressing technological, institutional, and human factors. We thereby contribute to the call for bringing together affordance theory and insitutional logics. Drawing on this theoretical basis, we develop an eco-sustainability logic and elaborate on a research agenda concerning the interplay between different institutional logics and motivational affordances. We conclude with an outlook on how to tackle the emerging research questions.

## Keywords

*Green IS, pro-environmental behavior, organizational sustainability transformations, affordance theory, motivational affordances, institutional theory, institutional logics, research agenda*

# Introduction

Pro-environmentalism is a socially critical topic, since it seeks to protect the environment and its resources (Stern, 2000). As organizations increasingly take responsibility for the consequences of climate change and worldwide environmental degradation, organizational as well as employees' pro-environmental behavior plays an important role in the protection of the environment. Thus, how can organizations encourage their employees to act environmentally in the workplace? This paper seeks to address this question by examining how persuasive Information Systems (IS) can encourage employees to behave environmentally through an institutional lens.

*Pro-environmental behavior* is defined as all behaviors that change the environment's availability of materials or energy or alter the structure and dynamics of ecosystems or the biosphere, regardless of whether people are aware of or consider environmental impacts of specific behavior when making decisions (Stern 2000). Pro-environmental behavior at work includes different actions such as environmentally sound business travel, recycling, reduce printing, or conserving resources such as electricity or consumables (Lee et al. 1995). Employees' pro-environmental behavior is considered important, since it positively impacts key economic and environmental performance indicators, such as cost efficiency, growth, and the reduction of resource usage, waste, and emissions (Butler et al. 2015; Loepp and Betz 2015; Lubin and Esty 2010; Moon et al. 2014). Further, it fosters corporate social responsibility (Jones 1996).

We know from literature that IS are entangled with human activity as humans are seen as recursively interwoven with technology (Orlikowski 2007). However, to date, the literature has focused mainly on the interplay between human and material agency within idiosyncratic contexts, but has downplayed the roles of structures and institutions (Seidel and Berente 2013). Moreover, the studies by Bengtsson and Ågerfalk (2011) and Seidel et al. (2013) are among the few to have investigated the use of IS in organizational sustainability transformations.

We follow the idea of Seidel and Berente (2013) of affordances being enacted and embedded in a historical, cultural, and institutional context. But, given our emphasis on organizational sustainability transformations, we seek to explain the motivational factors of employees to act pro-environmentally. Our paper addresses technological, organizational, and human factors that strengthen pro-environmental behavior. It contributes to the call that researchers bring together institutional logics, sociomateriality, and affordance theory (Seidel and Berente 2013; Volkoff and Strong 2013). As sustainability becomes increasingly important for organizations, evermore companies refer to pro-environmental values, beliefs, and norms as guidelines for actions and the individual's identification in the organizational setting. These assumptions are an essential part of institutional logics (e.g., Lee and Lounsbury 2015; Thornton et al. 2005, 2012; Thornton and Ocasio 2008).

As research has shown, the usage of IS by individuals, groups, and organizations can help eco-sustainable practices to emerge and diffuse (e.g., Dedrick 2010; Kranz and Picot 2011; Watson et al. 2010). Even though pro-environmental values and beliefs might be supported by organizations, employees often do not adhere to these values, these values stand in conflict with personal goals, or employees do not profit from pro-environmental behavior. Therefore, motivating employees for pro-environmental behavior at the workplace is challenging. Since motivational affordances eventually determine whether or not employees actualize an IS' functional affordances, as they characterize whether and how users' motivational needs are supported by IS (Zhang 2008a, 2008b), they are considered important. Hence, satisfying users' motivational needs is a prerequisite for leveraging the potential of IS.

Investigating this interplay between technological, human, and organizational factors is especially important as existing IS research has often neglected the contextual dimensions of pro-environmental behavior (Loock et al. 2013; Seidel and Berente 2013). Additionally, the organizational literature has primarily focused on institutional logics and psychological factors, but has marginalized the potential of IS' influence on behavior (Battilana and Dorado 2010). Interestingly, also the psychological research on pro-environmental behavior has mainly focused on norms and goals, but neglected organization's institutional logics (Lo et al. 2012, 2014). The suggested conceptualization of our research enables a view to unravel seemingly contrary institutional logics and their relation to motivational affordances.

To analyze the potential of Green IS in encouraging employees' pro-environmental behavior, we respond to several calls in the Green IS literature demanding to actually apply existing Green IS theories (Gholami et

al. 2016), extend the range of influential Green IS affordances (Malhotra et al. 2013), point out practical relevance (Watson et al. 2010), and thereby contribute to tackle one of our society's biggest challenge (vom Brocke et al. 2013; Gholami et al. 2016; Loepp and Betz 2015; Seidel et al. 2013).

This paper proceeds as follows. First, we outline the conceptual background highlighting the theories of motivational affordances and institutional logics. Based on a thorough literature review, we present and elucidate on gaps regarding both theories in the context of organizational sustainability transformations. Additionally, we present a tentative conceptualization of an eco-sustainability logic, which is tailored to employees' pro-environmental behavior. In the following section, we elaborate on four research questions which for the first time combine the theories on motivational affordances and institutional logics. These research questions relate to the questions of whether specific motivational affordances work with or rather against prevailing logics in organizations. In the final section, we provide an outlook on how this research agenda can be addressed by future research. We hope that this research agenda will encourage research on organizational sustainability transformations at the intersection between IS, environmental psychology, and organization behavior and science. We present a first research approach to elaborate on these tensions between human, technological, and organizational factors.

## Conceptual Background

To elaborate on how persuasive IS can help encourage employees' pro-environmental behavior, our research contributes to Green IS by highlighting the role of motivational affordances in fostering pro-environmental behavior at the workplace. Because employee behavior is influenced by a large variety of individual as well as organizational factors, we draw on research on institutional logics which encompasses institutions and organizational behavior.

The literature provides evidence on motivational factors for pro-environmental behavior, possible motivational affordances to support desired pro-environmental behaviors, and enables one to define a corporation logic as well as to reason about a potential eco-sustainability logic.

### *Motivational Affordances in Green IS*

*Green IS* are an emerging research strand in IS research and addresses issues related to their usage by individuals, groups, organizations, and society to help eco-sustainable practices to emerge and diffuse (e.g., Dedrick 2010; Kranz and Picot 2011; Watson et al. 2010). They integrate and cooperate information technologies (IT), people, processes, and software to "support individual, organizational, or societal goals" (Kranz et al. 2015, p. 8). Green IS support pro-environmental, sustainable practices and decisions for individuals and organizations (e.g., Baskerville et al. 2016; Butler 2011; Carberry et al. 2015; Seidel et al. 2013). They have the potential to mitigate negative environmental impacts by triggering changes in individuals' customs (Dedrick 2010; Kranz and Picot 2011; Watson et al. 2010). In other words, Green IS enable one to change practices, sense-making processes, and business processes, which have impacts on the environment (Seidel et al. 2013). Green IS cover more than the research field of Green IT, which only focus on the improvement of hardware and related infrastructure to minimize the direct negative impacts on the environment (e.g., Kranz et al. 2015; Sarkis et al. 2013; Watson et al. 2010). Further, several studies have demonstrated IS' potential to positively influence individuals' private behavior (e.g., Loock et al. 2013; Watson et al. 2011) and individuals' behavior in an organizational setting (e.g., Bengtsson and Ågerfalk 2011; Butler 2011; Hilpert et al. 2013; Köpp et al. 2013; Marett et al. 2013; Seidel et al. 2013).

Bengtsson and Ågerfalk (2011) examined an organizational sustainability initiative that sought to decrease transport logistics in a municipality with the help of IS. The results implied that IS can be seen as an essential "change actant in sustainability innovation" (Bengtsson and Ågerfalk 2011, p. 96) if institutionalized behavior can be overcome. Most resistance emerged in situations in which the required changes conflict with prevailing, institutionalized practices and the organizational structure (Bengtsson and Ågerfalk 2011). Thus, they conclude that we need to thoroughly understand organizational routines and standards in order for IS to successfully improve organizational pro-environmental behavior. The study by Maret et al. (2013), for instance, sought to investigate the importance of personal benefits and institutional pressures for end-users in deciding whether to continue using Green IS. Their results imply normative pressures and individual benefits to be the main drivers of adoption. While these studies demonstrate the transformational power of Green IS, these examples do not convey how Green IS should be fundamentally

designed for sustainability projects in organizations. Finding broadly applicable design principles has been identified as a promising field for further research (Gholami et al. 2016; Malhotra et al. 2013; Watson et al. 2010).

To help design Green IS, we utilize the concept of affordances (Gibson 1986), which has the capacity to answer the question how Green IS provide its users with functionality (Baskerville et al. 2016). Generally, affordances relate to "the potential for behaviors associated with achieving an immediate concrete outcome and arising from the relation between an object (e.g., an Information Technology artifact) and a goal-oriented actor or actors" (Volkoff and Strong 2013, p. 823). For instance, a mobile app that allows organizations to connect employees for their everyday commute might be used in different ways by various actors according to their personal goals. One employee might see the shared commute as cost-efficient and might use the app to save money. Another might be convinced that car sharing is an effective possibility to protect the environment, and might use the app due to his personal belief in behaving pro-environmentally. Yet another actor might use the app to communicate with other employees, but not use the app as intended (organizing shared car rides). Thus, people can use an offered affordance in very different ways.

Investigating how IS can contribute to promoting environmentally sustainable work practices in organizations, Seidel et al.'s (2013) study focused on functional affordances of IS. Functional affordances are potential uses of IS that originate from a system's material properties that specify how users may be able to use the system, given users' capabilities and goals (Markus and Silver 2008). To actualize IS' affordances into actions, Seidel et al. (2013) note that employees must first recognize the functional affordances provided by an IS and then need to show problem awareness, motivation, and a positive attitude before using a system.

To foster motivation, Zhang (2008b) proposed 10 design principles for IS. These present a starting point to form the concept of *motivational affordances*, as the properties of an object that determine whether and how it can support one's motivational needs (Zhang 2008b). These design principles offer high-level and context-free knowledge about how to design IS with high motivational affordances (Markus et al. 2002; Pries-Heje and Baskerville 2008; Walls et al. 1992). In particular, the IS design principles relate to five motivational sources (Zhang 2008b), which target users' needs for (1) autonomy and self (psychological), (2) competence and feeling of achievement (cognitive), (3) relatedness to others (social and psychological), (4) power, leadership and followership (social and psychological) and (5) emotion and affect (emotional). Thus, motivational affordances are important, since they eventually determine whether or not employees actualize the functional affordances offered by an IS, as they characterize whether and how users' motivational needs are supported by IS (Zhang 2008a, 2008b). Thus, satisfying individual's motivational needs is a prerequisite for leveraging the potential of Green IS.

Particularly, the affordances based on the motivational needs of competence and achievement have shown potential to change individual's behavior in group collaboration systems (Jung et al. 2010). Competence, introduced as a basic need by White (1959), describes people's desire for increasingly effective interactions with their environment. This psychological need can be fulfilled by solving problems and completing tasks (De Young 2000). Thus, Jung et al. (2010) demonstrated satisfying this need via the use of IS that afford optimal challenges and positive feedback, building on the work of Reeve (2009) and Zhang (2008b). These affordances also satisfy the motivational need of achievement, a learnt social desire to do well in competitions with a task, the self, and against others (McClelland et al. 1953; Zhang 2008b).

The environmental psychology literature emphasizes that emotions play a key role in motivating pro-environmental behaviors (Lindenberg and Steg 2007). However, in the IS literature affordances related to the motivational needs of emotion and affect have been under-researched (Beaudry and Pinsonneault 2010). Affect generally describes moods, emotions, and feelings (Russell 2003). Emotions are a type of motive that invigorates and guides behavior (Zhang 2008b). Emotions can also reveal how well an individual adapts to a new situation (Zhang 2008b).

Since affordances are only potentials for action, several studies highlight that affordances need to be triggered (Volkoff and Strong 2013) or actualized (Strong et al. 2014) by a goal-oriented individual to achieve an action. To account for the actualization of affordances at the individual, team, and organizational level, a multi-affordance lens needs to be considered. This lens allows to investigate how affordances act together, rather than only analyzing each individually (Volkoff and Strong 2013). A multi affordance view is particularly important regarding organizational sustainability transformations since these initiatives seek

to improve individual pro-environmental behavior, which is motivated by a complex interplay of intrapersonal organizational factors (e.g., attitudes and values), interpersonal factors (e.g., social norms) as well as social comparisons, and external organizational factors (e.g., incentives, feasibility, and culture) (Gifford et al. 2011; Lülfs and Hahn 2013).

The literature on environment-related behaviors has often found that motivating people, especially in the long run, is difficult yet pivotal for the success of sustainability initiatives (Gifford et al. 2011; Lülfs and Hahn 2013; De Young 2000). However, the design and implementation of IS that support these initiatives with the help of motivational affordances has not yet been researched.

*RQ1: How can Green IS be designed to provide employee's motivational affordances that encourage pro-environmental behavior?*

## Institutional Logics and Eco-Sustainability

Based on the idea of institutional fields (Bourdieu 1984; DiMaggio and Powell 1991), Friedland and Alford (1991) introduce the concept of *institutional logics* into neo-institutional theory to intertwine individual practices and broad social institutions. An institutional logic describes the way a particular world works (Thornton and Ocasio 1999, 2008) and is commonly defined as "the socially constructed patterns of cultural symbols and material practices, assumptions, values, beliefs, and rules by which individuals and organizations produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality" (Thornton and Ocasio 2008, p. 804; see also Besharov and Smith 2014; Cai 2014; Glynn and Lounsbury 2005; Lee and Lounsbury 2015; Lok 2010; Thornton et al. 2012). Institutional logics direct actors' interests and define actors' identities, by drawing on how an organization, team, or individual sees themselves in a specific logic (Lok 2010). Thus, institutional logics are essential for actors' sense-making in social situations (Glynn and Lounsbury 2005). In other words, institutional logics represent the frames of reference that individuals and organizations employ in evaluating the world around them and everything that happens within it. They therefore play a major role in individual as well as organizational behavior.

Every organization can incorporate multiple institutions, and every individual can draw on different institutional logics, whether consistent or competing ones (Seidel and Berente 2013). When actions are in line with the values of an institutional logic, they are seen as legitimate in the context of this logic (Fiedler and Welpe 2010; Flickinger et al. 2013). Alternatively, when actions are in conflict with the behavior prescribed by an institutional logic, they are considered illegitimate (Fiedler and Welpe 2010; Flickinger et al. 2013). This finding leads to the conclusion that, to ensure the sustainable establishment of a desired behavior such as pro-environmentalism, this behavior needs to be in line with and legitimated by prevailing institutional logics.

Thornton et al.'s (2012) widely insinuated corporation logic can be used to draw on underlying assumptions, values, and beliefs concerning company characteristics, for instance bureaucracy, better market position, or hierarchical structures. A corporation logic incorporates hierarchy, the firm's market position, status, and bureaucratic roles (Thornton et al. 2012), and is therefore geared to market and business needs, following the idea of efficiency. This logic takes the firm's market position as its source of legitimacy and considers its board and top management to be sources of authority (Thornton et al. 2012; Thornton and Ocasio 2008). Within this logic, individuals identify themselves via their bureaucratic roles and take the norms from their employment in the corporation (Thornton et al. 2012). The attention one receives within the organization is based on one's status in the hierarchy (Thornton et al. 2012). Further, the organization's strategy is geared to increase the company's size and the diversification (Thornton et al. 2012). Informal control is enacted by the organization's culture (Thornton et al. 2012). All these characteristics support the notion of managerial capitalism (Thornton et al. 2012; Thornton and Ocasio 2008).

Concerning pro-environmental behavior within corporate organizations, very little is known about an institutional logic that supports this behavior. A broad variety of different institutional logics has been hypothesized over the past few years, for instance, managerial logics (Berente and Yoo 2012; Bévort and Suddaby 2016; Thornton and Ocasio 2008), commercial logics (Battilana and Dorado 2010; Gawer and Phillips 2013; Marquis and Lounsbury 2007; Pache and Santos 2013), cultural logics (Bhappu 2000; Bjerregaard and Jonasson 2014), or social and welfare logics (Battilana and Dorado 2010; Pache and Santos 2013). Although there are first attempts to develop a sustainability logic (Ahen and Zettinig 2015; Corbett

et al. 2015; Lee and Lounsbury 2015), a structured eco-sustainability logic that follows one of the most acknowledged and most comprehensive frameworks of institutional logics (Johansen and Waldorff 2015) - that of Thornton et al. (2012) - has not yet been established. Lee and Lounsbury's (2015) explanations of a pro-environmental logic and Corbett et al.'s (2015) characterization of an ecosystem project logic serve as helpful starting points to derive an eco-sustainability logic in line with Thornton et al.'s (2012) framework.

Based on different community logic types, Lee and Lounsbury (2015) show that these logics' salience have a significant effect on environmental practices and toxic waste reduction, and thereby conceptualize a pro-environmental logic. Since they use the idea of community as a starting point, they base their pro-environmental logic on shared beliefs and high intrinsic values of a pro-environmental community. They assume that this logic has its roots in a shared belief system and draws on the intrinsic value of reducing environmental pollution and protecting environmental goods (Lee and Lounsbury 2015). They highlight the roles of environmental movement organizations as non-profit organizations that seek to improve or preserve the environment in the formation of norms (Lee and Lounsbury 2015). Additionally, they illustrate that pro-environmental communities use these non-profit organizations to support their ideas and norms, and to force industrial facilities that use coercive and normative pressure to limit their environmental impacts (Lee and Lounsbury 2015). They further state that this logic often becomes manifest in civic activism, which is fostered by environmental organizations and their use of media attention (Lee and Lounsbury 2015).

Corbett et al. (2015) refer to corporate sustainability initiatives and the implementation of green projects in companies to develop an ecosystem project logic. They use parts of Thornton et al.'s (2012) category framework to describe their logic. As a basis (root metaphor), they highlight the environment's and its subsystems' states and well-being, drawing on the ecosystem (Corbett et al. 2015). They illustrate environmental impact as an ecosystem project's source of legitimacy, since organizations can be held more accountable for their behavior when there is high level of transparency in sustainability reporting exists (Corbett et al. 2015). Next, they draw on individuals' activities to introduce new processes or products, or to change them, leading to a higher positive impact (environmental championship) as a source of identity within their logic (Corbett et al. 2015). Corbett et al. (2015) consider the ecosystem as a source of authority within their ecosystem project logic, since they argue that organizations are not only obligated to mitigate changes in the ecosystem, but should also be able to adapt to changing ecological conditions. They introduce social movements, environmental organizations, and non-profit organizations as the basis of norms within their ecosystem project logic (Corbett et al. 2015). Furthermore, they characterize the economic system by the notion of ecological economics (Corbett et al. 2015). However, in their study, they do not consider Thornton et al.'s (2012) categories of attention, strategy, and informal control mechanisms.

Given the premature status of the development of an overarching eco-sustainability logic, there is a need to investigate characteristics of this logic. Based on a thorough literature review, we seek to develop an eco-sustainability logic and theorize on potential characteristics of this logic. Therefore, the following explanations should serve as a starting point for further research.

As an eco-sustainability logic focuses on the normative, overarching goal to protect the environment, we assume that the root metaphor is based on the notion of eco-sustainability as ideal. In line with Corbett et al. (2015), we argue that the environmental impacts of a particular behavior legitimize the behavior within an eco-sustainability logic. However, in relation to the source of authority within an eco-sustainability logic, we assume that non-profit organizations' roles are substituted by the commitments of organizations, teams, and individuals to pro-environmental attitudes and values. This is based on the notion that one's commitment to pro-environmental values provides others with the possibility to sanction environmentally unfriendly behavior. Following Corbett et al. (2015), we suppose that environmental championship is a source of identity within an eco-sustainability logic. Since we are interested in pro-environmental behavior, we define environmental championship as activities undertaken by individuals as attempts to enhance positive environmental impacts. We assume that, within an eco-sustainability logic, norms are predicated on one's participation in environmental friendly actions based on a conviction to protecting the environment. Since, to our best knowledge, there is as yet no reference to develop an eco-sustainability logic concerning the categories of attention, strategy, and informal control mechanisms (Thornton et al. 2012), we assume that an organization or an individual that strongly invests in pro-environmental behaviors receives more attention. Additionally, the overall strategy might be based on the notion to increase pro-environmental behavior, since this is assumed to be the appropriate behavior to protect the environment.

Since pro-environmental behavior in an eco-sustainability logic is based on the normative concern to protect the environment, we assume that the visibility of environmental impacts serves as an informal control mechanism. Following Corbett et al.'s (2015) notion of ecological economics, we indicate ecological capitalism as the economic system of eco-sustainability logic.

| Categories (Thornton et al. 2012) | Corporation Logic (Thornton et al. 2012) | Eco-sustainability Logic |
|---|---|---|
| **Root Metaphor** | Corporation as hierarchy | Eco-sustainability as ideal |
| **Sources of Legitimacy** | Market position of the firm | Environmental impacts |
| **Sources of Authority** | Board of directors, Top management | Commitment to pro-environmental values |
| **Sources of Identity** | Bureaucratic roles | Environmental championship |
| **Basis of Norms** | Employment in firm | Participation based on a conviction to protect the environment |
| **Basis of Attention** | Status in hierarchy | Investment in pro-environmental behavior |
| **Basis of Strategy** | Increase size and diversification of firm | Increase pro-environmental behavior |
| **Informal Control Mechanism** | Organization culture | Visibility of pro-environmental impacts |
| **Economic System** | Managerial capitalism | Ecological capitalism |

**Table 1. Eco-sustainability and Corporation Logic within Organizations**

As outlined above, Lee and Lounsbury's (2015) pro-environmental logic and Corbett et al.'s (2015) ecosystem project logic provide useful hints to develop an eco-sustainability logic, which can then be applied in the organizational context. However, coming from a community notion, Lee and Lounsbury (2015) focus on non-profit organizations as enablers and supporters of pro-environmental behaviors, which might not be the main trigger of pro-environmental behavior for profit-oriented organizations. Also, Corbett et al. (2015) only draw on a project logic for green information technology projects and do not provide characteristics for all categories of Thornton et al.'s (2012) framework. Thus, we can now only theorize on possible characteristics of an eco-sustainability logic. Following Thornton et al.'s (2012) proposition that the institutional logics categories and its characteristics should be tested by empirical research to qualify, modify, and verify them, further research is needed to elaborate on the characteristics of an eco-sustainability logic within organizations.

*RQ2: How is an eco-sustainability logic within organizations characterized?*

## A Research Agenda on the Interplay of Institutional Logics and Motivational Affordances

We hypothesize that in order for IS-enabled sustainability transformations to be effective, institutional logics and motivational affordances should be jointly investigated. To advance research on the potential interplay between institutional logics and motivational affordances in influencing pro-environmental behavior, we draw on the corporation and eco-sustainability logics as dominant logics in the context of organizational sustainability transformations, and on emotion- and affect-, as well as competence- and achievement-based IS affordances.

The corporation logic incorporates hierarchy, the firm's market position, status, and bureaucratic roles (Thornton et al. 2012) and is therefore geared towards market and business needs, following the idea of efficiency. All these characteristics support the notion of managerial capitalism (Thornton et al. 2012; Thornton and Ocasio 2008). A corporation steadily seeks to strengthen and diversify its market position by expanding its resources and size and by simultaneously reducing the overall costs (Thornton et al. 2012).

Employees perceive the continual need for higher efficiency and effectiveness, greater performance, and improved abilities in a corporation (Thornton et al. 2012; Thornton and Ocasio 2008). In the sustainability literature eco-efficiency and eco-effectiveness have been established as two broad sustainability goals (Dyllick and Hockerts 2002). Eco-efficiency can be accomplished by a progressive reduction of ecological impacts and resource intensity used throughout the life-cycle of IS or other products and services (DeSimone and Popoff 1997). The concept of eco-effectiveness goes beyond eco-efficiency by requiring a shift of mindset and transformation of business models (Drucker 2006; McDonough and Braungart 2002).

In a corporate context, Green IS that support measures to increase eco-efficiency are more likely to be introduced by executives (Butler and Daly 2009), for instance, the introduction of virtual meetings to lower travel costs (Seidel et al. 2014). The resulting lowered impact on the environment and cost reductions support corporate goals (Watson et al. 2010). This essential orientation towards efficiency, growth, and success can be facilitated with the help of IS affording motivational needs for competence and achievement in an organizational sustainability transformation (Zhang 2008a; see also Jung et al. 2010). For example, employees can be motivated by Green IS interventions where individuals need to solve personally tailored tasks (optimal challenges) and can see their immediate progress (positive and timely feedback) when acting pro-environmentally (Zhang 2008b). No study in Green IS or institutional theory has linked and explained the effects of competence and achievement affordances and the corporation logic on pro-environmental behavior in organizations. By examining this connection, we expect to gather insights on how to influence employee actions by satisfying their needs to strive economically and ecologically.

*RQ3: How do competence-based and achievement-based IS affordances interplay with a corporation logic in influencing pro-environmental behavior?*

The theorized eco-sustainability logic is based on the notion of a linkage between environmentalism and status, a commitment to pro-environmental values, and a personal investment in and visibility of pro-environmental impacts. Thus, knowledge on environmentally harmful or supportive behavior as well as of the own environmental impacts play important roles based on the normative idea to protect the environment. Drawing on the differentiation of eco-efficiency and eco-effectiveness (Dyllick and Hockerts 2002), the theorized eco-sustainability logic is more oriented towards eco-effectiveness, highlighting environmentalism as ideal.

An individual acting in an eco-sustainability logic tends to do what is best for the environment "instead of making the wrong things less bad" (McDonough and Braungart 2002, p. 76). These actions are motivated by a pro-environmental attitude of the individual and the knowledge about behavioral impacts (Meinhold and Malkus 2005). Thus, it can be assumed that based on an eco-sustainable attitude and the related knowledge, an individual inherently seeks to act in the best possible ways to save and care for the environment (Lindenberg and Steg 2007). By improving individuals' knowledge of sustainable behavior, normative green behavior - to care more for the environment – is fostered (Lindenberg and Steg 2007; Meinhold and Malkus 2005). External entities can also stimulate the need to gather more knowledge about pro-environmental behavior via voluntary benchmarking in a specific organization (Butler and Daly 2009). An IS can afford competence and achievement to motivate employees in advancing their knowledge of pro-environmental behavior (Zhang 2008b), for example, by completing a daily quest to guide specific behavior and thus overall to improve individuals' knowledge of, attitudes to, and impacts on the environment. Competence and achievement affordances foster the emergence of hierarchies by awarding and promoting better performance (Zhang 2008b). This might stand in conflict to the overarching ideal of eco-sustainability. To our best knowledge, no study has yet analyzed the relationship between IS affording competence and achievement and an eco-sustainability logic in an organization. Research on this gap could unveil strategies to strengthen normative green behaviors in organizations by addressing employees' psychological and social needs.

*RQ4: How do competence-based and achievement-based IS affordances interplay with an eco-sustainability logic in influencing pro-environmental behavior?*

To our best knowledge, there is no research on the relationship between a corporation logic oriented towards managerial and business efficiency that incorporates a hierarchy notion, and IS affording emotion and affect to influence pro-environmental behavior in organizations. Drawing on the idea of a corporation as hierarchy as root metaphor of the logic (Thornton et al. 2012), we can use Edenborough and Ashkanasy's (2002) and Cardon's (2008) studies to elaborate on how positive emotions can motivate individuals to

engage in pro-environmental behavior. Both studies highlight that leaders, such as superiors or managers, can stimulate their employees' emotions and spark their passion. If these emotions are framed appropriately, they might provide an individual with the feeling that it personally contributes to an organizational sustainability transformation. This then might lead to the individual's conviction that the own behavior is important (Cardon et al. 2009; Vallerand et al. 2003). Thus, we can assume that employees' acceptance and enactment of their superior's propositions and exemplification through their own behavior is supported by an enacted hierarchy notion. This can be facilitated by IS affording emotion and affect. We assume that the described interaction between the hierarchy notion of the corporation logic and emotion and affect is useful for an IS design leading to successful organizational sustainability transformations. For instance, an emotion-based and affect-based IS to support pro-environmental behavior within a corporation logic could include positive, emotional quotes from superiors in the IS design to trigger the desired pro-environmental behavior.

Even though hierarchy is an important characteristic of a corporation logic and provides a good example for the enactment of emotion and affect within IS, all other characteristics of the defined corporation logic remain under-researched. Thus, research is needed to elaborate on how a corporation logic interacts with emotion-based and affect-based IS affordances in influencing pro-environmental behavior. Further research should provide insights into important characteristics of a corporation logic, design principles for successful emotion-based and affect-based affordances IS, and possible tensions between the logic and the applied IS affordances.

*RQ5: How do emotion-based and affect-based IS affordances interplay with a corporation logic in influencing pro-environmental behavior?*

The theorized eco-sustainability logic incorporates environmental impacts and their visibility, environmental championship, and personal investment in pro-environmental behavior. Thus, it can be assumed that the logic includes organization's and an individual's openness to pro-environmental behavior. This is supported by the notion that the organization and the individual acting in this logic are subscribed to pro-environmental values. As research has shown, intrinsic motivation for sustainable behavior and emotional attachment are closely related and lead to a higher engagement in sustainability programs (Nilsson and Küller 2000; Seidel et al. 2010; Steg 2005; De Young 2000). Correspondingly, pro-environmental behavior and affect have been shown to stand in a close relationship (Smith et al. 1994). It has further become visible that pleasure and satisfaction play important roles in individuals' willingness to engage in pro-environmental behavior (Pelletier et al. 1998). Lindenberg and Steg (2007) highlight that pro-environmental behavior in organizations should be made more appealing by triggering positive emotions, such as happiness or joy, while environmentally harmful behaviors should be made less appealing by inducing negative emotions, such as sadness or anger.

Even though there is some general research on the influence of emotions and affect on pro-environmental behavior, research on organizational and technical factors that influence this relationship remain limited. To date, no study exist that considers the results of emotional influence on pro-environmental behavior in relation to an eco-sustainability logic, nor of IS as intervention methods in organizational sustainability transformations to strengthen pro-environmental behavior. Thus, further research is needed to provide insights into how emotion-based and affect-based IS can be used to increase pro-environmental behavior under a dominant eco-sustainability logic, how they need to be designed, taking this logic into consideration, and how they interact with this logic.

*RQ6: How do emotion-based and affect-based IS affordances interplay with an eco-sustainability logic in influencing pro-environmental behavior?*

## Outlook

To investigate these research questions, a multi-method approach seems to be appropriate including multiple qualitative and quantitative methods to provide a greater assortment of divergent and complementary views as well as stronger inferences than a single method approach (Venkatesh et al. 2013). An appropriate and promising research approach therefore includes interviews, randomized, controlled field experiments, and surveys to measure regularities across organizations on multiple levels. We think that a multi-method approach is particular suitable as it allows to understand idiosyncrasies of organizational, human, and technical factors, and to additionally provide further insights into existing and

enacted institutional logics within the organization. We think it is therefore appropriate to follow Morgan and Smircich's (1980) approach of description, explanation, and recommendation by first describing the tensions between institutional logics and motivational affordances in influencing pro-environmental behavior; second, by explaining potential reasons for this interplay; and third, by recommending solutions for how to solve these tensions in order to facilitate long-term pro-environmental behavior.

As institutional logics and motivational affordances can only be understood based on an individual's subjective experience background, an interpretive approach using explorative interviews is needed (Morgan and Smircich 1980). This enables one to understand how institutional logics within the organization are characterized, and which motivational sources and needs can be used to design IS that provide motivational affordances for supporting pro-environmental behaviors at the workplace. With the help of design science research, this understanding can then be transformed into a design theory for an appropriate IS. Design science research offers the possibilities to address practical problems or goals by attempting to develop, apply, and evaluate new technology (Gregor and Hevner 2013). Since technology and behavior are inseparable, a complementary research cycle between design science and behavioral science can address fundamental problems confronted in the productive use of information technology (Hevner et al. 2004). Design science research, as a research approach incorporating subjectivist and objectivist research elements (Morgan and Smircich 1980), can thereby help to explore, design, develop, and evaluate suitable motivational affordances.

To be able to recommend solutions for potential tensions between institutional logics and motivational affordances, based on the learnings from interviews, an objectivist approach should be included (Morgan and Smircich 1980). These tensions can be hypothesized and tested with randomized, controlled field experiments and surveys, leading to insights into how organizations can encourage their employees to behave pro-environmentally in the workplace.

We think that the outlined research approach allows for an understanding of underlying assumptions of pro-environmental behavior (Banerjee 2001; Gifford et al. 2011; Lo et al. 2012), the study of de facto instead of only self-reported pro-environmental behavior (Gifford et al. 2011; McKenzie-Mohr 2000), and the investigation of the concept of motivational IS affordances in an organizational setting, including different organizational levels (Strong et al. 2014; Volkoff and Strong 2013; Zammuto et al. 2007). Further, the research design helps to fill a gap regarding qualitative research on pro-environmental behavior (Lo et al. 2012) and enables further research on the influences of institutional logics at the individual level (Bévort and Suddaby 2016; Thornton 2015). Moreover, by drawing on different organizational settings, the research approach allows for inter-organizational comparisons as called for by Lo et al. (2012).

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