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Disentangling the Concept and Role of Continuous Change for IS Research – A Systematic Literature Review

by

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Abstract

To ensure their business success in the digital age, organizations must continuously adapt to an increasingly hypercompetitive environment. Although the topic of continuous change has been addressed by previous research, we perceive a lack of attention on continuous change as an appropriate organizational change approach to tackle the challenges of digital business in the IS domain. Thus, our research goal is to analyze what IS research can learn from extant literature on continuous organizational change in today's business environments. By carrying out a systematic literature review and analyzing 34 relevant papers, we identify and describe five major research streams which explore continuous change from different perspectives. Furthermore, we discuss links to well-known theoretical concepts to stimulate interdisciplinary exchange and we present a research agenda to transfer the identified results into the IS domain. Finally, we provide organizations with guidance to manage the challenges of digital business.

Keywords: Organizational change management, continuous change, dynamic capabilities, ambidexterity, agility, systematic literature review

Introduction

The fast development of digital technologies over the past decade provides organizations with new opportunities to extend and improve their business strategies and business models bringing IT to their core (Bharadwaj et al. 2013). Thereby, organizations are able to provide new, more customer-centric product and service portfolios based on digital technologies. However, using digital technologies and integrating them into the core of organizations' businesses not only provides new opportunities but also brings up new challenges. Organizations have to deal with fast developing digital technologies, increased velocity and interconnectivity caused by digitalization, emergence of disruptive threats, rapidly changing customer needs, as well as global competition and environmental turbulences (Chakravarty et al. 2013; El Sawy et al. 2010; Tanriverdi and Lim 2017). We consider these dynamics and the increasing complexity as two

important characteristics of today's hypercompetitive business environment (D'Aveni and Gunther 1994). Consequently, product and service life cycles shorten and competitive advantages erode very fast (El Sawy et al. 2010). Therefore, organizations can no longer rely on change initiatives transforming their organization from one stable state to another. Rather, modern organizations have to be able to continuously adapt to their fast changing environments to ensure their business success (Du and Pan 2016; Munduate and Bennebroek Gravenhorst 2003; Ngo-Ye and Ahsan 2005).

For the past decades, research on traditional (planned) change models dominated the organizational change and development literature, even though organizations experience a constant flux of their environment in their daily operation (Brown and Eisenhardt 1997; Orlikowski 1996). As researchers realized that traditional change programs are no longer appropriate to meet organizations' change demand and actual adaptation, the focus has shifted towards continuous change models. These models were identified as crucial success factors for organizations' long-term survival (Brown and Eisenhardt 1997; Du and Pan 2016). Continuous change is emergent, ongoing, and incremental, thus, enabling organizations to adapt rapidly and continuously to environmental conditions. Although continuous change has recently received more attention, further research on continuous change in organizations is still needed (Frahm and Brown 2007). In addition, we perceive a lack of attention on continuous change as an appropriate organizational change approach to tackle the challenges of digital business in the IS research domain. Therefore, we pose the following research question:

What can IS research learn from extant literature on continuous change of organizations in hypercompetitive environments?

By answering our research question, we address two research objectives. First, we aim at synthesizing the existing body of knowledge on continuous change to identify relevant insights for and links to IS research. Second, we want to elucidate relevant research gaps to facilitate future research on continuous change. Therefore, we conduct a systematic literature review (SLR). SLRs are an appropriate research approach to structure the existing body of knowledge of a research field and they "create a firm foundation for advancing knowledge" (Webster and Watson 2002, xiii). SLRs are essential to synthesize the breadth of knowledge from various research fields for the topic of interest (Paré et al. 2015; Wolfswinkel et al. 2013). Continuous change has conceptual roots in various research field, related to the organizational as well as to IS research domain. Therefore, we draw on Webster and Watson (2002) and broadly select scientific databases for our SLR to cover diverse research fields. This is also in line with the interdisciplinary nature and tradition of IS research (Agarwal and Lucas 2005; Benbasat and Zmud 2003). Based on a set of 34 eligible papers, we shed light on the key elements of continuous change in organizations. We identify and describe five major research streams, namely **cause** (i.e. the environmental and internal factors triggering continuous change), **process** (i.e. the underlying orchestration of continuous change in organizations), **governance** (i.e. the organizational design, decision rights, and routines which facilitate continuous change), **capabilities** (i.e. the organizational enablers of continuous change), and **results** (i.e. the implications of continuous change for organizations). Subsequently, we discuss links to well-known theoretical concepts, i.e. dynamic capabilities, ambidexterity, and agility, to stimulate the interdisciplinary exchange. Our paper concludes with a future research agenda to transfer the identified results on continuous change into the IS research domain. Finally, we provide organizations with additional guidance to manage the challenges of digital business.

Theoretical Foundations

Organizational Change – Episodic vs. Continuous Change

Organizational change has already been subject of research for the past decades. In the context of organizational development, change is "a set of behavioral science-based theories, values, strategies, and techniques aimed at the planned change of the organizational work setting for the purpose of enhancing individual development and improving organizational performance, through the alteration of organizational members' on-the-job behaviors" (Porras and Robertson 1992, p. 723). More general, change was defined as "alterations in the organization's routines and structures" (Dean et al. 1999, p. 4). Research distinguishes two major ways of organizational change: episodic change and continuous change (Weick and Quinn 1999).

Episodic change is often associated with the well-known three-staged change model by Lewin (1951): *unfreeze-transition-refreeze*. Episodic change occurs infrequent, discontinuous, and intentional and thus, is also known as planned change, radical change, technological imperative or punctuated equilibrium (Orlikowski 1996; Weick and Quinn 1999). In this context, organizations are perceived as operating in relatively stable business environments. Being in a punctuated equilibrium, organizations operate in long periods of stability without any change interventions so that deep inertial structures develop (Romanelli and Tushman 1994). However, business environments are not as stable as assumed owing to environmental shifts. For instance, changing customer needs, disruptive technological innovations or new competitors cause misalignment between organizations and their environment, which results in lower organizational performance (Håkonsson et al. 2013). To overcome this misalignment, organizations set up radical and revolutionary change programs to move from one equilibrium to another, changing their known organizational structures and routines. However, such radical changes programs are risky and stressful for organizations (Dean et al. 1999).

In contrast, performing continuous change enables organizations to quickly adapt to changing market conditions. Thus, organizations avoid the misalignment with their environment (Weick and Quinn 1999). Continuous change is ongoing, evolving, and cumulative. It is perceived as a process (Chakravarthy and Lorange 2007; Du and Pan 2016; Ford 2006) and is associated with continuous adaptations (Dean et al. 1999; Weick and Quinn 1999). Organizations that undergo continuous change are able to change rapidly and on an ongoing basis (Brown and Eisenhardt 1997). Continuous change is emergent and results from the day-to-day, micro-level human actions and operations of organizational members based on daily events in terms of improvisation, translation, and learning (Weick and Quinn 1999). As Orlikowski stated, change "is often realized through the ongoing variations which emerge frequently, even imperceptibly, in the slippage and improvisation of everyday activity" (Orlikowski 1996, pp. 88–89). Yet, the ongoing act of daily improvisation can lead to restructuring in the long-term (Weick and Quinn 1999). Further, "the idea of translation is one of a setting where there is continuous adoption and editing […] of ideas that bypass the apparatus of planned change and have their impact through the combination of fit with purposes at hand, institutional salience, and change" (Weick and Quinn 1999, p. 376). To translate ideas into the organization, the originator of the idea and the organizational members who imitate the related actions are important. Moreover, it is essential that these actions match to the purpose at hand and thus, can become part of the daily routine. Learning is another important aspect for organizations' continuous change (Weick and Quinn 1999). Considering that daily human actions are defined by a repertoire of actions and knowledge, learning means the change of the organizational members' response repertoire. Therefore, learning enables organizational members to enlarge, strengthen or shrink their range of skills and knowledge. Consequently, this also influences their response repertoire and the potential actions of organizational members in their daily work. Overall, the cumulation of small and daily adaptations can create substantial change and have radical effects like episodic change does (Dean et al. 1999; Weick and Quinn 1999). Finally, continuous change is seen as having an important role in enabling an organization to be innovative (Frahm and Brown 2007).

Dynamic Capabilities

Originally, dynamic capabilities were defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments […] [and thus,] reflect an organization's ability to achieve new and innovative forms of competitive advantage" (Teece et al. 1997, p. 516). Helfat et al. (2007) emphasize that since the development of this definition, research extended it by investigating dynamic capabilities in terms of organizational processes (Eisenhardt and Martin 2000), organizational learning (Zollo and Winter 2002), information processing capabilities to sense market opportunities (Pierce et al. 2002), and dynamic managerial capabilities (Adner and Helfat 2003) among other. Thereby, research refers to this multi-facet character of dynamic capabilities as "the capacity of an organization to purposefully create, extend and modify its resource base" (Helfat et al. 2007, p. 4). Depending to the fit of dynamic capabilities to the internal and external environment of an organizations, they can be a way to adapt to, exploit, and create change in the business environment (Helfat et al. 2007).

Organizational and IT Ambidexterity

Ambidexterity describes the two activities exploitation and exploration which an organization should perform simultaneously to stay sustainably competitive (O'Reilly and Tushman 2008). On the one hand, organizations must exploit their existing assets and capabilities to be efficient and to increase productivity, control, and certainty. On the other hand, organizations must explore new opportunities, markets, and technologies to develop new capabilities and assets by reconfiguring its resources. Thereby, exploration is about "search, discovery, autonomy, innovation, and embracing variation" (O'Reilly and Tushman 2008, p. 189). Organizations often tend to focus on exploiting existing operational capabilities to compete in existing markets as this ensures short-turn profits. Thus, organizations neglect to explore new opportunities and develop "the ability to recombine and reconfigure assets and organizational structures to adapt to emerging markets and technologies" (O'Reilly and Tushman 2008, p. 189). This requires dynamic capabilities so that they become part of ambidexterity. If organizations are able to balance the tensions between exploitation and exploration, they will sustain in competitive environments (Järventie-Thesleff et al. 2014). To design an ambidextrous organization, it is necessary to establish an ambidextrous thinking senior leadership team which is able to sense new opportunities in the surrounding market and to communicate a compelling vision (O'Reilly and Tushman 2004).

Organizational and IT Agility

Organizational agility is defined as "the capability of operating profitably in a competitive environment of continuous and unpredictable change" (Goldman et al. 1995 as cited by Ngo-Ye and Ahsan 2005, p. 2147). Further, it is described as "the ability to detect and seize market opportunities with speed and surprise" (Sambamurthy et al. 2003, p. 238). Customer agility, the ability to co-opt with customers, partnering agility, the ability to leverage assets and knowledge of an organization's partner network, and operational agility, the ability to accomplish speed, accuracy and cost economy, are identified as three interrelated capabilities which organizations requires to survive in hypercompetitive environments (Sambamurthy et al. 2003).

Method

We want to shed light on the topic of continuous change by analyzing the current state of research. Thus, we aim at strengthening the knowledge in the IS research domain and develop a future research agenda. Therefore, we conduct a SLR which is a recommended research approach to gain a comprehensive overview of existing literature (Webster and Watson 2002). One of the authors is highly engaged in consulting projects which also encompass the implementation of change initiatives. Thereby, we discussed the topic of continuous change with practitioners and subject matters experts. We openly talked about their experience with and understanding of continuous change. At the same time, we conducted a preliminary literature search in different databases, e.g. Google Scholar, Ebsco Host Business Complete Source etc., with various key words like "continuous change" or "continual change". Both activities helped us to gain a first overview and understanding of continuous change as well as to identify relevant publications.

Based on this initial understanding and literature sample, we developed search strings with relevant keywords. We tested the constructed search strings iteratively for relevance of the received results and their feasibility. Therefore, we conducted a keyword search in titles, abstracts, and keywords. Since the research field of change management is extensive and diversified, we had to use a narrow set of keywords to receive a feasible amount of results (cf. Table 1). Moreover, since the combination of the adjectives *continuous* and *continual* with the noun *change* and its synonyms still led to too many results, we decided to include the keyword *organization* since we focus on continuous change in the organizational context. Due to the interdisciplinary character of the IS research domain and the topic of change management, we decided to not limit the review process to IS-specific journals or conferences but followed a database approach with the following interdisciplinary scientific databases without limiting the publication date: *EBSCO Business Source Complete*, *EBSCO Academic Search Complete*, *IEEEXplore*, *ProQuest ABI Inform*, *ACM Digital Library*, *Science Direct*, *AISel* and *EBSCO EconLit*.

	OR			**OR**		
Continuous		**AND**	Change		**AND**	Organization
Continual			Renewal			
			Reinvention			
			Morphing			

Table 1. Overview of Keywords for the Systematic Literature Review

The initial sample comprised 730 search results which we cleared by excluding duplicates, papers in foreign languages (except German and English), and papers of unrelated research fields (e.g. biology). This first exclusion iteration resulted in a sample of 497 eligible papers. To further focus the amount of eligible papers, we screened the titles and abstracts considering ex ante defined inclusion and exclusion criteria (cf. Table 2).

Inclusion Critera	Exclusion Criteria
The study focuses on defining continuous change.	The study only refers to continuous change to motivate the actual study purpose.
The study compares continuous change with other kinds of change.	The study only focuses on any kind of planned change.
The study focuses on the capability of an organization to continuously change.	The study does not focus on capabilities for continuous change (i.e. continuous change is only a by-product).
The study focuses on capabilities enabling continuous change.	The study focuses on historical-related change.
The study investigates continuous change in an organizational context.	The study investigates continuous change in a non-organizational context (e.g. politics, globalization).

Table 2. Overview of Inclusion and Exclusion Criteria during Literature Screening

This second iteration resulted in 198 eligible papers. We decided to further reduce this amount of papers based on the outlet quality. Thereby, we used the VHB JourQual[1] as a reference and included all listed outlets independent of their rankings resulting in 44 eligible papers. In the last iteration, we conducted a full-text screening of all 44 papers leading to the exclusion of additional 10 papers.

Our final sample of eligible papers comprises 34 papers from as early as 1986 to 2016. 30 out of the 34 papers were published in journals, while the other four papers were published in the Proceedings of AMCIS and PACIS. The papers were published in a variety of journals of diverse research fields whereby most papers (5) were published in the Journal of Change Management. According to the VHB JourQual ranking, two papers are published in A+-ranking outlets, eight papers in B-ranking outlets, 17 papers in C-ranking outlets, four papers in D-ranking outlets, and three papers without a ranking. According to the VHB JourQual ranking, 29 of the 34 papers are either published in the research field of *General Business Economics* (11), *Organization and Personal Resources* (9) or *Information Systems* (8), and one paper is published in an outlet which is related to both, *Organization and Personal Resources* as well as *Information Systems*. The remaining five papers are related to research fields of technology, innovation and entrepreneurship, as well as higher education management, and finance. Therefore, we conclude that the eligible papers are heterogeneously spread across different research fields. 19 of 34 papers are based on an empirical research approach and 15 of 34 are based on a conceptual research approach. Table 3 depicts the used research approaches in more detail.

[1] Journal Rating published by German Academic Association for Business Research (https://vhbonline.org/vhb4you/jourqual/)

Empirical (19)		Conceptual (15)	
Theoretical Category	*Number of Papers*	*Evidence Base*	*Number of Papers*
Case Study	14	Commentary	6
Secondary Data, Ethnographic Data	2	Conceptual Model	4
Interview Study	1	Conceptual Model (Scale Development)	2
Meta-Analysis	1	Review	3
Survey	1		

Table 3. Research Types of the Eligible Papers

Results

Terms and Research Streams

Research phrases continuous change differently by using terms like continual change (Govindarajan 2016), continuous innovation (Boer and Gertsen 2003; de Oliveira Teixeira and Werther 2013), continuous renewal (Chakravarthy and Lorange 2007; Merrifield 1993), open-processional change (Ford 2006, 2008), continuous morphing (Rindova and Kotha 2001) or continuous reinvention (Furlong and Johnson 2003). All terms have the same underlying understanding: On the one hand, change is continuous, incremental, emergent, and cumulative; occurring on an ongoing basis in the day-to-day activities of each organizational member to adapt and improvise to suddenly arising challenges. On the other hand, continuous change is relevant in strategic planning to develop new ideas, experiment, and adapt the strategic direction to ensure the best fit with its environment in the long run.

From our set of eligible papers, we identified five major research streams which explore continuous change from different perspectives. First, continuous change in external and internal conditions requiring adequate responses of organizations. Second, the process of continuous change which occurs within organizations. The next two streams are the necessary organizational governance and capabilities which facilitate continuous change. The last research stream considers the outcome of continuous change. Figure 1 shows the links between the research streams, including the number of papers with findings for the respective research stream. Note that the numbers of papers per research stream are not disjoint sets since a paper can provide findings for several research streams. In the following, we elucidate the identified research streams in more detail.

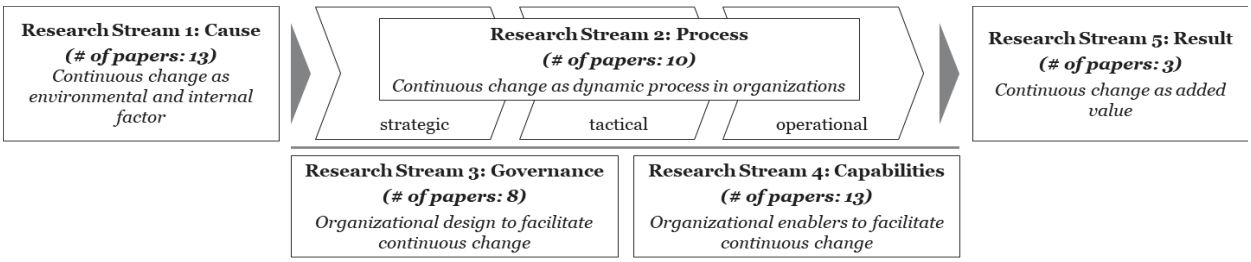

Figure 1. Continuous Change Research Streams

Research Stream 1: Cause

The first research stream focuses on the environmental and internal factors since many eligible papers refer to different causes which require organizations to continuously change. Change is endemic in organizations (Brown and Eisenhardt 1997) because the environment in which they operate is in a constant flux (By 2007) and shaped by dynamism, complexity, pace, unpredictability and uncertainty (Govindarajan 2016;

Heckmann et al. 2016; Kianto 2008; Pryor et al. 2007). This puts organizations under high day-to-day pressure. In addition, the environment is turbulent, super-connected and constantly changing (Du and Pan 2016; Heckmann et al. 2016). These environmental conditions results from rapidly changing and unknown customer preferences (Järventie-Thesleff et al. 2014), short product and service life cycles and global competition (Brown and Eisenhardt 1997; Järventie-Thesleff et al. 2014; Kets de Vries and Balazs 1998; Ngo-Ye and Ahsan 2005; van Ham and Williams 1986) as well as rising digital and rapidly developing technology (Du and Pan 2016; Merrifield 1993). Moreover, globalization, crisis and disasters, political changes and low-cost strategies influence organizations' business (By 2007; Paschke and Molla 2011; van Ham and Williams 1986). The influence of this hypercompetitive environment is not only investigated from the overall organizations' perspective, but from an IT organization's perspective in particular. IT organizations support the business in their challenge to serve customer needs and achieve its performance goals by providing proper digital solutions. Thus, they also have to adapt their product and service portfolio rapidly and on a continual basis in line with the business (Boar 1998; Prager 1996).

However, the pressure for continuous change may not only result from external factors but also from internal ones. Achieving great performance over a long time period can lead to organizational inertia impeding organizations to change. Winning strategies do not ensure success forever but also needs to be adapted on an ongoing basis. Thereby, organizations ensure to be aligned with their environment and implement customer-centric strategies (Pryor et al. 2007). On the one hand, all these factors force organizations to adapt their practice and activities on a daily basis. On the other hand, organizations must adapt their business strategy much quicker to stay competitive. Thus, to deal with the identified external and internal factors, organizations require a process (research stream 2) to operationalize continuous change, adequate governance structures (research stream 3) to manage the process, and capabilities (research stream 4) to conduct continuous change successfully.

Research Stream 2: Process

The second research stream focuses on the dynamic and orchestrated process of continuous change which is required due to the environmental and internal factors identified in research stream 1. The continuous change process appears on the strategic, tactical, and operational level and requires involvement of organizational members on all hierarchical levels. For an organization to continuously change its strategic direction, Chakravarthy and Lorange (2007) identified different renewal strategies by either entering new markets or developing new competencies. First, an organization can leverage its existing competencies and if needed add complementary competencies to enter new markets. Second, an organization can build new competencies to protect its position in the existing markets. Finally, if an organization performs both tasks at the same time, it is able to transform itself by entering new markets with new competencies to seek new opportunities. However, choosing the right renewal strategy is not an easy task due to the unpredictable environment.

Moreover, a continuous change process in organizations can comprise activities to ease environmental unpredictability. Organizations scan and monitor their environment to identify new opportunities or weak signals that might favor or threaten their performance (Govindarajan 2016; Håkonsson et al. 2013; Hatum et al. 2010; Merrifield 1993). Based on these opportunities, organizations can delineate hypotheses of the future, for instance, to develop low cost experiments of products or services (Brown and Eisenhardt 1997; Govindarajan 2016). Organizations test these experiments to have a variety of options for future scenarios and thus be able to react to the fast changing environment by choosing the best fitting option (Brown and Eisenhardt 1997; Ford 2008; Govindarajan 2016; Pryor et al. 2007). They then carefully transition from the old scenario to a chosen future scenario by linking the present to the future. For successful organizations, this transition is a regularly reassessed and fine-tuned process, achieved by day-to-day operations (Brown and Eisenhardt 1997; Govindarajan 2016).

These findings reinforce the results by de Oliveira Teixeira and Werther (2013) who define organizations as resilient if they are capable of adapting anticipatory and repeatedly to environment changes. For them, resilience is part of the organizational culture where innovation is put at the core and leadership facilitates the open discussion on the future environment also with the lower levels of the organization. Thus, an open culture is created where employees are empowered to experiment and learn from failure so that they are able to develop an entrepreneurial spirit aligned with the strategic direction. Strategy is therefore something that happens in the day-to-day practice of all organizational members. Therefore, organizational members

should perform practices of strategizing which includes interactivity of organizational members within and outside the organization as well as organizational members' intrapreneurial spirit (Järventie-Thesleff et al. 2014). Further, these practices encompass exploring for new ideas and capabilities while exploiting the existing ones, i.e. ambidexterity (O'Reilly and Tushman 2008).

Research Stream 3: Governance

Extant literature within the third research stream focuses on elements of governance, i.e. organizational design, decision rights, and routines, which facilitate and foster continuous change (Hatum et al. 2010; Kondakci and van den Broeck 2009). Hence, literature in this research stream describes suitable organizational boundary conditions in addition to the general transformation process in research stream 2. Our results show that continuous change mainly happens in the day-to-day operations of organizational members, often adapting to ad-hoc challenges by means of improvisation. This might bring up the impression that continuous change happens without clear guidance and at the edge of chaos (Brown and Eisenhardt 1997). However, this is not the case.

Instead, organizations have to strike a balance between organizational flexibility and structural stability to successfully realize continuous change (Ford 2008). In their empirical study, Brown and Eisenhardt (1997) identified that the most successful organizations implemented semi-structures in terms of defining clear roles, giving (project) priorities and conducting formal meetings with extensive communication within and across projects. Although this formality seems quite strict, the design process was unstructured and leaves freedom for organizational members to be creative and improvise. Ford (2008) identified minimal structures in form of building blocks, which are components that can be recombined as needed. The recombination of the building blocks provides on the one site formal stability in turbulent environments and on the other site informal flexibility by adapting the structure as needed. Through this balance, networks of interactions develop which allow open communication and sharing of information and knowledge to create new ideas. Stability is often associated with organizational inertia which impedes organizational change. However, the ability to not only build but also to destroy inertia increases agility and facilitates continuous change in organizations (Håkonsson et al. 2013). Furthermore, organizational responsiveness (i.e. the ability to quickly react to environmental shifts), dynamic fit routines (i.e. ensuring the fit between strategic orientation and the future business environment) and a long-term perspective within the management team (i.e. management looking proactively for new opportunities to explore in the future) are important components of organizational design to realize continuous change successfully.

Research mentioned two organizational forms which favor the balance of stability and flexibility, i.e. loosely coupled systems with relatively weak structural and personal interconnectedness (Kondakci and van den Broeck 2009) and complex adaptive systems (CAS) (Ford 2008). Loosely coupled systems are organizations in which the system's components show responsiveness as an integrated part of the overall systems but still show their distinctiveness from the whole (Spender and Grinyer 1995). CAS refers to organizations which comprise diverse elements (complex) and are able to learn from experience (adaptive) (Ford 2008). Kondakci and van den Broeck (2009) show how loosely coupled systems foster continuous change. They allow the continuous development of emergent change domains as addition to pre-defined change domains providing guidance and formalization. Further, a high level of formalization, a high level of strategic centralization in conjunction with a low level of operational centralization of decision-making, low macroculture embeddedness, top management diversity and strong organizational identity are identified as structural organizational properties favoring continuous change (Hatum et al. 2010).

In addition, employees' diversity helps to develop and experiment with new innovative solutions and thus, support the continuous change process. By engaging into social actions, employees incorporate their internal mental models or learned experience which are "simplified representations of the environment that individuals use to interpret the current events and anticipate future actions" (Ford 2008, p. 178). To foster organizational members' engagement, an appropriate learning structure has to be implemented. 'Communities of practice' (CoP) based on three key dimensions provide such learning structure (Furlong and Johnson 2003). First, mutual engagement which describes people's engagement in an activity or process. This activity or process has a certain meaning for engaged people. They negotiate this meaning with each other by applying the meta-capabilities participation and reification, meaning "giving form to experience by projecting them into the real world" (Furlong and Johnson 2003, p. 107). Second, the dimension of a joint enterprise which is the "focal point for the development of a particular practice's

required meta-capabilities" (Furlong and Johnson 2003, p. 110) by means of participation and mutual accountability. Third, the last dimension is a shared repertoire of resources to negotiate meaning. Organizations develop this dimension through people's mutual engagement in the joint enterprise. The concept of CoP enables work-based learning in organizations as a condition of continuous change.

Moreover, organizational design impacts solution and routine development within organizations (Tippmann et al. 2014). A flexible organizational design without a central knowledge repository forces middle managers to develop their own search routines by using knowledge components within and beyond their organizational function. Thereby, they are able to generate new solutions for organizations' problems so that organizational routines are modified or generated. This fosters organizational capability evolution rather than capability replication.

Research Stream 4: Capabilities

The fourth research stream focuses on organizational capabilities. We identified leadership, organizational renewal capability inventory, organizational capacity for change, adaptive IT capabilities, and Information Systems Alignment (ISA). Moreover, our research results show that sustainability, change communication, and change readiness are crucial enablers to implement continuous change properly from the beginning.

Leadership is crucial to operationalize continuous change across all hierarchical levels. It has to spread awareness and commitment and involve all organizational members into the change initiative as well as being consistent in their behavior. (van Ham and Williams 1986) Considering leadership in more detail, Ford (2006) identified three process principles how power relations have to be employed to support and maintain continuous change. First, leaders need to create space for open communicative interaction. Second, leaders have to safeguard a credible and open process, i.e. employees are able to openly communicate about their problems in a way that their voice is heard and not dominated by others. Hence, information and knowledge are shared willingly and are accurate. Organizations today are facing complex industry problems which require the involvement of experience, expertise, and skills by all organizational members to solve them. Therefore, the third principle urges leaders to continuously reclaim suppressed voices of all stakeholder groups. Thereby, all stakeholders are engaged in the problem-solving process and no stakeholder group dominates the decision-making. Research shows that change in such organizations does not have to occur as punctuated change programs to perform successfully but depends on rearranging and reconfiguring their activities driven by top management. This highlights the key role of leadership to create an energizing environment to sustain and maintain continuous change as well as keeping organizations loosely coupled (Spender and Grinyer 1995).

In addition, leaders take on the role of change agents in organizations to drive continuous change (Lawrence et al. 2006). Therefore, change agents have to sell new ideas to other stakeholders (evangelist) and have to use their authority to take over responsibility and accountability for the change as well as to give guidance and to help overcoming change resistance (autocrat). Furthermore, change agents have to be capable of designing the systems to establish new practices and communicate to the senior management on technological topics (architect). Beyond this, change agents have to foster a culture of learning and innovation in which employees do not only enact but also extend and elaborate the change (educator). They transform employees' belief and value systems by gradually attracting them to the ongoing change process following a transformational leadership perspective (Munduate and Bennebroek Gravenhorst 2003). To enable attraction, the change agents can use six power dynamics, i.e. reward and coercive power, legitimate power, referent power, expert power, and information power. Furthermore, it is beneficial for each change agent to understand the personal change that happens in each individual to facilitate the change process for the involved organizational members. The prerequisites for personal change are strong negative emotions leading to dissatisfaction with the current situation and the intention to change, a focal event that supports the negative emotions and the need for change, the public declaration of the intent to change and the inner journey envisioning the new alternatives (Kets de Vries and Balazs 1998). Transferring these prerequisites into the organizational context helps leadership to create important capabilities and change orientation as a core value.

Owing to its importance for continuous change, leadership is also an element in the Organizational Renewal Capability Inventory developed by Kianto (2008). This is a survey instrument to evaluate organizational renewal capabilities required to create and maintain knowledge in the context of continuous learning and innovation. Besides leadership, the instrument comprises five further renewal capabilities categories. First,

strategic competence which refers to an organization's ability to create compelling visions and strategies. It also refers to identifying new opportunities and sensing weak signals in an organization's environment on which to react quickly and flexibly. Second, the instrument encompasses connectivity, representing the structure and quality of social interaction within and outside the organization. Third, exploiting time refers to "an internally orchestrated rhythm for conducting changes" (Kianto 2008, p. 74). Fourth, learning orientation describes organizations' attitude towards learning and the supporting structure and processes. Fifth, managing knowledge comprises the approach and tools to store information and share knowledge.

Beyond these organizational renewal capabilities, we identified additional important capabilities from the eligible papers. Organizational capacity for change (OCC) is a "dynamic, multi-dimensional capability that enables organization to initiate and successfully achieve changes of different types, sizes, and forms on an ongoing basis [...]. [It] comprises different aspects of leadership, culture, employee behavior and an organizational infrastructure supporting organizational change" (Heckmann et al. 2016, p. 779). Organizations' capability to continuously change builds the essence of OCC which is influenced by a high level of technological turbulence and previous, positive change experience. Additionally, OCC enables managing the tension between exploitation and exploration(Heckmann et al. 2016).

In the context of continuous change, research does not only explore organizational capabilities but also specific IT capabilities. The construct of adaptive IT capabilities measures the extent that IT enables and supports organizational adaptations (Paschke and Molla 2011). Adaptive IT capabilities are based on the three components of dynamic capabilities, i.e. adaptive, absorptive, and innovative capabilities (Wang and Ahmed 2007), as well as IT flexibility and IT enablement. Adaptive IT capability "refers to a firms' ability to maintain flexible IT capabilities and deploy such capabilities quickly and efficiently to enable the building, renewing, and reconfiguring of organizational competences" (Paschke and Molla 2011, p. 3). This highlights the importance of the fit between the organizational goals, mission and activities and those of the IT function, which is also called IS System Alignment (ISA). The alignment needs to be ensured continuously as the organization changes (Street et al. 2010). Thereby, patterns of ISA match and support the way an organization changes on an ongoing basis.

To successfully perform and sustain the continuous change process, continuous change must be set up properly. Organizations have to define a clear goal or vision, to which the program strives, and an implementation strategy to make the process sustainable before initiating a continuous change program (Brännmark and Benn 2012). This requires four enablers: active (management) ownership of the change initiative, professional steering, and continuing and competent leadership. As these enablers are interlinked, communication and coordination among them are required. Especially, communication plays a critical role in initiating a change initiative since communication impacts change receptivity (Frahm and Brown 2007). Change receptivity of the affected by the change is a measure of how receptive organizational members are to planned change. Formal communication of the clear goal of the change, communication style, and the involvement of organizational members are crucial for the positive perception of the change. Besides the change receptivity, an organization requires continuous change readiness, facilitated by organizational culture and structure, to successfully implement and manage continuous change (By 2007).

Research Stream 5: Results

Even though many of the eligible papers refer to the first four research streams, we also identified a fifth research stream focusing on results, i.e. the outcome of the continuous change process. Continuous change can enable organizations to overcome organizational inertia by renewing their product and service portfolios so that organizations are able to achieve, maintain or regain great performance (Pryor et al. 2007). In addition, organizations must establish continuous change as a long-term initiative since better performance and reliability is primarily achieved in the long run (Håkonsson et al. 2013). Also Dean et al. (1999) revealed, that organizations' economic and service performance with continuous change is comparable to punctuated change programs which are, however, much riskier. Organizations only initiate punctuated change programs if they fail to implement a continuous change program successfully leading to a misalignment with their environment. Additionally, since the hypercompetitive environment erodes competitive advantage quickly, organizations are able to regenerate existing or develop new competitive advantages as a response to environmental shifts by performing continuous change (Rindova and Kotha 2001).

Discussion

We identified and described five research streams on continuous change as the key findings of our systematic literature review, i.e. **cause**, **process**, **governance**, **capabilities**, and **results**. In the following, we discuss our results against the backdrop of major theoretical concepts relevant for IS research and delineate implications for future research. Thereby, we elucidate the present and potential role of continuous change for IS research. Specifically, we propose links to the established theoretical concepts of dynamic capabilities, ambidexterity, and agility.

Rindova and Kotha (2001) state that dynamic capabilities are an facilitator for continuous change which is in line with previous findings of dynamic capabilities as an enabler for organizations to adapt to change (O'Reilly and Tushman 2008). Dynamic capabilities are emergent and evolving. They are developed based on the emergent learning routines, open-ended principles of organizations, and evolution-minded and stable leadership (Rindova and Kotha 2001). They might generate strategic flexibility which is defined as "the ability to respond to the demands of dynamic competitive environments (Rindova and Kotha 2001, p. 1275). Thus, the greater the extent of dynamic capabilities and strategic flexibility in an organization, the more the organization is engaged in continuous change (Rindova and Kotha 2001). Consequently, the combination of dynamic capabilities and strategic flexibility enables an organization to renew its competitive advantages, which otherwise would quickly erode in the hypercompetitive environments (El Sawy et al. 2010). Other links to dynamic capabilities are the already described concepts of adaptive IT capabilities (Paschke and Molla 2011) and absorptive capacity (Lane et al. 2006; Roberts et al. 2012). In addition, dynamic capabilities are identified as an appropriate theoretical foundation to study digital transformation requiring organizations to continuously change and to have the right capabilities in place (Vial 2019). Further, dynamic capabilities will help organizations to deal with the causes of continuous change, enable the process of continuous change as well as to achieve long-term success.

Furthermore, our results on continuous change refer to ambidexterity as an important organizational and IT capability which ensures organizations' strategic survival in hypercompetitive environments (Järventie-Thesleff et al. 2014). Through explorative activities, organizations identify new opportunities, build new capabilities, and thus, reach new market positions to stay competitive (Boer and Gertsen 2003; Chakravarthy and Lorange 2007; Du and Pan 2016). However, tensions between exploitation and exploration require organizations to strike the balance between the two activities (Du and Pan 2016; Heckmann et al. 2016). Besides the organizational capacity, organizational design is another way to deal with these tensions. Research proposes different approaches to set up an ambidextrous organization including their design options, development paths, and governance mechanisms (Du and Pan 2016; Haffke et al. 2017; Jöhnk et al. 2017; Jöhnk et al. 2019). An ambidextrous organization can establish exploitation and exploration either in two different business units (structural mechanism) which are integrated by high management or integrate both activities in one business unit in which organizational members balance exploitation and exploration based on their own judgment (contextual mechanism). Furthermore, these two mechanisms can either be combined with a planned path, where top management provides a step-by-step plan, or with an emergent plan, where organizations achieve ambidexterity by constant adapting to changes. Ambidexterity has become a much investigated theoretical concept in the IS domain to manage the tensions between opposing activities, like exploitation and exploration, in IT transformations in general and in digital business transformations in particular (Gregory et al. 2015; Lee et al. 2015; Leonhardt et al. 2017). Thus, ambidexterity relates to all identified research streams.

We identified organizational agility as the third theoretical concept closely related to research on continuous change. Ngo-Ye and Ahsan (2005) link this organizational capability to IT application systems agility since organizations require flexible IT to enable organizational flexibility and responsiveness, i.e. core elements of continuous change. By focusing on the enterprise IT application systems rather than on the IT infrastructure, they developed a model based on the three dimensions of customer agility, partnering agility, operational agility, and additional technical agility dimensions (i.e. IT connectivity, IT compatibility, application functionality, and data transparency). Also, agility has been recognized by the IS domain as an important factor to deal with the challenges of the hypercompetitive environment (Chan et al. 2019; Lee et al. 2015). Therefore, agility is an appropriate capability to deal with the causes of continuous change and contribute to the long-term success of organizations.

Our results also express the necessary evolution of modern IT functions; no longer perceiving themselves as a mere service provider implementing IT solutions in accordance with predictable business requirements or as a strategic partner who understands the business strategy and only participates in organizational change as it occurs (Prager 1996). Rather, the IT function needs to be set up more flexible and decentralized with a workforce that is capable of understanding the customer needs and their important role for the overall corporate success of organizations. Therefore, IT professionals need to predict change, create a flexible infrastructure and continuously seek input for their organization. Moreover, Albanna and Osterhaus (1998) stated that the IT function has to adopt the characteristics of a learning organization which is able to balance the interconnected change of organization, technology, process, and process controls as well as culture. In addition to this, IT functions should be set up in a way that they feel day-to-day pressure to continuously update their product and service portfolio similar to the business (Boar 1998). Therefore, an organizational design for the IT function was suggested in which centers of competency are set up, i.e. grouping employees logically to their skill set. The centers of competency provide their services and products to an internal marketplace. As organizations' work is based on business processes, process owner can hire individuals from the center of competency to develop and redesign processes. Product managers, marketing/sales manager and senior management can hire individuals to execute processes. Based on the external market requirements, the internal marketplace can be reorganized to meet the customer demands.

Reflecting our SLR results, we see a clear dominance of organizational research regarding continuous change. This partially neglects the role of change due to disruptive IT and its management within the IT function (Kumar et al. 2016). We identified that continuous change is explored from many different facets in organizational research. However, only few studies are related to IS research, either focusing on IT capabilities or on IT organizations' design to facilitate continuous change. Further, studies related to organizational research predominantly use an empirical rather than a conceptual research approach. Contrary, the IS research mainly uses conceptual research approaches. Therefore, we propose five promising areas for future research in the following. Subsequently, Table 4 summarizes the concept and role of continuous change for IS research as well as a research stream specific outlook on future research.

First, digital transformation and fast developing, disruptive technologies bring IT to the core of today's businesses and make it a strategic key success factor (Bharadwaj et al. 2013). Therefore, the IT function with its workforce, IT systems, and IT infrastructure must support organizations in the necessity to meet fast changing customer needs and stay competitive in the hypercompetitive environment by means of continuous change. Hence, we propose future research in the IS research domain to further explore the role of continuous change for the IT function. We identified results on governance topics like organizational design or decision-making structures in the organizational research field facilitating continuous change. Future research could investigate if those findings are also applicable in an IS context, integrating them with seminal IT governance literature (e.g. Brown and Grant 2005; Peterson et al. 2002; Wu et al. 2015). Our SLR findings show the importance of governance to steer continuous change. Therefore, further research on that topic may provide guidance for IT managers to set up appropriate structures in their IT organization to enable continuous change.

Second, our SLR only comprises three studies exploring IT capabilities (Ngo-Ye and Ahsan 2005; Paschke and Molla 2011; Street et al. 2010). Thus, more research is needed to generalize and empirically validate these results, especially since two of the studies used a conceptual study design. Therefore, we suggest future research to focus more on continuous change enabling IT capabilities. In addition to this, we propose to conduct more research to identify and define further appropriate IT capabilities as well as to focus on the underlying capability-building process (Sambamurthy et al. 2003). The work of Tanriverdi and Lim (2017) is one example of extant research on defining IT capabilities to survive. Based on theory development, the authors developed a new set of IT-enabled capabilities. These capabilities help an organization to focus on vigilance of the complex business ecosystems and to co-evolve with dynamic and unexpected environmental shifts or redefine its strategy in case of disruptions in the existing ecosystem.

Third, in the context of IT capability research, a special focus should be on dynamic capabilities as a facilitator for continuous change. Future research could investigate which further IT-related dynamic capabilities are available to facilitate continuous change in IT organizations, how they are applied and can be implemented as well as how do they help IT organizations to support business' continuous change. By investigating IT capabilities in general and IT-enabled dynamic capabilities in particular, research could

generate relevant findings for practitioners on the specific capabilities organizations require to enable continuous change and how to foster these capabilities.

Fourth, research identified that the inflexibility of IT systems, like ERP, can impose constraints on organizations, which have to adapt to the systems. Thus, IT systems can impede organizations in their ability to continuously change (David et al. 2003). However, over the past years, digital and innovative technologies like Cloud Computing, Internet of Things or Artificial Intelligence emerge. Such technologies not only require but also enable the development of more agile and adaptable IT systems. Therefore, we propose to explore if such new technologies facilitate continuous change in IT functions and what impact they have on necessary adaptations to environmental changes. These findings will help IT managers and IT architects to better understand the role and relevance of digital technologies for continuous change.

Continuous change research streams	Links to IS-related theoretical concepts	Learnings for IS research from continuous change	Proposed future research agenda
Cause (e.g. Du and Pan 2016; Merrifield 1993; Pryor et al. 2007)	• Dynamic capabilities, ambidexterity, and agility constitute potential measures to overcome challenges from external and internal factors of continuous change	• Continuous change may serve as an umbrella term for change-inducing factors in technology-driven, hypercompetitive environments	• Integrate continuous change with existing research of environmental turbulence and dynamism • Structure change-inducing factors for the IT function
Process (e.g. Brown and Eisenhardt 1997; Govindarajan 2016; Järventie-Thesleff et al. 2014)	• Dynamic capabilities and ambidexterity enable the continuous change process	• Continuous change process shows potential to develop and implement new business opportunities through IT	• Identify digital technologies to support the continuous change process
Governance (e.g. Ford 2008; Håkonsson et al. 2013; Hatum et al. 2010)	• Especially ambidexterity explores characteristics of organizational design that foster continuous change	• Governance characteristics may serve as orientation for an organizational design of IT functions that enables continuous change	• Integrate literature on continuous change and IT governance • Examine the influence of IT functions' governance on the potential for and success of continuous change
Capabilities (e.g. Ford 2006; Kianto 2008; Paschke and Molla 2011)	• Dynamic capabilities, ambidexterity, and agility all provide a possible theoretical lens to describe required and desired capabilities for continuous change	• Organizational capabilities my serve as enabler for continuous change oriented organizational culture in IT functions	• Identify specific IT capabilities and IT-enabled dynamic capabilities to facilitate continuous change
Results (e.g. Håkonsson et al. 2013; Dean et al. 1999)	• Dynamic capabilities, ambidexterity, and agility describe success measures, implications, and prerequisites for digital businesses	• The nature of change programs (episodic vs. continuous) is an important factor for organizations' long-term success	• Identify IS-specific measures and methods to evaluate the business impact of continuous change

Table 4. The Concept and Role of Continuous Change for IS Research

Fifth, continuous change is still a rarely explored phenomenon, especially in the IS domain. Considering the lack of IT-related empirical research in the eligible papers, we propose to conduct more empirical studies to investigate continuous change in IT organizations. Change happens over time and thus requires longitudinal investigation (Ford 2006). Therefore, pursuing empirical and inductive research designs, like case studies, can provide rich insights on the investigated phenomenon (Eisenhardt 1989; Kondakci and van den Broeck 2009). The identified studies concerning the organizational design of the IT function are over 20 years old (Albanna and Osterhaus 1998; Boar 1998; Prager 1996). Therefore, future research could focus on identifying modern IT organization designs and investigate whether these designs facilitate continuous change in today's IT organizations and for the overall company as well. It is essential for practitioners to understand how they should set up their IT organization to facilitate continuous change considering the environmental turbulences and thus, to stay competitive in the future.

Conclusion

Our research provided profound insight into research on continuous change and structured the key findings in five major research streams by synthesizing the existing body of knowledge on continuous change. These research streams demonstrate the multi-facet nature of continuous change, ranging from causes, process, governance and capabilities, to results of continuous change in organizations. Moreover, we identified important links to related theoretical concepts in IS research, which enable continuous change and stimulate further research at this interface. In addition, we proposed a research agenda, which can potentially guide future research building on our systematic review of relevant literature on continuous change. Nevertheless, limitations of our paper leave room for further enhancement by other researchers. First, our SLR, despite being unrestricted in terms of publication outlets, misses a forward and backward search so far. Such an extension might provide additional eligible paper and an even broader overview of the topic. Further, this could comprise a specific focus on IS literature and an in-depth comparison with prevailing change models in IS research. Second, our results might be biased owing to the developed search strings. Considering the enormous amount of publications on the topic of change management, we decided to limit the number of results by including the keyword *organization*. While this approach reflects our focus on continuous change in the organizational context, the choice of other keywords (e.g. digitalization, technology) might lead to additional relevant results. Third and given the available space, our paper lacks an extensive elaboration on the interrelation of the continuous change research stream with the selected theoretical concepts related to IS research. Therefore, future research could draw on our classification of the five research streams and examine the links in more detail.

We provide relevant managerial implications for practitioners, especially concerning the important role of leadership to enable continuous change. Leaders must create a working environment in which employees are energized and empowered to participate and engage in the continuous learning and innovation process of organizations. The diversity of organizational members is a key success factor to create new ideas, besides providing the freedom to contribute employees' experience and insights. In addition, practitioners must be aware of the personal and cognitive change of each employee since understanding the prerequisites that triggers this change will help to establish a change-oriented organizational culture. Furthermore, the organizational design must provide a proper balance between stability and flexibility to allow information and knowledge sharing so that creativity and innovation can flourish. Thus, our five research streams of continuous change provide a potential structure to guide managerial decision areas.

Our contribution to theory is threefold. First, we unraveled and structured the concept of continuous change as a core competency of organizations to survive and thrive in today's hypercompetitive environments (Lawrence et al. 2006). Our results show that continuous change is a dynamic process which requires flexible organizational design as well as enabling organizational and IT capabilities. Second, we integrated continuous change, which is more related to organizational research so far, in the IS research domain. Thereby, we elucidated the role of continuous change for IS research and offered potential areas for a fruitful exchange between research domains. Third, we proposed promising areas as potential starting point for future research. Summarizing, we emphasize the need for increased consideration of continuous change in IS research agendas, mainly owing to current challenges of digital transformation and digital business strategies.

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