

A Change and Constancy Research and Management Framework for IT-related Organisational Change

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Abstract

In Africa, and globally, organisations and Information Technology (IT) are pervasive and, hence, impact and influence millions of African livelihoods every day. Thus, facilitating successful IT and organisational structuring is paramount for organisational success and the interrelated and interdependent improvement of African livelihoods. The paper develops a research and management framework for IT-related organisational change, based on the explicit ontological position that change and constancy exist in cohesion, to facilitate successful IT and organisational structuring. The research problem is the absence of this ontological view in prominent IT-related organisational change theories. The paper is appropriately theoretical in nature and proceeds with discourse, reason and argumentation based on the academic literature. The paper analysed and evaluated the essential features of the developed framework in relation to prominent theories applicable to IT-related organisational change, which demonstrated that the framework augments each for further knowledge development and insight. The framework would assist managers to acknowledge, identify, analyse and address relevant aspects of change and constancy relating the external environment and the internal organisational environment, including people, IT systems and tasks. Recognizing what is changing and constant and what should be changed and kept constant is vital for researching and managing these environments.

Keywords

Change and Constancy, Digital Information & Technology, Improving African Livelihoods, IT and Organisational Structuring, IT-related Organisational Change, Research and Management Framework.

1. Introduction

Globally, digital information and technology has become pervasive (Cascio & Montealegre, 2016) and organisations continue to be ubiquitous (Pfeffer, 1997). In Africa, organisations have a significant impact and influence on millions of African livelihoods every day. This includes all those organisations that directly employ Africa's people and financing, governmental, agricultural, health, educational, retail and housing organisations, to name only a few.

Importantly, when organisations experience failed Information Technology (IT) and organisational structuring, there are severe consequences for those organisations, financially and otherwise (Burke, 2017; Burnes, 2004; Lucas Jr. & Goh, 2009). These failures also negatively impact the organisations' employees and the many and varied external stakeholders, including customers, suppliers and communities. Thus, facilitating successful IT and organisational structuring is paramount for organisational success and the interrelated and interdependent improvement of African livelihoods. The paper sets out to develop a research and management framework to facilitate successful IT and organisational structuring.

The relationship between IT and organisational structuring is very often one of IT-related organisational change. Notably, organisational change is as relevant today as it was before the prevalence of IT and theorizing about IT-related organisational change is just as relevant. Furthermore, Information Systems (IS) theory development is essential for progressing the IS field (Gregor, 2006; Hassan, 2014; Hirschheim & Klein, 2012; Larsen & Levine, 2005; Weber, 2003).

From an ontological perspective, the primacy of change or constancy has been a focus of philosophical argument since the ancient Greek philosophers (Loubser, 2013). Some have argued for change having ontological primacy, which presents a view of existence in perpetual flux. Others have argued for constancy having ontological primacy, which presents a view of existence as essentially persistent. However, either extreme is difficult to maintain since there are convincing arguments for both (Loubser, 2013). Therefore, change and constancy should be regarded as existing in cohesion (Loubser,

2013), which presents an epistemology where change is known in contrast to constancy and constancy is known in contrast to change.

While there are many notable theories and conceptions about IT-related organisational change, none is based on a change and constancy ontology. Hence, the paper's research problem is the absence of this ontological view in prominent IT-related organisational change theories. This absence precludes vital insight about the realities of these organisational environments. Consequently, the paper's objective is to develop a change and constancy research and management framework based on the ontological view that change and constancy exist in cohesion. The paper also analyses and evaluates the essential features of the developed framework in relation to prominent theories applicable to IT-related organisational change. This is done to demonstrate the potential contribution of the paper's framework to the domain. The research questions are:

1. Why is a change and constancy ontology important for theorizing about IT-related organisational change?
2. What essential features should the change and constancy research and management framework include?
3. How do the essential features of the framework relate to prominent theories applicable to IT-related organisational change?
4. What is the potential contribution of the paper's framework to IT-related organisational change research and management?

The paper is appropriately theoretical in nature and proceeds with discourse, reason and argumentation (Remenyi & Money, 2004) based on the academic literature. A fitting epistemology for the paper is that of rationalism (Hjørland, 2005). The paper makes an original contribution to theory by presenting a framework for researching and managing IT-related organisational change based on the explicit ontological position that change and constancy exist in cohesion.

In terms of management practice, the paper supports the management of IT-related organisational change environments. It presents a framework to enable critical insight about decisions that involve the allocation of scarce organisational resources. Applying the paper's world view to the IS domain provides a framework for holistically analysing and managing IS change and constancy. Without this framework, either change or constancy may be considered in isolation or one may be assumed to dominate or be more important than the other. The result may be a sub-optimal allocation of resources to either change or constancy. For example, allocating resources to change and ignoring relevant aspects of constancy could mean failed change initiatives at great cost (Burke, 2017; Burnes, 2004). Similarly, allocating resources to constancy or business as usual and ignoring relevant aspects of change could mean a failed business (Lucas Jr. & Goh, 2009). Knowing when and what to change and knowing when and what to keep constant is vital. The change and constancy framework facilitates such understanding by requiring both change and constancy to be acknowledged, identified, analysed and addressed.

Recognizing both change and constancy and not change or constancy only may be a subtle change in perspective, but it has a profound impact on the way one views, manages and researches IT-related organisational change. Change is just as acceptable as constancy. Both exist in cohesion. No value judgement should be placed on either. The next section develops and defines the framework and the subsequent section analyses and evaluates the essential features of the framework in relation to prominent theories applicable to IT-related organisational change. Lastly, the paper's conclusion and future research opportunities are presented.

2. Framework development and definition

It is often stated that change is the only constant, which could mean that the ontological position of the paper is not feasible. However, on examination, this statement does not pose problems for the paper's ontological position. An interpretation of the statement could be that only change occurs. From this perspective change is given explicit ontological primacy, which is convincingly challenged by the literature (Loubser, 2013). Another interpretation could be that there is only constancy in the form of

change. While this suggests an ontological primacy for constancy, it would be difficult to maintain because it could be argued that other forms of constancy would exist besides change, so, change cannot be the only constant. A further interpretation could be that at some point in time every aspect of existence will experience change. Such a notion suggests that both change and constancy exist, which supports the paper's ontological position.

The words 'change' and 'constancy' are fundamental to the paper. The paper essentially regards change in relation to difference and constancy in relation to similarity. Thus, the words 'change' and 'constancy' are regarded as antonyms. Notably, definitions of change and constancy often imply that change requires effort or energy and constancy requires only the absence of effort or energy. However, it can be argued that constancy requires effort or energy. For example, it may require effort and energy to deliver a standard or constant service to a customer when the service provider's systems are down or to resist a proposed IT system change when serious and likely risks are foreseen. Equally, in certain contexts change may occur in the absence of effort or energy. For example, where a teacher exits from his/her class, the class may change naturally, without any concerted effort and become unstable and chaotic.

Both change and constancy are inextricably linked to the idea of classical time (Callender, 2010). Whether change or constancy is observed depends on the length of time of the observation, which is arbitrary. Nevertheless, for any length of time, the paper argues that certain aspects of existence change, and others are constant. For example, a social setting is observed surreptitiously, initially at time t_0 . Then, at a subsequent time (t_1), the same social setting is observed again. Certain aspects of that social setting may appear to be the same at t_1 , in which case there is constancy, and certain aspects of that social setting may appear to be different at t_1 , in which case there is change. The paper's ontological view requires a binary outcome for any arbitrarily observed aspect and time, namely change or constancy.

In addition, at one level of abstraction change could be occurring while at another level of abstraction constancy. For example, people in an organisation may be changing as people leave the organisation and new people are hired. However, their roles may not change at all, thus, there is constancy at the role level and change at the individual personnel level. Similarly, in software development, from a high-level view, a general method may appear constant. However, from one individual project to the next, the general method may be changed in various small or large ways as appropriate for each context, specific objectives and developers.

Another consideration is the use of natural science metaphors to explain change and constancy. While such metaphors offer many established concepts and relations, choosing one or many that exactly match and explain the abstract concepts is inherently difficult. While natural science phenomena such as forces, pressure, inertia, chemical reactions and electrical resistance offer valuable opportunities to explain and understand change and constancy, they also impose behaviour, regularities and laws from natural science, which can distort and limit understanding and explanation in social settings. Subsequently, the approach in this paper is to explain its ontological view of change and constancy without using metaphors from the natural sciences.

Following the preceding discourse, the paper's change and constancy research and management framework for IT-related organisational change aims to provide an analytical and explanatory framework with which to understand the reality of IT-related organisational change environments. Its essential features are:

1. It is based on an ontological perspective where there is no primacy for either change or constancy. Both exist in cohesion.
2. It establishes an epistemology where change is known by its contrast to constancy and vice versa. This advances knowledge development and insight about both change and constancy.
3. It proposes that there is no universal pattern of change and constancy. The aspects of change and constancy observed in any context are subject to the specific observer and contextual phenomena involved. However, where the scope of observation is delimited, patterns within those boundaries may be evident.

4. It requires that when managing or researching an IT-related organisational change context both change and constancy are acknowledged, identified, analysed and addressed for improved management and knowledge.

Figure 1 below is a depiction of the paper’s framework applied to a single organisation. The conception of the organisation in Figure 1 is the author’s subjective view and does not reflect a generalised view of organisations, IT and people. It is merely a basis on which to illustrate the paper’s change and constancy framework in an organisational environment where there are people and IT. For example, there are many other conceptions of organisational environments, including where people and IT are not separate (Orlikowski, 2009). Throughout Figure 1 there are aspects of change and constancy. However, the position and the number of the aspects of change and constancy in the figure are not prescriptive, since they depend on each observer and context.

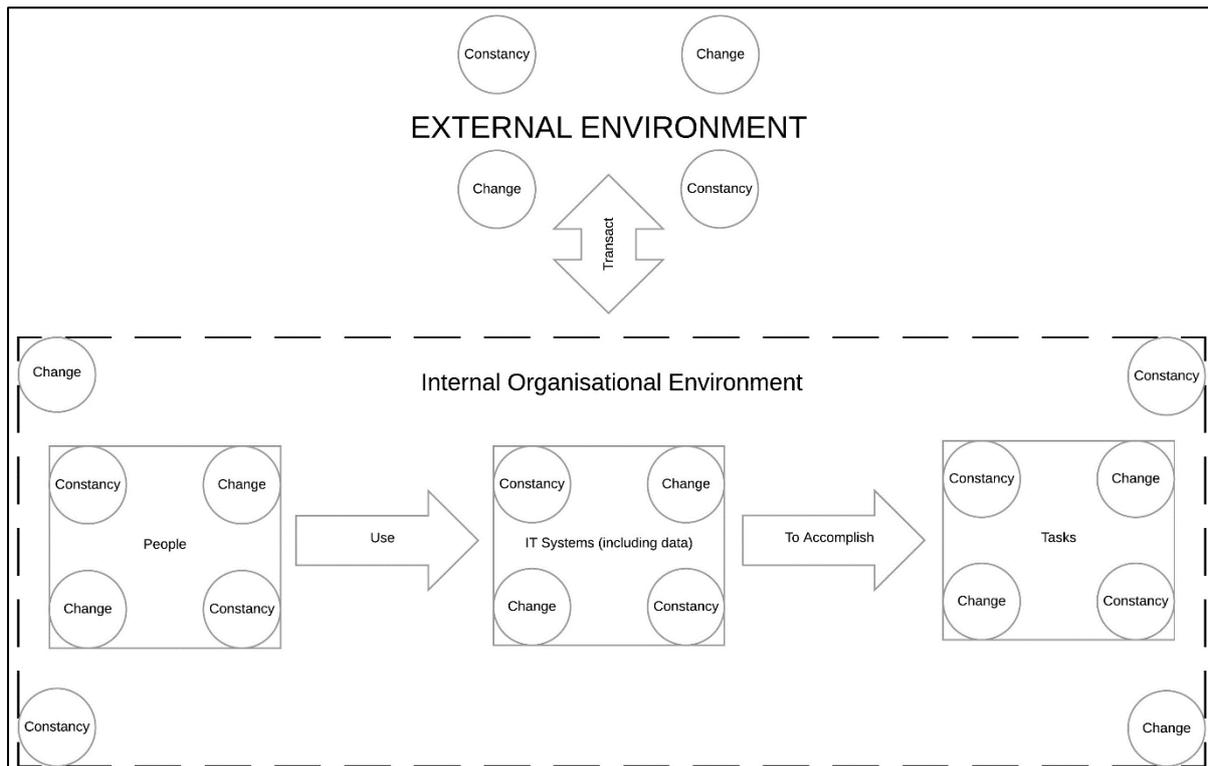


Figure 1: Change and constancy research and management framework for IT-related organisational change applied to a conception of a single organisation

Indeed, the drivers of both change and constancy can be many and varied, and include legislation, technology, stakeholders, internal organisational problems, capital availability, strategy, management, politics, globalisation and competition to name a few. For example, competition in the external environment could drive changes in the form of new business routines in the internal organisational environment or could drive constancy of the existing routines to minimise costs and improve efficiencies. In relation to IT-related organisational change, competition may drive changes to IT systems for developing or supporting new business initiatives or constancy where certain non-revenue generating systems are kept constant save resources.

3. The framework in relation to selected prominent theories applicable to IT-related organisational change

3.1 Theory selection

The theories in this section, with the exception of changing as three steps (Lewin, 1947) and sociomateriality (Orlikowski, 2009), were obtained from the Association for Information Systems’ wiki called ‘Theories used in IS research’ (Larsen & Eargle, 2015). The wiki was accessed during January 2018. This wiki was referenced because it provides a comprehensive list of theories relevant to

IS research. The author subjectively selected the theories from this wiki based on how well the author thought they applied to IT-related organisational change. For each selected theory, an exemplar article was selected from its wiki page or from a Google Scholar (*Google Scholar*. n.d.) search if the wiki page did not appear to present a suitable exemplar. The selection of each article was also based on the researcher's subjective judgement.

3.2 The essential features of the framework in relation to the selected prominent theories

Table 1 below lists the prominent theories and corresponding articles selected by the researcher and analyses the essential features of the paper's framework in relation to each one.

Table 1: Selected articles relating to prominent theories applicable to IT-related organisational change (in alphabetical order of theory name)

| # | Prominent theory | Article: In-text citation and title | These columns relate to the prominent theories as presented in the selected article | | |
|---|--|--|---|--|--|
| | | | Ontological perspective of change and constancy | Presents a pattern of change and/or constancy? | Explicitly acknowledges both change and constancy? |
| 1 | Adaptive structuration theory (AST) | (DeSanctis & Poole, 1994) | No primacy for either change or constancy | No | Yes |
| 2 | Changing as three steps: Unfreezing, moving and refreezing | (Lewin, 1947) | Primacy for constancy | Yes | Yes |
| 3 | Contingency theory | (Robey, 1977) | No primacy for either change or constancy | No | Yes |
| 4 | Dynamic capabilities | (Sambamurthy, Bharadwaj, & Grover, 2003) | Primacy for change | No | Only change |
| 5 | Evolutionary Theory | (Arnott, 2004) | Continuous evolution: Primacy for change | Yes | Only change |
| | | | Punctuated equilibrium: Primacy for constancy | Yes | Yes |
| | | | Quantum evolution: Primacy for change | Yes | Only change |
| 6 | Institutional theory | (Avgerou, 2000) | Primacy for constancy | No | Yes |
| 7 | Punctuated equilibrium theory | (Lyytinen & Newman, 2008) | Primacy for constancy | Yes | Yes |
| 8 | Social network theory | (Burkhardt & Brass, 1990) | No primacy for either change or constancy | No | Yes |

| # | Prominent theory | Article: In-text citation and title | These columns relate to the prominent theories as presented in the selected article | | |
|----|------------------------|-------------------------------------|---|--|--|
| | | | Ontological perspective of change and constancy | Presents a pattern of change and/or constancy? | Explicitly acknowledges both change and constancy? |
| 9 | Sociomateriality | (Orlikowski, 2009) | Primacy for change | No | Only change |
| 10 | Socio-technical theory | (Sawyer & Jarrahi, 2014) | No primacy for either change or constancy | No | Yes |
| 11 | Structuration theory | (Phang & Kankanhalli, 2005) | No primacy for either change or constancy | No | Yes |
| 12 | Work system theory | (Alter, 2013) | Primacy for change | No | Only change |

3.3 The potential contribution of the paper's framework in relation to the selected prominent theories

A key contribution of the paper's framework is its epistemology, where change is known by its contrast to constancy and vice versa. The paper's framework exposes the aspects of change and constancy and their interrelationships. Furthermore, since change and constancy exist in cohesion, attention to both is essential for knowledge development, deep insight and effective management. Each aspect of constancy and change could have unique drivers and consequences, so, acquiring knowledge of both constancy and change is necessary for a holistic understanding of the antecedents to, factors involved in and effects from actions and resource allocations.

3.3.1 Adaptive structuration theory - (DeSanctis & Poole, 1994)

Adaptive structuration theory (AST) provides an explanation of IT's role in organisational change (DeSanctis & Poole, 1994). AST focuses on the types of structures provided by IT and the structures that emerge as people interact with the IT. AST indicates that organisational change happens gradually through various appropriations of technology (IT) structures by their human users. In time, social structures may change and result in IT-related organisational change. The paper's framework offers a broad perspective where IT may even play a role in organisational constancy or situations where IT use results in emergent constancy.

3.3.2 Changing as three steps: Unfreezing, moving and refreezing - (Lewin, 1947)

Changing as three steps explained organisational and social changes in terms of forces acting on states of equilibria and processes of freezing and unfreezing (Lewin, 1947). Various contextual forces act on quasi-stationary equilibria, which are maintained or frozen when the opposing forces are in balance. A process of moving or unfreezing takes place when an imbalance in the opposing forces occurs and then the level of an equilibrium changes. The new level of equilibrium is maintained or frozen when the opposing forces become balanced at the new level. However, the metaphor of freezing, while useful in many contexts, may be unsuitable for other environments, such as dynamic IT environments. The paper's framework allows a metaphor-free view of any context and the identification of as many prominent aspects of change and constancy as is relevant without any primacy for constancy via equilibria.

3.3.3 Contingency theory - (Robey, 1977)

Contingency theory proposes that organisational structure is determined by variables relating to the organisation and its environment, such as competitors, customers and suppliers (Robey, 1977). This perspective overlooks IT as the determinant of organisational structure. However, IT is seen as a moderator of organisational structure. The paper's framework does not preclude aspects of change and

constancy residing within IT that could conceivably result in change or constancy in an organisational structure.

3.3.4 Dynamic capabilities - (Sambamurthy et al., 2003)

Dynamic capabilities refer to an organisation's ability to flexibly combine different business and IT resources to compete in rapidly changing business environments, such as high-tech, financial services and retailing (Sambamurthy et al., 2003). Moderate to rapid change is evident in both the business environment and in the organisational environment, which involves business and IT resources being changed. The paper's framework could expose the short periods of constancy that exist in these environments. This would enable reflection for further developing and optimising the organisation's dynamic capabilities for forthcoming change events and emphasise the equally important organisational capabilities that are necessary to compete in any periods of constancy.

3.3.5 Evolutionary Theory - (Arnott, 2004)

Evolutionary theory provides an explanation for various processes of change. Where decision support systems (DSSs) are concerned, several evolutionary tempos or patterns of evolution over time are described (Arnott, 2004). These are continuous, punctuated equilibrium and quantum evolution. Continuous evolution refers to the cumulative effect of many small changes over time, punctuated equilibrium refers to relatively long periods of stability interrupted by short periods of rapid change and quantum evolution refers to many large radical changes. The paper's framework provides an explanatory framework to accommodate all change tempos, which offers the opportunity to gain insight about different tempos occurring simultaneously in different aspects of the same domain, their causes, nature and consequences.

3.3.6 Institutional theory - (Avgerou, 2000)

Institutional theory explains social patterns that are established and maintained through self-sustaining processes. This can be applied to IT innovation where the social pattern is frequent changes in the organisational environment, and its pattern is constant and self-sustaining (Avgerou, 2000). The paper's framework offers opportunities to view institutions as both self-sustaining social patterns and as environments where various aspects of change and constancy exist, which reinforce or weaken those institutions. Such knowledge could provide insight about the tensions that exist within institutions and any consequential effect they may have on the institutions.

3.3.7 Punctuated equilibrium theory - (Lyytinen & Newman, 2008)

The punctuated sociotechnical IS change (PSIC) model explains complex changes in IS environments (Lyytinen & Newman, 2008). It is extensive and valuable in its explanation of many different types of change, including random and chaotic change and curious chance events. The PSIC model indicates that change events occur as punctuations over time that disrupt business as usual. In addition to this, the paper's framework offers explanations for contexts where change occurs very frequently and is punctuated by short periods of constancy.

3.3.8 Social network theory - (Burkhardt & Brass, 1990)

Social network theory explains social relationships in terms of nodes, which are individual actors, and ties, which are the relationships between the actors. Social network theory has been used to explain how a change in technology affects organizational structure and power (Burkhardt & Brass, 1990). Social network theory explains how a change in technology can result in changed or constant organizational structures and power distribution. The paper's framework offers opportunities to identify and analyse the various aspects of the technological system, not just the social system, that change and those that stay constant, such as various features, processes, data and information, and how each of those relate to change and constancy in the corresponding social structures.

3.3.9 Sociomateriality - (Orlikowski, 2009)

Sociomateriality refers to the constitutive entanglement of the material and social in everyday practices (Orlikowski, 2009). Sociomateriality views the social and technical as ontologically inseparable in the practices of contemporary organizations. In these contexts, the social and technical are interpreted to be

fluid, interconnected, temporary and dispersed. Agency is not attributed to either the social actors or IT, instead it is attributed to their constitutive entanglement in any particular instantiation. The paper's framework offers opportunities to identify and analyse the various change and constancy aspects that occur within each sociomaterial entanglement, how those aspects relate to other entanglements and how they either promote change or constancy in the organisation and/or the organisation's IT.

3.3.10 Socio-technical theory - (Sawyer & Jarrahi, 2014)

Socio-technical theory explains that the performance of an organisation is dependent on the mutual constitution of two sub-systems, namely the social sub-system and the technical sub-system, and the particular context in which this takes place (Sawyer & Jarrahi, 2014). Socio-technical theory is also contrasted with social and technical determinism. The social sub-system consists of the people in an organisation at all levels, their characteristics and relationship structures. The technical sub-system consists of the techniques and tools used to transform inputs into outputs and is often reduced to IT. The paper's framework offers opportunities to identify and analyse the various change and constancy aspects of the technological sub-system and the social sub-system and how those aspects relate across the two sub-systems and how they either promote change or constancy in the organisation.

3.3.11 Structuration theory - (Phang & Kankanhalli, 2005)

Structuration theory explains social life as a mutual duality of social structure and human agency (Phang & Kankanhalli, 2005). Human agency refers to the patterns of human action, which produce and reproduce social structures. Social structure has three dimensions, namely signification, domination and legitimation. The human actions of communication, power and sanction are mediated by the modalities of interpretive schemes, facilities and norms to produce and reproduce signification, domination and legitimation, respectively. The paper's framework offers opportunities to identify and analyse the various change and constancy aspects that occur in the human actions, modalities and structural dimensions, how those aspects relate across them and how they either promote change or constancy in the organisation's social structure and IT.

3.3.12 Work system theory - (Alter, 2013)

A work system comprises the activities and processes performed by people and machines to produce services and products for internal and external customers (Alter, 2013). While work system theory explains that work systems can be stable or static for periods of time, the theory expects work systems to change or evolve over time from planned change and emergent or unplanned change. Information systems are regarded as work systems comprising information processing activities and processes such as information capturing, storing, manipulating and displaying. The paper's framework offers opportunities to identify and analyse the various change and constancy aspects that occur within work systems and their component parts, how those aspects relate across them and how they either promote change or constancy in the organisation's work systems.

4. Conclusion

In Africa, and globally, the success and failure of organisations affects millions of African livelihoods. Therefore, it is important that organisations are successful. Many, if not all, organisations rely on IT to function so IT success is a crucial part of organisational success. Hence, the paper developed a research and management framework to facilitate successful IT and organisational structuring and address the research problem with an original contribution to knowledge.

Research question one was answered by demonstrating that the absence of the paper's ontological view precludes vital insight about the realities of IT-related organisational change environments. Question two was answered in section two of the paper. Question three was answered in section three of the paper. Question four was answered by establishing an epistemology where change is known by its contrast to constancy and vice versa. This advances knowledge development and insight about the aspects of change and constancy and their interrelationships in IT-related organisational change environments. Acquiring knowledge about both constancy and change is necessary for a holistic understanding of the antecedents to, factors involved in and effects from actions and resource allocations.

In industry, the framework would assist managers to acknowledge, identify, analyse and address relevant aspects of change and constancy relating the external environment and the internal organisational environment, including people, IT systems and tasks. Recognizing what is changing and constant and what should be changed and kept constant is vital for managing these environments, decision-making and resource allocation.

Subsequent research on the paper's framework could be empirical to empirically verify and evaluate its applicability and efficacy in varied organisational contexts. In addition, the paper's framework could be used to develop an analysis method for industry to improve decision making and resource allocation in IT-related organisational change environments.

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