

REVIEW

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Comments on “The nature of theory in information systems”

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Abstract

This commentary is on Shirley Gregor's (2006) article titled “The Nature of Theory in Information Systems”, published in *MIS Quarterly*. In terms of theories, five types have been prominent in Gregor's classification: (a) Theory of Analyzing (b) Theory of Explaining (c) Theory of Prediction (d) Theory of Explaining and Predicting (e) Theory of Design and Action. The author argued that this can help researchers to choose a differing epistemological approach to develop a theory that is under development. Furthermore, a structural breakdown of the theory has been projected that gives a better and clear understanding of the essential parts of the theory to researchers. However, some important questions emerge after reading the most cited article about the nature of theory in IS. The major ones are: (a) What is the difference between theory in general and theory in IS?, (b) Are the structural parts of the theory described by Gregor exhaustive and correctly presented?, (c) Different classifications of theories presented by Gregor are theory or theorizing in nature, and finally, (d) Gregor argued that management scientists did not provide anything regarding design and action theory, is that true?

Keywords: Information systems, Theory, Management sciences, Gregor

Introduction

In the age of pragmatic and theoretical disruption where intersection, overlapping, and interconnection between disciplines are paving way for better epistemological approaches for understanding of ‘what is’ rather ‘what not’ about theory. So, clearing the clutter through commentary, guided by the simple yardstick of pocketing the ‘better half’ and leaving the rest could be the most suitable choice, especially in the case of most cited research works. Therefore, this review is an endeavor to present the palatable ‘better half’, as per the current scenario, for better utilization of the classical work.

Main text

The pivotal point of inception of new knowledge corridors has been done through the fundamental and unified agenda carried by theorists, termed as theory building. An associated struggle is the absence of precise definition

of theory, which could be generally acceptable. Therefore, there is a high call for ‘what it is’, in terms of theory [6]. Sensing this need, numerous theorists have strived for studying the nature, structural parts, and goals of theory [5]. The classical work of Gregor adds value to the core body of knowledge in this perspective by defining the four primary notions of theory (generalization, causality, explanation, and prediction).

Furthermore, the brief mapping of the article depicts that the goals of the theory description, explanation, analysis, and prescription have been detailed. The structural breakdown of theory is encapsulated into seven components, which provides a helping hand to the young researchers for better comprehension of theory. Moreover, based on four central goals of theory, five types of information system theories have been extracted from published work, using seven structural components of the theory. The researchers strived to segregate the commentary in terms of the four dimensions, as per the questions that demand reconsideration, as being the way forward.

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Nature of theory

Gregor mentioned that the domain of interest for a discipline influences the nature of theory. Therefore, it is needed for the distinct nature of theory for information systems because this discipline relates to human and machine interactions. As Gregor argued, theory in information systems needs to explain the social world phenomenon and the artificial socially constructed world by humans. However, information system discipline has commonalities with other design disciplines like architecture, management sciences, and medicines regarding human-machine interactions.

Hence, the questions arise in terms of the need for separate discussion about the nature of theory in each discipline, and the reasoning for not having a general theory for disciplines relating to human-machine interactions. Additionally, structural parts of the theory described by Gregor are common in other related disciplines as well. So, the researchers argue that, the nature of theory must be generalized across the related discipline for better comprehension of socially interacted phenomenon.

Structural parts of the theory

According to Gregor, all theories have means of representation (words, mathematical terms, symbolic logic, diagrams, tables, etc.), constructs, statement of relationship, and scope (boundary domain). Additionally, based on theory purpose causal explanations, testable propositions (hypotheses) and prescriptive statements may be part of the theory. Describing theory, Gregor argued that theory can have implications of causality.

However, it is widely accepted that a theory must be falsifiable, especially in management sciences [3]. It means each theory must have the potential to be tested through propositions or hypotheses by providing causal explanations [2], as knowledge advances and better theories emerged in a discipline that is an interaction of humans and machines. Therefore, once a theory is falsified, a better and more accurate theory will replace it through better prediction and prescription of human-machine interactions. Hence, it is better to say that causality implications, testable propositions are objective components of each theory to be falsifiable rather than a component based on theory purpose.

Theory of theorizing

Gregor presented analyzing, explaining, and predicting separately as theories in information systems literature. The importance of idiosyncratic efforts of analyzing, explaining, and predicting work is not negated by dominant research work in management but only implies that these are part of theorizing, not a theory in indigenous

sense [7]. As Gregor elaborated that theories of explaining and predicting or design and action are derived from “theories” of explaining, predicting, and analyzing. This implies that explaining, predicting, and analyzing “theories” are theorizing in nature. So, the idiosyncratic sense and theorization concept should go hand in hand.

Therefore, a physical theory is not an explanation only [4] and a simple description of facts about what is or how and why or what will be is not a theory. A theory must answer these questions simultaneously.

Design and action theory

In making a comparison between information systems and related fields, Gregor claimed that the classification of theory regarding design and action is unique and does not exist in other social science disciplines. The author depicted that the main researchers in management discipline lack debate on theory regarding design and action.

However, it is noteworthy that theory in organizational science is aimed to design an organization that guides humanistic action or studies focusing on human actions that guide organizational design [1, 5]. Organizational theory and organizational behavior disciplines are full of such research focus. Hence, claiming that social sciences, particularly management science authorities, do not debate the theory for design and action is not factual, or at least not entirely true, as per the citations of classical related work.

Conclusion

The comparison of strengths and weaknesses of the work under consideration, the vital side is comprehensiveness, simplicity, and potential for producing more generalized, concise, and interesting theories regarding information systems. In contrast, the demarcation of ‘what it is’ in regards to theory related with human-machine interactions and information systems is yet to be done. The way forward would be detailing the possible similarities, overlaps and differences. Therefore, it is more useful to define theory in general terms for information systems and related fields. The reasoning for the difference between theory in human-machine interacting disciplines and theory in IS, paves the way for further study.

Moreover, structural components of the theory are comprehensive, but causal explanations and testable propositions are an inherent part of theory as theory must be falsifiable, and this is a dominant practice management, which should not entirely sidelined. Therefore, based upon falsifiability condition, “theories” of explanation, prediction, and analysis are theorizing in nature until they are falsifiable with characteristics of causality and testability. So, different classifications of theories presented by Gregor is an idiosyncratic approach that is vital

for better understandability but cannot be termed as ‘theories’ altogether, as per the present status of significant research work progress. Finally, Gregor’s claim about the uniqueness of design and action theory is not true in totality because organizational science is full of theories addressing actions guiding the organizational design and organizational design predicting human actions and utilized by the plethora of major management studies conducted across the globe.

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Authors’ contributions

SH has critically analyzed the main article and given his detailed viewpoint keeping in view the management sciences discipline and its contribution to the theory and its implication for practitioners. IBD has made significant and visible contribution in terms of language, structure, and improvement of manuscript. The same can be vetted from the parent institute. IBD is MBA&MS from Sweden, assistant editor for university research journal, successfully pursuing his PhD from one of the top universities in Pakistan, Assistant Professor and has handsome research experience, and his work is accepted in many international conferences. IBD has been co-authoring with many university teachers and has handsome experience in drafting and proof readings well. All authors have read and approved the manuscript.

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References

1. Astley WG, Van de Ven AH (1983) Central perspectives and debates in organization theory. *Adm Sci Q* 28:245–273
2. Bacharach SB (1989) Organizational theories: some criteria for evaluation. *Acad Manag Rev* 14(4):496–515
3. Dubin R (1978) Theory building: a practical guide to construction and testing theoretical models. Free Pre. ISBN-10: 002907620X ISBN-13: 978-0029076200
4. Duhem P (1962) The aim, and structure of physical theory. Atheneum, New York
5. Gioia DA, Pitre E (1990) Multiparadigm perspectives on theory building. *Acad Manag Rev* 15(4):584–602
6. Sutton RI, Staw BM (1995) What theory is not? *Adm Sci Q* 40:371–384
7. Weick KE (1995) What theory is not, theorizing is. *Adm Sci Q* 40:385–390

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