Paper Summary

Title:

Defining and Conceptualizing Actionable Insight: A Conceptual Framework for Decision-centric Analytics

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Year:

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Publication Type:

Conference Paper

Discipline/Domain:

Information Systems

Subdomain/Topic:

Data Analytics, Decision Support, Problem Solving

Contextual Background:

The paper addresses the lack of a systematic, theory-driven definition of "actionable insight" in data analy

Geographic/Institutional Context:

Queensland University of Technology, Australia

Target Users/Stakeholders:

Data analysts, decision makers, system designers

Primary Methodology:

Conceptual/Theoretical Development

Primary Contribution Type:

Conceptual framework and definition

General Summary of the Paper

This paper proposes a theory-driven, multi-component definition of actionable insight for decision-centric

Eligibility

Eligible for inclusion: **Yes**

How Actionability is Understood

Actionable insight is defined as:

> "A cohesive set of understandings about the problem situation based on prognostic insights derived fro

It is conceptualized as reasoning artefacts gained through the analytics process, contextualized, internali

What Makes Something Actionable

- Derived from integrating analytic, synergic, and prognostic insights.

- Contextualized to the user's objectives, constraints, and domain.

- Involves internalization of results into mental models.

- Supports confident, informed decision making for problem solving.

How Actionability is Achieved / Operationalized

- **Framework/Approach Name(s):** HIVE Framework

- **Methods/Levers:** Hierarchical insight layering, integration of analytic results with soft evidence, situat

- **Operational Steps / Workflow:**

  1. Derive **analytic insights** from data queries/analysis.

  2. Synthesize into **synergic insight** via chains of arguments and situation models.

  3. Generate hypotheses and predict future states for **prognostic insight**.

- **Data & Measures:** Quantitative analytical results, qualitative domain knowledge, soft evidence, scen

- **Implementation Context:** Decision-centric analytics systems.

> "Support structured reasoning with the aids of advanced analytics techniques." (p. 8)

> "Provide flexible analytics environment that supports the natural flow-of-thoughts of the users." (p. 9)

Dimensions and Attributes of Actionability (Authors' Perspective)

- **CL (Clarity):** Yes — insights must be interpretable and structured for reasoning.

- **CR (Contextual Relevance):** Yes — must align with user's objectives, constraints, and domain know

- **FE (Feasibility):** Yes — solution alternatives and predictions must be actionable in practice.

- **TI (Timeliness):** Partial — addressed via anticipatory strategies and faster insight cycles, but not a pr

- **EX (Explainability):** Yes — reasoning artefacts, chains of arguments, and situation models explicitly

- **GA (Goal Alignment):** Yes — objectives and constraints are explicitly embedded in situation models.

- **Other Dimensions Named by Authors:** Objectivity, scope, granularity, domain value, human reasonir

Theoretical or Conceptual Foundations

- Complex problem solving

- Naturalistic decision making

- Sensemaking theory

- Situation awareness

Indicators or Metrics for Actionability

No explicit quantitative KPIs; operational indicators implied through completeness of the three insight con

Barriers and Enablers to Actionability

- **Barriers:** Lack of synthesis support; cognitive overload; weak probabilistic reasoning without aids; re

- **Enablers:** Computational reasoning aids (e.g., fuzzy cognitive maps, Bayesian networks); flexible an

Relation to Existing Literature

Builds on prior fragmented definitions of actionable insight, integrating them into a systematic, multi-comp

Summary

Tan and Chan (2015) define actionable insight as the integration of analytic, synergic, and prognostic insi

Scores

- **Overall Relevance Score:** 95 — Strong, explicit definition with systematic, theory-informed features.

- **Operationalization Score:** 90 — Clear methods for achieving actionability via HIVE, though lacking e

Supporting Quotes from the Paper

- "Actionable Insight: A cohesive set of understandings about the problem situation… enables the user to

- "Insight is the result of information internalization process… contextualized in a specific situation…" (p. 3

- "Design consideration: Support the users in constructing computation-friendly situation model…" (p. 6)

- "Prognostic insight has the highest extent of actionability as it provides users with the knowledge necess

Actionability References to Other Papers

- Saraiya et al. (2005) — insight-based evaluation methodology.

- Thomas & Cook (2005) — visual analytics research agenda.

- Ribarsky et al. (2009) — analytical reasoning.

- Weick (1995) — sensemaking theory.