Early Results from Luhmann's Social Systems Theory Observation Upon the Impact of AI in Society.
A Systematic Review

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WHY LUHMANN? \

In the post-industrial era, scholars agree technology plays a relevant role in social change (Trend, 2001; Webster, 1995; Castells, 2004; Salvaggio, 2013; Lebow et al, 2016;), being AI a technology capable to accelerate tasks and processes, shaping the nature of organisations and the way we do things (Iansiti and Lakhani, 2020; Pelz-Sharpe and Kompella, 2019). Niklas Luhmann is considered one of the most pre-eminent sociologists of postmodern time (Mingers, 2002; Šubrt, 2019; Roth, 2013). He intended to offer to sociology discipline a unified theory, split at the time into two concepts, empirically hypotheses and conceptual efforts in a broad sense. (Mingers, 2002; Luhmann, 1995; Luhmann, 2012).

QUALITY \

SAMPLING: Academic articles; Textbook chapters;
SOURCE: 30 initial databases executed, 7 extracted: Scopus; Web of Science; ACM Digital Library; BMJ Journals; ProQuest; Business Source Ultimate; CORE. 76 sources explored, 14 analysed.
QUESTION: Could Luhmann's Social Systems Theory be an appropriate lens to understand the complex impact of artificial intelligence in society?
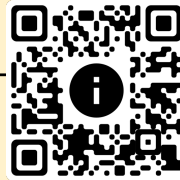**SEARCH TERM:**
("Niklas Luhmann" AND "artificial intelligence" AND " societ*")
STRATEGY: From January 2012 to January 2022; English/Spanish/Portuguese/ Italian languages;
QUALITY STRATEGY: Referencing Niklas Luhmann at least once; Exploration of reference list and Connect Papers tool for further search.
STANDARD: PRISMA (Developed by Researcher based on Booth et al, 2021; Boland, Cherry and Dickson, 2017; Easterby-Smith et al, 2021; PRISMA, 2020; Saunders, Lewis and Thornhill, 2019)

/ PURPOSE

The purpose of this research is conducting a systematic review of Niklas Luhmann's Social Systems Theory oriented to understand the complex impact of Artificial Intelligence in Societies. A rigorous approach to reduce bias and increase quality will be applied, including preliminary search, inclusion and exclusion criteria, and quality assessment. Finally, a grounded analysis using code-of-theory model will explore patterns between the full reading selection to provide insights and further research questions.
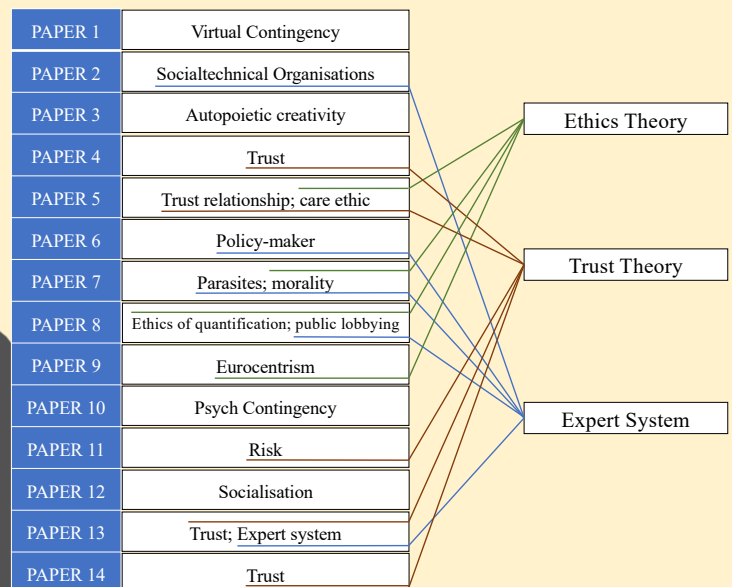
/ RESULTS

Overall, papers explored a variety of Luhmann's social systems, being highly related with the impact of AI in society from different angles. Furthermore, a few good contributions have be extracted, mostly regarding the role of experts in interfering in the relationship between AI and society. For example, PAPERS 2 and 8 called for entities who should regulate the relation AI-User, being named *Socialtechnical Organisations* and *Officer for Public-Lobbying* respectively. Complementarily, PAPER 7 adverts about the *digital parasitism* of hackers, which creates noise in communications. PAPER 6 proposes art as a policy-maker through its *aesthetic expertise*. Similarly, PAPER 13 highlights religion as an expert in providing *reassuring to human destination*. Finally, PAPER 14 directly addresses the relevance of experts in constructing a *trustful relationship* between internet and social systems. Trust is also present in several papers; for example, in PAPER 5, it is defined as a functional mechanism to reduce complexity. PAPER 1, differently, reflects about the paradoxical functions of AI as machine and communicator, being expected to execute a precise task and at the same time surprise the interlocutor.

/ ANALYSIS

CONCLUSION

Despite the great amount of publications, Luhmman's contributions is **narrow** in terms of empirical evidence. Only a few results are related with his social systems work.

Systematic Review is a broad and time demanding methodology, however, useful in exploring complex and interdisciplinary theories. (Campbell et al, 2014)

A variety of social systems have been covered, being only a few related with **business** directly.

Following the grounded analysis and abductive approach, **three theories** have been noted, ethics theory, trust theory and expert system. Surprisingly, ethics is one of them, despite Luhmann's interest in differentiate ethics from his study of moral communications (Luhammn, 1996).

Further research is advised to explore more papers, correlations of theories and applicability to AI, society and business.

PAPER 1	Virtual Contingency
PAPER 2	Socialtechnical Organisations
PAPER 3	Autopoietic creativity
PAPER 4	Trust
PAPER 5	Trust relationship; care ethic
PAPER 6	Policy-maker
PAPER 7	Parasites; morality
PAPER 8	Ethics of quantification; public lobbying
PAPER 9	Eurocentrism
PAPER 10	Psych Contingency
PAPER 11	Risk
PAPER 12	Socialisation
PAPER 13	Trust; Expert system
PAPER 14	Trust

Ethics Theory

Trust Theory

Expert System