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Knowledge Entropy

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National University of Political Studies and Public Administration

Definition

- Knowledge entropy reflects the probable distribution of knowledge within a given period of time, and it proves helpful when it comes to understanding the process of knowledge transfer and knowledge dynamics.
- The concept of entropy was firstly introduced by Clausius in thermodynamics, followed by Boltzmann for statistical mechanics, and Bratianu for knowledge management
 - It is considered to be a measure of order and disorder within a system: the higher the entropy, the greater the level of disorder
- Managing knowledge implies managing the knowledge entropy within an organization implying the distribution of knowledge among individuals at different managerial levels and how the knowledge is shared

Entropy measures system randomness or uncertainty. In information theory, it quantifies the information in a message or dataset. More uncertainty means higher entropy.

Knowledge management involves knowledge transfer like sharing and intergenerational transfer. Considering rational, emotional, and spiritual knowledge is important for understanding knowledge transfer complexity. Knowledge entropy, inspired by thermodynamics, explains transfer and measures management complexity based on knowledge distribution probability.

Knowledge entropy helps evaluate transfer effectiveness in training programs, knowledge sharing, and organizational communities. Assessing knowledge distribution enables informed decisions to increase entropy, fostering innovation. Measuring knowledge entropy aids researchers in intellectual capital development and promoting intelligent organizations.

Knowledge entropy characteristics

1.

Statistical Nature

It reflects how knowledge is distributed within a company

2.

Stimulates Innovation by all transformations between Knowledge Fields

Focus on three types of knowledge: rational, emotional, spiritual

3.

Enhanced by Knowledge Sharing

Knowledge entropy is increased by knowledge sharing



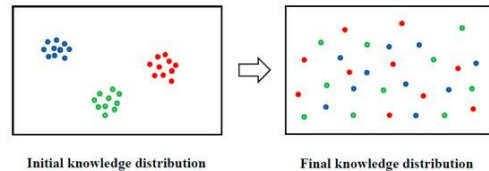
Entropy is linked to the second law of thermodynamics, characterizing thermodynamic systems. Heat flow from high to low temperatures represents thermal flux. In the domain of knowledge, it's unevenly distributed, nonlinear, and exists in the human brain, body, or social context. This interpretation goes beyond Newtonian mechanics, increasing entropy with system changes.

Knowledge Dynamics focuses on transforming knowledge fields. Metaphors for knowledge have evolved from objects to fluid or stock-and-flow. Bratianu & Andriessen(2002) introduced an energy-centered metaphor, where knowledge takes different forms and can be lost or acquired. Knowledge transformation is the objective of studying this concept.

There are three knowledge categories: rational, emotional, and spiritual. Rational knowledge is explicit and communicated through symbols or language. Emotional knowledge is tied to the subconscious and expressed through feelings, stemming from survival instincts. Spiritual knowledge encompasses values, beliefs, and mental states experienced by an organization (Bratianu, 2018).

Knowledge sharing and distribution

- Knowledge sharing changes the knowledge distribution within the organization, but it does not create new knowledge
- Knowledge sharing increases knowledge entropy i.e. level of knowledge disorder
- Organizations with a high level of knowledge entropy register a flat organization culture, are considered fast-growing companies, and demonstrate a great level of autonomy and flexibility within individuals



Source: Figure by Bratianu & Bejinaru (2019) in research article

Knowledge sharing is the process of exchanging information, skills, expertise, and ideas between individuals or groups within an organization or across different organizations. It involves the transfer of knowledge from those who possess it to those who need it, in order to enhance learning, innovation, decision-making, and problem-solving.

Knowledge sharing is thought to be one of the most important factors in the success of the Knowledge Management strategy in organizations and it can enhance job performance, boost intellectual capital, improve individual and organizational competitiveness, and lower operational costs for organizations.

Knowledge distribution involves the dissemination of information and expertise to individuals, teams, organizations, or communities, making it readily available to those who require it, irrespective of their location or organizational affiliation. This process aims to ensure that knowledge is accessible and shared effectively to promote collaboration, innovation, and performance, regardless of organizational boundaries or geographical location.

Sources to find out more!

- Bratianu, C. (2018). A holistic view of the organizational knowledge dynamics. *HOLISTICA– Journal of Business and Public Administration*, 9(2), 7-22. DOI: <https://doi.org/10.2478/hjbpa-2018-0009>.
- Bratianu, C. (2019). Exploring knowledge entropy in organizations. *Management Dynamics in the Knowledge Economy*, 7(3), 353-366. DOI: 10.25019/MDKE/7.3.05
- Bratianu, C. (2020). From thermodynamic entropy to knowledge entropy. In *Proceedings of the International Conference on Business Excellence*, 14, (1), 589-596. DOI: <https://doi.org/10.2478/picbe-2020-0055>
- Bratianu, C., & Bejinaru, R. (2019). The theory of knowledge fields: a thermodynamics approach. *Systems*, 7(20). DOI: <https://doi.org/10.3390/systems7020020>

We recommend you to check these resources for additional information on KIBS and the race for knowledge.



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More about the project:
knowmanproject.eu

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