

COLLECTIVE INTELLIGENCE FOR SOCIAL IMPACT

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ABSTRACT

As the world strives to reach new realms in sustainability, education and innovation, the topics of social impact and collective intelligence have attracted global attention, both in corporate and academic environments. This paper further explores these topics, while describing how some of these key elements have contributed to business and social impact in a Japanese organization.

KEYWORDS: *Impact, Innovation, Social, Strategy, Sustainability.*

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1. INTRODUCTION - COLLECTIVE INTELLIGENCE

As organizations are constantly confronted with change and continuous transformation, businesses are not simply adapting but also learning how to navigate in such fluid environments. The US Army originally used the VUCA acronym for Volatility, Uncertainty, Complexity and Ambiguity to refer to the increasingly VUCA-esque world following the Cold War (Bennis & Nanus, 1985) and this term has been broadly used in emerging leadership theories (Horney et al., 2010).

A study by Laukkonen et al. (2018) further described different aspects of VUCA. *Volatility* suggests a situation or condition which changes rapidly and unpredictably. *Uncertainty* relates to the quality of information or the degree to which the outcome of an event is knowable in advance. *Complexity* increases when there is a greater number of relevant variables or interrelationships. *Ambiguity* occurs when an event, situation, or context is unclear. This may be either because information is missing, inconsistent, contradictory, or obscured. For humans, each of these components of VUCA has a tendency to create hardship such as adverse physical or mental health (Dima et al. 2021).

Surowiecki (2003) states that the aggregation of information in groups, results in decisions that are often better than could have been made by any single member of the group. Additionally, Lesser et al. (2012) determines that as individuals become more adept and comfortable sharing thoughts and ideas in virtual spaces, companies can use these insights to address critical business challenges. Malone (2020) further supports these suppositions, going a step further to suggest that everything humans have done has not been achieved by lone individuals, but by groups of people working together.

Malone (2020) further attributes "collective intelligence" as a significant statistical indicator of group performance such as a group's ability to perform wide varieties of tasks required to solve complex problems. And, as companies experience digital transformation, the logic of human actions are impacted. This can lead to different ways of thinking by workers such as a change in organizational effectiveness, firm productivity, company profitability, teamwork and leadership (Figueroa & Perez, 2018).

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2. COLLECTIVE INTELLIGENCE FOR SOCIAL IMPACT

Collective intelligence for social impact refers to the collaborative effort of diverse groups—such as communities, organizations, and individuals—working together to solve complex social issues. It leverages the collective knowledge, skills, and experiences of a group to create solutions that are more innovative, effective, and sustainable than what could be achieved by individuals or isolated organizations alone.

Key Aspects:

1. **Diversity of Perspectives:** Involving a wide range of stakeholders from different backgrounds and disciplines to ensure a comprehensive understanding of the social issue.
2. **Collaborative Problem-Solving:** Encouraging open dialogue, brainstorming, and co-creation among participants to generate creative solutions.
3. **Technology and Data:** Utilizing tools such as crowdsourcing platforms, data analytics, and AI to gather insights, identify patterns, and scale solutions.
4. **Shared Goals and Values:** Aligning the group around common objectives and ethical principles to ensure that the impact is positive and equitable.
5. **Adaptability and Learning:** Continuously assessing the effectiveness of solutions and being open to feedback and iteration to improve outcomes.

Examples:

- **Crowdsourcing** ideas for social innovations, such as online platforms where people contribute solutions to challenges like poverty or climate change.
- **Participatory decision-making** in communities, where citizens work together to decide on local policies or initiatives.
- **Collaborative research** initiatives, where multiple organizations pool their resources and expertise to address global issues like health disparities.

In essence, Collective Intelligence for Social Impact is about harnessing the power of the many to achieve positive social change in a more inclusive and effective way.

In Practice 1: The OpenIDEO Platform

OpenIDEO is a global online platform that applies collective intelligence to tackle pressing social challenges. It invites a diverse community of individuals, including designers, innovators, entrepreneurs, and everyday citizens, to participate in solving specific challenges related to social impact.

How it Works

1. **Challenge Definition:** Organizations, governments, or NGOs define a social problem they want to solve. For instance, they might seek solutions for improving access to clean water in developing countries.
2. **Crowdsourcing Ideas:** The platform opens the challenge to the global community, encouraging people from all walks of life to submit ideas, no matter how big or small. This brings in diverse perspectives and innovative concepts that might not emerge in a more closed or homogeneous group.
3. **Refinement and Collaboration:** Participants can build on each other's ideas, provide feedback, and collaborate to refine the solutions. The collective intelligence of the community helps to strengthen the best ideas and make them more feasible.
4. **Selection and Implementation:** The most promising solutions are selected for further development. OpenIDEO often partners with organizations that can fund and implement these solutions on the ground.
5. **Continuous Learning:** The platform also promotes continuous learning by encouraging participants to share their experiences and insights during and after the implementation phase. This feedback loop helps to improve future projects and fosters a culture of innovation.

Example Outcome

In a past challenge, OpenIDEO sought solutions to improve early childhood education in low-resource settings. The challenge received hundreds of submissions, ranging from mobile apps that provide educational content to parents, to community-driven initiatives that create safe learning spaces. The winning ideas were piloted in various communities, demonstrating the power of collective intelligence in addressing a critical social issue.

Impact: By engaging a global community and combining their diverse knowledge, OpenIDEO has successfully generated innovative solutions to complex social problems, such as health, education, and sustainability. These solutions are more robust and widely applicable because they are informed by a broad range of experiences and insights.

In Practice 2: Ushahidi

Ushahidi is a crowdsourcing platform originally developed in Kenya to map reports of violence during the 2008 post-election crisis. It has since evolved into a tool used globally for various social impact initiatives, particularly in crisis situations.

How it Works

1. **Crowdsourced Data Collection:** Ushahidi allows people to report incidents via SMS, email, social media, or web forms. These reports can include anything from violence, natural disasters, human rights abuses, to health emergencies. The platform aggregates this data in real-time.
2. **Geospatial Mapping:** The collected reports are then mapped onto an interactive platform, providing a visual representation of the situation on the ground. This map can be accessed by anyone, including the general public, NGOs, government agencies, and humanitarian organizations.
3. **Data Validation and Analysis:** Community members and volunteers can help validate the data by cross-checking reports and providing additional information. This collaborative effort ensures that the information is as accurate and up-to-date as possible.
4. **Resource Coordination:** The visualized data helps organizations and authorities to better coordinate their response efforts. For instance, during a natural disaster, they can identify the most affected areas and prioritize aid distribution accordingly.

Example Outcome

- **Haiti Earthquake (2010):** During the 2010 earthquake in Haiti, Ushahidi was used to map and coordinate emergency responses. People on the ground reported incidents such as collapsed buildings, trapped individuals, and urgent needs for medical assistance. The platform aggregated these reports and helped relief organizations direct resources more effectively.
- **COVID-19 Pandemic (2020):** Ushahidi was also used during the COVID-19 pandemic to map the spread of the virus, report health resources availability, and track the needs of vulnerable populations. This information was crucial in areas with limited government response, enabling communities to self-organize and provide support where it was needed most.

Impact: Ushahidi has been widely recognized for its ability to mobilize collective intelligence during crises. By empowering ordinary people to report and map critical information, it has transformed how organizations respond to emergencies, ensuring that efforts are more targeted and effective. The platform exemplifies how collective intelligence can save lives and improve crisis management.

In Practice 3: eBird

eBird is a citizen science project that leverages collective intelligence to gather data on bird populations worldwide. Managed by the Cornell Lab of Ornithology, it is one of the largest biodiversity-related science projects globally.

How it Works

1. **Crowdsourced Bird Observation:** eBird allows birdwatchers of all levels, from amateur enthusiasts to professional ornithologists, to submit their bird sightings through the eBird website or mobile app. Users can record which species they saw, the number of individuals, the location, and the time of the sighting.
2. **Data Aggregation and Analysis:** The platform aggregates millions of observations from around the world, creating a massive, continuously updated database of bird sightings. This data is analyzed to track bird populations, migration patterns, and changes in species distribution over time.
3. **Global Mapping and Visualization:** eBird provides visual tools that map the distribution of bird species across the globe. These maps are accessible to the public, researchers, and conservationists, allowing them to observe trends, identify areas of concern, and make data-driven decisions.
4. **Conservation and Research Impact:** The data collected through eBird is used by scientists and conservation organizations to monitor bird populations, study the impacts of climate change, and design conservation strategies. The vast amount of data generated by citizen scientists through eBird has led to numerous scientific publications and conservation initiatives.

Example Outcome

- **Monitoring Bird Migrations:** eBird has significantly contributed to our understanding of bird migration patterns. For example, the data collected has helped scientists track the migratory routes of species like the Swainson's Thrush and identify critical stopover points where conservation efforts are needed.
- **Conservation Efforts:** In Australia, eBird data was used to identify key habitats for the critically endangered Regent Honeyeater. This information informed habitat protection efforts and guided the reforestation of areas crucial to the species' survival.
- **Climate Change Research:** eBird data has been used to study the effects of climate change on bird populations. By analyzing long-term trends, researchers have observed shifts in the ranges of various species, which is critical for predicting how ecosystems may change in the future.

Impact: eBird exemplifies how collective intelligence can contribute to large-scale scientific research and conservation efforts. By engaging a global community of birdwatchers, the project has amassed an unparalleled dataset that informs research, guides conservation actions, and increases public awareness of biodiversity. It shows how citizen participation can make a substantial impact on environmental science and conservation.

3. QUANTIFYING COLLECTIVE INTELLIGENCE

Measuring social impact generated by collective intelligence involves integrating qualitative and quantitative assessments. The formula for measuring social impact is not a one-size-fits-all but rather a framework combining multiple factors.

One possible approach is:

Social Impact (SI) = Reach × Depth × Duration × Empowerment

Here's how the components can be broken down:

1. **Reach:** The number of people or communities affected by collective intelligence. This could be measured by:
Reach = Total Number of People Engaged or Benefited
2. **Depth:** The degree of change experienced by individuals. It measures how profound the impact

is, often determined through surveys, case studies, or before-and-after assessments. You can create a scale for this:

Depth=Average Improvement in Key Metrics per Person or Community

3. **Duration:** How long the impact lasts. Long-lasting changes in behaviors, systems, or environments carry more weight.

Duration=Expected or Measured Duration of the Impact in Years

4. **Empowerment:** A qualitative factor indicating how much people or communities are empowered to create further change or improve their situation autonomously. This is often a multiplier or an additional qualitative score.

Example Formula

SI = (Reach × Depth × Duration) × Empowerment Score

Where the **Empowerment Score** could range from 0 to 5, reflecting the degree of autonomy and capability gained by the impacted groups.

Additional Considerations

- **Collective Intelligence Contributions:** Could involve measuring how collective inputs (e.g., crowdsourced solutions, open innovation platforms, etc.) lead to more efficient, effective, or innovative solutions than would have been possible through individual or siloed efforts.
- **Network Effects:** The way that ideas or solutions spread through a community can also amplify impact, contributing to broader social changes.

These components are often contextual and should be customized based on the specific initiative being measured.

Application Test

We have conducted a substantive test by applying the formula to EBEMATSU Co., Ltd.

Company Profile

EBEMATSU Co., Ltd. (shortly known as EBM) is a wholesale and manufacturing company for kitchen tools, mainly for professional use. With the vast range of Kitchen tools, EBM provides both with high-quality made-in-Japan products as well as exquisite items from renowned brands all over the world.

EBM is located in Tsubame City of Japan, which is known for its abundance in mineral resources and production of copperware and cutleries. EBM started as a small business in 1937 and today it is one of the top kitchenware distributors in Japan generating 113 Mil. USD sales revenues in the year 2019. EBM offers more than 90,000 professional kitchenware products.

EBAMATSU is deeply involved in multiple activities of social impact - Collaborating with local authorities and various organizations of education investments is one of their strategic objectives.

Methodology

Our approach to conduct a substantive test is:

- 1) Manager Discussions (16 people interviewed)
- 2) Focus Group Interviews with key stakeholders (5 executive directors)
- 3) Participatory Observations

4. SUMMARY OF FINDINGS

Throughout the discussions we held with the management of EBM, their high interest in monitoring and amplifying social impact was indicative of their commitment to social value creation, innovation and resilience. All of the 16 managers interviewed indicated that the main reason for being in business to them was value creation – value for customers, employees and broader society. Following the **Social Impact (SI)** formula, they indicated that in 2024 their orchestrated activities focused on collective intelligence reached over 36,000 people (approximately 2,000 people on the

payroll engaged and approximately 34,000 people actively enrolled in collective intelligence activities within their communities). The depth of the engagement was calculated in terms of improvement in key metrics (proactive contributions to collective intelligence activities, participation in events, indication of enhanced interest and commitment to further contributions, etc.) per person throughout the year. In terms of duration, the measurement is still work in progress, as the intentional monitoring process of collective intelligence initiatives only started this 2024.

Nevertheless, we are planning to continue this research in 2025 and below to observe how EBM managers are progressing with their impact measurements of collective intelligence initiatives.

From participatory observations activities, the authors have noted repeated interactions and cascaded engagements following initial rounds of organizational actions geared at accelerating interest and contributions throughout the employee population and beyond. On multiple occasions, employees took it upon themselves to speak with a broader audience and to engage suppliers, distributors, corporate customers and other business partners in a variety of collective intelligence activities, with the aim of fostering a culture of continuous innovation, gaging input and collective thinking from a diverse group of stakeholders.

5. DISCUSSIONS AND FINAL REMARKS

Social intelligence initiatives have generated increased public awareness and interest recently in Japan. Similarly to Ebematsu Shoji, there are multiple private and public organizations indicating interest and committing resources to social impact and collective intelligence efforts. Although this is a relatively new initiative in business operations in Japan, it is a matter of increased popularity of further attention and continued research on outcome and impact with help both scientists and business professionals better monitor and govern collective intelligence initiatives. This might also be of interest to businesses striving to go beyond legacy innovation efforts, which have traditionally been carried on under high confidentiality, in house by full-time employees, with limited input and contributions from external stakeholders.

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