IBM Global Business Services
Executive Report

IBM Institute for Business Value

Collective Intelligence

Capitalizing on the crowd

IBM Institute for Business Value

IBM Global Business Services, through the IBM Institute for Business Value, develops fact-based strategic insights for senior executives around critical public and private sector issues. This executive report is based on an in-depth study by the Institute's research team. It is part of an ongoing commitment by IBM Global Business Services to provide analysis and viewpoints that help companies realize business value.

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By Eric Lesser, David Ransom, Rawn Shah and Bob Pulver

Can an organization, operating in today's interconnected and interdependent environment, overlook the insights of its global ecosystem and still expect to thrive? Social technologies are increasing the ability of companies to tap into Collective Intelligence – the distributed knowledge and expertise of individuals located inside and outside the formal boundaries of the enterprise. Applying this knowledge can deliver tangible benefits in developing new products and services, sharing best practices, distributing work in new, innovative ways and predicting future events. This study highlights a number of approaches for applying Collective Intelligence, how organizations can determine and select the appropriate audiences for these efforts, and how they can address the common risks and challenges of this emerging capability.

Introduction

We live in an increasingly social world, where advancements in technology are changing how we buy, how we work and how we connect with others. Expanding and overlapping social networks are enabling individuals to express opinions, share expertise with a greater audience and shape decision-making processes on a global scale. Can an organization that chooses to ignore the insights of employees, customers and business partners expect to thrive?

For many organizations, the answer is no. In a global environment where innovation cycles are shrinking, customer expectations are rising and talent is becoming more distributed, companies are seeing the need to more effectively apply the knowledge and experience of individuals, regardless of their vocation, affiliation or organization status. As organizations look to become "social businesses," tapping into the thoughts and opinions of the marketplace becomes even more critical.

Fortunately, the opportunity to more effectively apply Collective Intelligence – the aggregated knowledge, insight and expertise of a diverse group – has become a reality. As individuals become more adept and comfortable sharing thoughts and ideas in virtual spaces, companies can use these insights to address critical business challenges. Harnessing Collective Intelligence can play an important role in generating new ideas, solving age-old problems, disaggregating and distributing work in new and innovative ways, and making better, more informed decisions about the future.

Through our research, extensive client experience, and in-depth conversations with a broad range of academics, vendors and companies that have explored Collective Intelligence techniques, we see three areas of guidance for organizations:

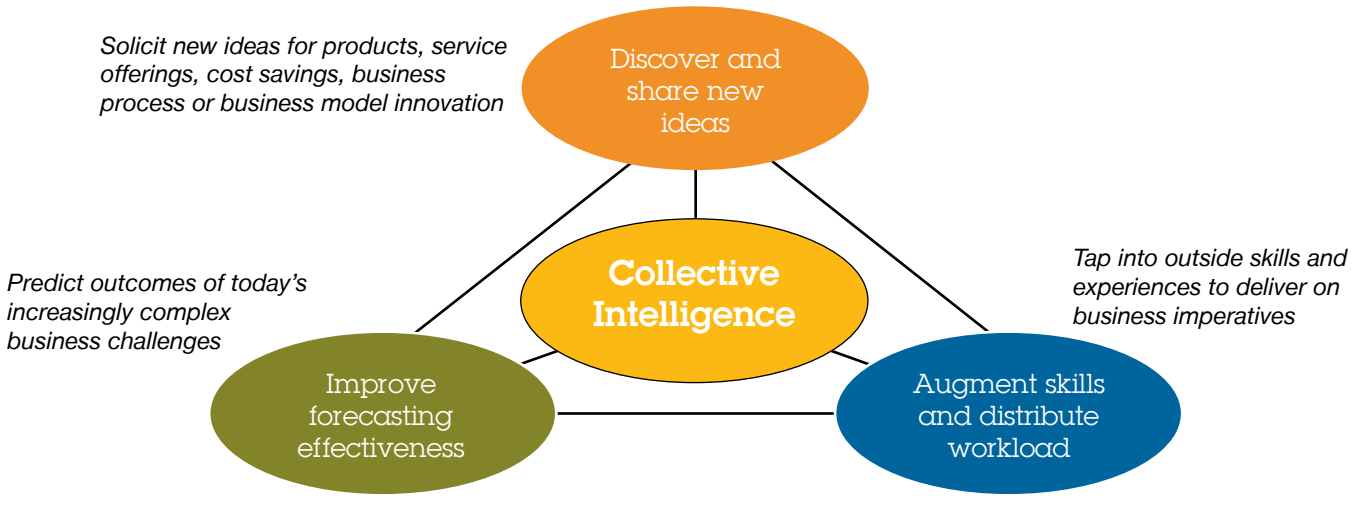
1 Collective Intelligence enhances business outcomes by improving how organizations access the untapped knowledge and experience of their networks to:
- Discover and share new ideas
- Augment skills and distribute workload
- Improve forecasting effectiveness.

2 Central to the success of Collective Intelligence initiatives is the ability to target and motivate the right participants, considering the need for:
- Knowledge – contextual awareness of the problem to be solved
- Diversity – sufficient breadth of experience to bring a range of perspectives and views
- Disruption – willingness to challenge current thinking.

3 Key study findings indicate that successful Collective Intelligence efforts need to:
- Address sources of resistance, including operational challenges, conflict with existing charters, perceived loss of control, and shifting roles and responsibilities
- Integrate Collective Intelligence into the work environment, both technologically and culturally
- Act on what is discovered, communicating value and outcomes to both the organization and the individual.

Applying Collective Intelligence

Collective Intelligence can be applied across a number of business objectives to:
- Identify new opportunities to differentiate your organization or serve new markets
- Tap into outside skills and experiences to deliver on business imperatives
- Predict outcomes of today's increasingly complex business challenges.



Source: IBM Institute for Business Value..

Figure 1: **Collective Intelligence approaches connect knowledge and experience to where it is most needed to address today's business challenges.**

1. Discovering and sharing new ideas

Collective Intelligence methods provide compelling frameworks to solicit new ideas for products, service offerings, cost savings, business process innovation or new business models. Traditional approaches for capturing these insights, such as focus groups, surveys, product feedback forums or suggestion boxes, are often resource-intensive, time-consuming and lack the breadth of audience to create an optimal solution. Further, they do little to engage participants in the sharing and co-creation process, and often fail to provide feedback or connect individuals' contributions to business outcomes.

By using a number of emerging and existing approaches, enterprises can use networks of employees, customers, business partners, consumers, external experts and others to:

- Identify new disruptive offering ideas
- Provide ways to improve business processes and increase efficiency
- Develop product enhancements based on end-user and customer feedback
- Use co-creation to deepen customer engagement and strengthen brand loyalty.

These approaches include:

Contests and challenges: This is an approach where opportunities or problem statements are presented to members of the crowd, who compete to provide a winning solution. Individuals or groups of participants work simultaneously to submit their ideas or problem solutions for adjudication by the organization sponsoring the challenge. In some cases, submissions are ranked and scored among fellow participants. Successful contests and challenges require careful problem definition to break the business challenge into clearly articulated components for participants to tackle. Using this technique, organizations, such as *The Economist* (see sidebar), have accessed a broad range of expertise – often outside their core competencies – to discover unique solutions to difficult problems.

The Economist gets novel media ideas by challenging readers (and others) in new ways

The Economist **magazine was looking new ways to engage its global readership and participants in its *Ideas Economy* conference series. To accomplish this, the magazine worked with online crowdsourcing organization InnoCentive, which helped create a challenge in which *The Economist's* readers and members of InnoCentive's community of participants could identify innovative solutions to contemporary problems.**

Through its *"Ideas Economy"* website, and in preparation for live conference events, the joint team from *The Economist* and InnoCentive posed a series of challenges to develop new ideas around a variety of topical issues, such as healthcare information and biologic solutions for climate change.

Challenge winners were given monetary awards and interviewed as part of live events, resulting in video assets and other publicity. The challenges provided important media opportunities and content for *The Economist* and created new business opportunities for the winners, including media visibility and exposure to potential investors for their ideas.[1]

"The quality and the volume of [responses] we got back was just extraordinary. In each of the cases so far we've had very high-quality responses. People take the InnoCentive process seriously, and respond accordingly."

Justin Hendrix, Vice President, Business Development and Innovation, *The Economist*

Collaborative design markets: Using a web interface, participants can take basic images of items such as t-shirts, purses, or even cars, and customize them using colors, patterns and accessories to create a variety of original designs. These designs can then be commented on, rated and ranked to identify those most popular and likely to succeed in the market. Using this approach, companies, such as Coach (see sidebar), can engage a broad range of creative individuals, often outside the organization, by giving them a voice in the design process.

Some organizations, such as t-shirt company Threadless, have taken this concept of the collaborative design markets and made it the central focus of their overall business model. Participants from the Threadless community of over 1.5 million members submit designs and vote on which designs should be printed. By tapping into the energy and creativity of the community, Threadless is able to identify early trends and sales opportunities and is assured of a market, because the community also includes a large percentage of its customers.[2]

Coach redefines the online focus group

One alternative to generating new ideas is to provide predesigned templates or components that can be assembled into new products. Fashion designer Coach, wanting to reach a new and younger audience, used this approach in an online contest that allowed participants to create their own Coach tote bag designs. The platform provided simple tools for participants to choose and layout tote styles, graphics and colors. Other customers were encouraged to rate and comment on the designs.

Prizes were awarded based on the popularity of a design and ranged from small gift certificates to a hosted party at a Coach retail store, a $2,500 shopping spree and $500 cash/scholarship. The company received 3,200 entries in less than six weeks. The designs from the contest that were placed into production resulted in increased sales and enhanced customer satisfaction.[3]

Virtual ideation and dialogue: This is a process by which individuals come together in a virtual environment to discuss and share insights on specific topics. The ideas can be posed by leadership, individuals or communities within the organization. Within the discussion (which can be ongoing or defined for a specific period of time), participants are able to propose, comment on, refine and, finally, evaluate and rank ideas. When these rankings are aggregated using analytics, organizations can more easily identify the common themes and prioritize future investments. Organizations, such as Citi's Global Transaction Services (see sidebar), have found this technique to be valuable not only in soliciting ideas and opinions, but also in engendering a sense of connection and engagement among the larger workforce.

Citi engages in a global discussion

Collaborative online events that bring individuals into a virtual discussion often provide insightful information. By giving employees, partners, or customers the opportunity to share thoughts, interact and participate in polls and facilitated discussions, companies can uncover a myriad of ideas across diverse business units, organizational levels and backgrounds.

This was the experience of Citi's Global Transaction Services division, which was looking to tap into the knowledge of employees across the business and around the world to validate its business strategy and identify further opportunities to improve client service and grow. Citi created a collaborative event, or Jam, that was open to over 20,000 people in 96 countries. Over 6,000 employees from 88 countries registered for the 55-hour event. The average participant engaged in the dialogue for four hours. Following the event, organizers used analytics to link different sections of the discussion and mine comments for additional insight.

According to Mei Li Tan, Managing Director for Global Franchise Initiatives, the Jam not only tapped the collective wisdom of employees at all levels across the business to validate future direction and strategies, but also enhanced employee engagement as their ideas were heard and incorporated into business action plans and initiatives.

[The Jam] also helped our employees extend their network of connections and improve collaboration across time zones and organizational constructs with common purpose. They appreciated the opportunity to have a candid conversation with senior executives and influence where we are going."

Mei-Li Tan, Managing Director for Franchise Initiatives, Citi Group

Communities of practice: Communities bring together individuals with a common interest, craft or profession to develop and share knowledge, best practices and new ideas. Collaborative platforms are often used to support these communities by enabling social networking, fostering open dialogue and facilitating virtual communication. Bringing people together through communities creates a sense of connection and common context for individuals working in different geographies and organizational units. Although companies have been applying the principles of communities of practice for a number of years, more recently we are seeing organizations, such as El Paso Exploration & Production (see sidebar), incorporating the knowledge of communities into the company's day-to-day operations to improve business processes and outcomes.

El Paso Exploration & Production connects technical experts to share knowledge, build skills

El Paso Exploration & Production (E&P) Company, a leading provider of natural gas and related products, applies the concept of communities of practice across its workforce. Before 2009, the company was organized into operating divisions, with each division having its own siloed reporting structure.

In 2009, the company underwent a transformation designed to improve technical communication and make employees more accountable for their work. The resulting change eliminated the technical silos and reorganized business areas around specific properties. As part of this transformation, employees specializing in a given technical discipline began reporting across different teams within the organization. However, El Paso E&P executives were concerned this new reporting structure would degrade knowledge flow and expertise alignment within each technical discipline.

The company launched an aggressive knowledge management program with communities of practice as its centerpiece. Networks of excellence were created around each of the company's disciplines (such as geoscience, drilling, land use, drilling, and facilities), providing an environment where technical specialists could collaboratively solve problems, develop technical standards, and identify and share best practices.

Although primarily focused on face-to-face community activities within headquarters, to leverage expertise available from field-based or regional offices, El Paso implemented collaborative tools that enabled employees to communicate and share best experiences and knowledge across operational units. This platform included employee profiles, a database of skills/expertise, location mapping, case studies and other pertinent information.

As a result of these communities of practice, El Paso saved US $1.2 million in its first year by sharing knowledge and experiences on how to lower direct costs, decrease cycle times, or improve productivity. In addition, the networks of excellence improved employee skills assessment and capacity building.[4]

2. Augmenting skills and distributing workload

Collective Intelligence not only allows an organization to gather ideas and input from a wider range of people, but also to apply the talents of a distributed workforce, or talent marketplace, to realize those ideas. By disaggregating work, tasks can be assigned to individuals with the highest corresponding competency, either inside or outside the firewall, potentially improving quality. Activities can also be accomplished in parallel, reducing time to completion. Techniques companies are using to distribute work to individuals include:

Parallel task processing: This is an approach used to deconstruct complex problems into smaller or simpler tasks that individuals can complete in parallel. These include anything from labeling large numbers of uncatalogued digital photos (see sidebar) to writing software code. Platforms that enable parallel task processing, such as Amazon's Mechanical Turk and TopCoder, provide the ability to screen for certain skills or expertise and track the performance of individuals completing tasks. Organizations benefit from the rapid completion of tasks, often at significantly lower overall cost for similar quality.

Using the crowd to tag unlabelled digital photo libraries

Photo-tagging startup Tagasauris and photography cooperative Magnum Photos recently launched a beta application for the immense task of identifying the content and subject matter of photos in the Magnum library that have no description or identifiers.[5]

Currently, nearly half of the 500,000 photos in the online library fall into this category. Magnum asked its nearly 350,000 Twitter followers to help with this task. Participants are sent a notification when a new photo is available to review, access the application, and tag and reference the content of photo. Once the tags from several participants agree, the photos are then considered tagged and undergo a quality assurance process before being added to the online searchable repository.

Participants are rewarded by being able to see photos few others have seen. Magnum is also looking at other rewards, such as exclusive greeting cards or calendars signed by the photographers of the photos they identify.

Distributed question and answer (Q&A): This approach involves posting or distributing questions in a virtual forum that can be answered by one or more individuals. Participants can comment on and suggest improvements to answers, which can then be rated by the originator of the question or other participants. Organizations such as IBM (see sidebar) have found that, by distributing the workload of Q&A, they can reduce support costs, improve response time to operational requests or common questions and then capture these Q&A dialogues in an easily searchable repository, thus enabling social learning.

IBMers get things done more quickly and accurately when they answer each others' questions

For more than a decade, IBM has provided a self-service technical support portal for employees to find answers to common questions and technical support issues. However, the IBM Helpdesk was looking to further reduce costs while improving the ongoing accuracy of its knowledge base.

All employees accessing online help areas are now encouraged to review responses for accuracy by commenting on the content and suggesting modifications. Though changes are moderated, anyone discovering a new solution to an unanswered problem, errors or missing information can simply edit the entry and add the necessary remediation. This distributed Q&A system improves the quality of frequently encountered IT issues, while reducing load on the helpdesk.[6]

Serious games: Online simulated game environments enable participants, acting independently or in teams, to apply their knowledge and problem solving skills to provide solutions to complex business problems. This approach leverages the vast experience of game mechanics, which include skill level attainment, specific goals and tasks, and group problem solving. By providing real-world inputs (such as live supply-chain data) and observing behaviors and outcomes from the game simulations, organizations can adjust actual processes and see tangible results. Organizations such as the University of Washington have used these games to solve complex challenges (see sidebar).

Citizen scientist gamers solve decades-old problem in three weeks

Online gaming techniques have allowed scientists at the University of Washington to address a challenging biomedical research problem.[7] Following the failure of a wide range of attempts to solve the crystal structure of an enzyme related to retroviruses, the scientists developed a protein-folding game called "Foldit" to recruit the help of citizen scientists to produce accurate models of the protein. In "Foldit," anyone can learn simple folding techniques and manipulate virtual molecules.

More than 57,000 individuals from a variety of educational backgrounds and locations participated in the game. Within three weeks, participants in the game had solved a puzzle that had vexed scientists for years, providing important insights into the development of new retroviral drugs.[8]

3. Improving forecasting effectiveness

Beyond developing existing ideas and knowledge, Collective Intelligence can also be applied to predict the outcomes of future events. Aggregating the diverse perspectives, knowledge and insight of front-line employees, partners and customers provides a window into the future, enabling organizations to make more informed, evidence-based decisions that can complement traditional forecasting approaches.

Prediction markets: Markets are used to improve forecasting and predict outcomes where traditional approaches are incomplete or insufficient. Participants are given virtual tokens or currency to invest (or divest) in the likelihood of future events or outcomes, such as for the likelihood of a particular product's future success, project milestone date, or even for a political or legislative outcome. Organizations interpret the number of tokens or market prices as forecast probabilities. Using analytics, participants are rewarded based on the accuracy of their predictions when compared to others and how they match actual outcomes. Recognition often includes non-monetary awards and points-based leaderboards where the top "predictors" are recognized for their accuracy.

Using prediction markets, companies such as Google, ArcelorMittal and Best Buy have estimated outcomes as diverse as future sales, base-material supply, store openings and product success.[8] Since market participants share their insight as immediately quantifiable values, the organization can continually identify trends, reflecting fluctuations as employees make buy or sell decisions on an ongoing basis. As James Surowiecki, who popularized the concept in his 2004 book, *The Wisdom of Crowds*, states, "The anonymity of the markets and the fact that they yield a relatively clear solution, while giving individuals an unmistakable incentive to uncover and act on good information means that their potential value is genuinely hard to overestimate."[9]

Forecasting financial outcomes at a Consumer Products company

A Consumer Products company we interviewed used prediction markets to supplement its overall financial forecasts. The company found its forecasts to be inconsistent. It looked for ways to innovate forecasting while still respecting the existing, formal process, as well as cultural and securities compliance concerns.

To explore how prediction markets could support its forecasting, the company partnered with solution provider Crowdcast to create a prediction market that focuses on key areas of the financial forecasts. The company invited the extended team of those involved in the forecasting, approximately 50 people, to participate in the market.

The company's core financial analyst team compared results from the prediction market with forecast numbers from its existing approach, which helped uncover specific areas of discrepancy for discussion and focus.[10]

While we have grouped the Collective Intelligence methods according to the business challenge they address, it is important to recognize that these methods are not mutually exclusive. Organizations wanting to take advantage of Collective Intelligence are not committed to using just one technique. In many cases, the most appropriate approach to solving the business challenge may involve a combination of methods. For example, a Collective Intelligence initiative might start with an idea generation approach, such as a virtual discussion, to highlight potential opportunities. Then it might use a prediction market to identify opportunities likely to solve the problem and create the most impact, such as increasing revenue or improving customer satisfaction.

Getting players on the field – targeting and motivating participants

Across the techniques we investigated, one common theme was the need to carefully identify the individuals or groups whose knowledge and expertise constitute the "collective" in Collective Intelligence and, once identified, how to provide the right motivations for them to participate.

Sourcing the crowd

While each target population will differ based on the business problems to be solved, a number of important concepts were highlighted by our study participants. Each of the Collective Intelligence methods requires a minimum number of active participants to generate sufficient valuable insights. For example, in communities of practice, our experience suggests that at least 20 to 30 people are necessary to have enough interactions to maintain the group engagement; for idea generation and ideation events, this number may stretch into hundreds, if not thousands, of individuals. Ultimately, the appropriate number of individuals to be targeted will be based on three important factors, as shown in Figure 2:

Source: IBM Institute for Business Value.

Figure 2: **Three important factors dictate the size of the Collective Intelligence target participant group: knowledge, diversity and disruption.**

"The number one thing that we strive for is pure diversity. Even though 61 percent of our registered network have Masters and Ph.D.s the other 39 percent don't, and they're entrepreneurs, they're policy guys, they're everybody. We want all of them."

Dwayne Spradlin, CEO of InnoCentive

Knowledge: Is there a sufficient pool of knowledgeable individuals to address the problem? Familiarity and contextual knowledge of the subject being explored may be required to have an informed opinion or perspective. Without that perspective, participation may represent mere speculation.

Diversity: Is there enough diversity in the participants so that a problem is explored from a variety of perspectives and not dominated by a single point of view or bias? For example, if only the project team was invited to participate in a prediction market on the likelihood of meeting project timelines, the market would only reflect what is already in the project plan and could miss extenuating circumstances.

Disruption: Are there individuals able to provide a disruptive perspective that can lead to breakthrough thinking? Disruptors are individuals who are willing to challenge assumptions and the *status quo* with independent thought and are often forward thinkers. Even with a sufficient amount of diversity, the need for individuals who can mitigate groupthink or herd mentality by going "against the grain" can drive a deeper, more complete solution to Collective Intelligence problems.

Motivating for participation and engagement

Following identification of potential participant populations, sponsors of Collective Intelligence initiatives need to focus on encouraging individuals to share their insights, expertise or take on specific tasks. From our discussions, motivating participants requires clear articulation, not only of the value of their contributions to the organization, but also in the value to individual participants themselves. From our research, we see the importance of incorporating both extrinsic motivators, such as money or performance measures, and intrinsic motivators, such as satisfaction, loyalty or personal enjoyment.[11]

We found that when Collective Intelligence activities involve individuals from outside the organization and require a significant amount of participants' time and effort, there is often a need for significant monetary rewards. Many of the cash rewards for broad-based contests involve tens of thousands of dollars; in some cases, such as the Netflix Challenge for developing an improved movie recommendation algorithm, the reward was US $1 million.[12] Small tasks, however, may require only a few cents per transaction. This type of reward is a relatively simple extrinsic motivator with direct linkage between the actions required and the reward.

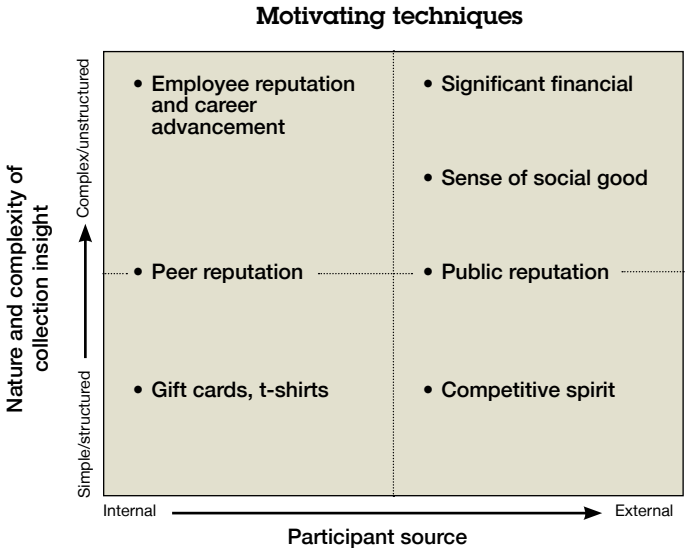
This is not to say that intrinsic motivations do not apply to external Collective Intelligence initiatives. Competitive spirit, peer reputation, a common purpose or work for the good of others can also be clear motivators for Collective Intelligence initiatives involving partners, customers and others outside the organization. As mentioned earlier, the protein folding game "Foldit" relies on a global group of individuals interested in citizen science and gaming. In her recent book, *Reality is Broken*, game designer Jane McGonigal explains that serious games offer huge potential for Collective Intelligence because of the ways in which games motivate by providing exhilarating rewards, stimulating challenges and epic victories.[13] Ms. McGonigal, Director of Games Research & Development at the Institute for the Future and Creative Director for Social Chocolate, also references other serious games, such as "World Without Oil" and "Evoke," which apply the energy and emotional engagement of gaming to important societal issues.

Motivating participants can also become a challenge when working with internal participants such as employees and contractors. While small extrinsic rewards, such as gift cards or t-shirts, provide incentive for some individuals to participate in internal Collective Intelligence activities, we see a range of such efforts that rely primarily on more intrinsic motivators. Many participants are motivated by the increased visibility of their contributions to their peers, by the possibility of new networking or career development opportunities, or through acknowledgement that their opinions are being heard by decision-makers. Individuals are increasingly aware that forward-thinking organizations value not only knowledgeable employees, but also those who share their knowledge and insight with others.

How the nature of the motivation is impacted by the level of complexity of the problem being solved – the effort required to solve it and whether the participant is inside or outside the organization – is detailed in Figure 3.

Trust is another key factor in motivating participants identified by many researchers and thought leaders. This trust can take a variety of forms, including:

1. Ideas suggested will be respected and the effort of contributing will be valued
2. Agreed upon sharing of intellectual property ownership will be adhered to
3. Participant feedback will be acknowledged and acted on.



Source: IBM Institute for Business Value.

Figure 3: Techniques for motivating participation.

Whether a Collective Intelligence initiative is a one-time event or part of an ongoing transformation, such initiatives require a careful period of trust-building to ensure participants are engaged and participating. This could include such activities as communications that reflect an open, collaborative culture of knowledge sharing, clear demonstrations to participants that their contributions are valued and will be acted upon and/or the use of reputation or moderation techniques to immediately recognize and discourage unwanted behaviors that could damage the level of trust.

Kick-starting Collective Intelligence initiatives – three keys to success

Key study findings show that successful Collective Intelligence initiatives address sources of resistance, integrate collective intelligence into the work environment and act on what is discovered.

Address sources of resistance and risk

Senior executives who have heard of Collective Intelligence, or the related term "crowdsourcing," are now anxious to explore it and understand how their organizations can benefit. Ironically, we see the most opposition in middle management layers, where resistance comes from those responsible for the work that Collective Intelligence initiatives can best enhance. In many cases, work can be accomplished with fewer resources and with shorter lifecycles. However, if initiatives do not deliver on this promise and fail to quickly realize return on investment (ROI) and other benefits, they will lose both momentum and senior management support.

Operational challenges

Study participants detailed a number of tactical objections and concerns encountered by organizations looking to implement Collective Intelligence and provided recommendations for addressing them. They include:

- *We won't get enough participation to make the results useful:* Participants stressed the importance of identifying and clearly communicating a value proposition that reflects the business objectives and the value to participants. In addition, encourage creativity and participation by providing an open, supportive and positive environment.
- *Participants will only debate and not come up with actionable solutions:* Ensure that the Collective Intelligence implementation supports action, either in terms of functionality, or through the help of facilitators that guide the conversation toward actionable goals.

- *Participants may not spend enough time or be involved long enough to really get to the heart of the matter:* Facilitate the dialogue to engage or re-engage participants in the exchange by linking to emerging trends and popular ideas and by requesting specific additional details or input. Model behavior and identify and communicate a desired minimum amount of participation.
- *Only experts can solve this problem for us:* Involve experts in the design and setup of Collective Intelligence initiatives; however, stress the importance and value that the crowd can bring in terms of diverse experience.
- *We might lose or have conflicts associated with intellectual property:* Seek agreement on pre-established terms of participation and be clear about intellectual ownership. Manage participant expectations of the outcomes.
- *Games can be played on personal time, I need employees to be productive and get their work done:* Explore the value of serious games to your organization in engaging your employees in new and different ways for learning and teamwork.

Conflict with existing charters and loss of control

Most large organizations today have specific roles or teams responsible for ideation, innovation or offering enhancement. For an executive to say these groups need to change their operating models and shift the collection of ideas and enhancements "to the crowd" may be interpreted by some managers that they are not doing their jobs. These managers may infer they lack the skills and creativity to perform or their decisions are biased or not trusted by senior management.

At both senior and middle management levels, loss of control, is another significant barrier and spans three dimensions:

- Performance and quality
- Decision making
- Awareness and communications.

By engaging teams in new ways and more frequently involving people from outside the team or even the organization, managers are concerned they will lose management control over those doing the work and that work quality may suffer through reduced performance management leverage. A recent study by the IBM Institute for Business Value on Creative Leadership identified the importance of leaders who are open to novel ways of accomplishing their goals and who can unleash the creative energy in their organizations by becoming more participative, sharing their ideas and encouraging team members to do the same.[14] This requires a shift in how managers lead their workers by using influence and creative motivation rather than the force of control to get work done effectively and to a sufficient standard of quality.

Managers often feel Collective Intelligence methods reduce their power to make decisions within their mandate. Collective Intelligence methods often break down the silos and hierarchical structures existing within many organizations, leaving managers in unfamiliar territory. Senior leadership needs to work with managers to help them understand how Collective Intelligence can help improve decisions, forecast accuracy and risk mitigation, as well as how those benefits can improve managers' individual performance.

Study participants were also concerned about the loss of control over awareness and communication around the outcomes of a Collective Intelligence initiative. By engaging larger numbers of participants in solving business challenges, Collective Intelligence can expose an organization to risks concerning who is aware of a particular prediction or proposed solution and the impacts these can have on the organization's public reputation, product launch cycle or project success.

In all of the these situations, organizations seeking to integrate Collective Intelligence initiatives into their business should manage the range of participants (e.g., internal/external, cross-department, etc.) to fit the parameters of the challenge and ensure participants are aware of their legal and moral responsibilities, including compliance with regulatory agencies, local law and code of conduct.

Importance of new roles and responsibilities

In conjunction with a shift in leadership roles and styles, Collective Intelligence introduces the need for new roles and responsibilities as it is integrated into an organization's culture and operations. These include:

- Moderators to encourage participation and make connections across multiple discussions or ideas
- A focal point and designated resources to coordinate collection and analysis for further development
- A sponsor and champion to drive and execute the desired transformation.

For example, in communities of practice, the roles of community champion and moderator become key to facilitating knowledge exchange and encouraging participation. Several organizations are also creating centers of expertise to assist in the use and adoption of Collective Intelligence methods. For example, in our interview with Trent Tilbury, Group Lead for Applied Innovation and Sustainability, Finance, for Westjet, a major Canadian airline, he describes how his group has become a hub for Collective Intelligence. His group now supports business units, teams and corporate management in running a variety of Collective Intelligence initiatives by helping them clearly articulate the problem, identify their audience and analyze the impact of their initiatives.[15]

Integrate Collective Intelligence into your work environment

Although Collective Intelligence initiatives have been ongoing for a number of years, the efforts of many of our study participants were in the early stages, with limited initial investment and support. While some were able to rely on existing investments in collaborative platforms, others turned to using third-party software-as-a-service platforms to run collaborative events or prediction markets. These services allowed companies to quickly get an initiative off the ground without having to invest time and resources to integrate a Collective Intelligence solution into their existing IT platform.

Depending on the technique involved, Collective Intelligence initiatives seem to be on two paths: fixed-duration events focused on a specific project and ongoing dialogues as part of a more holistic approach to integrate Collective Intelligence into the business. As these initiatives and approaches become more pervasive and persistent, this integration with corporate strategies and systems will become more important to provide context and visibility to the initiatives. Both Collective Intelligence vendors and corporate application providers are evolving their offerings to allow this system-level integration. The evolution of Collective Intelligence techniques, solutions and platforms will be closely watched, as they hold great potential to accelerate innovation and competitive advantage.

Act on what you discover

For many organizations, the virtual suggestion box concept (an early attempt to harness Collective Intelligence) has been unsuccessful because of a significant disconnect between the innovative ideas submitted and corporate strategy. Perhaps one of the most important components of Collective Intelligence efforts is the need to provide feedback to participants, both on actions taken and on the value of individual contributions.

In idea generation efforts, the organization needs to make sure participants are aware of the most important results of the Collective Intelligence effort and how it would use the ideas to drive improvements. Similarly, for prediction markets, organizations need to inform individuals of the relevance and accuracy of their predictions and provide clear understanding of how the organization uses these predictions to improve business decisions. Without this continuous learning effort, our study participants felt that individuals would not only miss out on opportunities to improve their contribution, but would also be more reluctant to participate in future efforts.

The potential integration of Collective Intelligence extends beyond the technical and cultural realms. Much like the analytics required to structure the associated recognition, rewards and reputation systems, the underlying social data itself presents organizations and their constituents with a rich repository of valuable, contextual information. This data can be further analyzed to enhance expertise location and knowledge discovery, thus expediting customer support, self-service or the dynamic formation of project teams. It can also augment workforce analytics and talent management programs. Tracking and recognizing these new performance measures will acknowledge individuals' contribution and help organizations optimize their resources.

Getting started

Collective Intelligence is a powerful resource for creating top-line growth, driving efficiency, improving quality and excellence, and building a better employee climate. Organizations considering adding Collective Intelligence as a business capability need to ask themselves the following questions:

- What are our strategic business objectives, and what types of insight can help us compete or differentiate ourselves in the market?
- Considering the audiences we may want to involve in a Collective Intelligence project, how can we motivate them to share their insights with the organization?
- How do we capture knowledge and connect individuals in new and cost-effective ways?
- What technology tools do we need to support this capability, and who is best positioned to help us take advantage of these tools?

Regardless of the approach taken to infusing Collective Intelligence into the fabric of an organization, the key premise is that it enables organizations to take advantage of the potential of their ecosystem's intellectual capital to dynamically address business challenges. As Tom Malone, Robert Laubacher, and Chrysanthos Dellarocas from the MIT Center for Collective Intelligence conclude in a 2009 article, "The early examples of Web enabled Collective Intelligence are not the end of the story, but just the beginning. As computing and communication capabilities continue to improve, there will be a myriad of other examples like these in coming decades."[16]

As organizations acknowledge and are more willing to leverage the intelligence of their employees, customers and business partners, Collective Intelligence will become an increasingly important mechanism to engage these networks to identify new and valuable opportunities, solve challenging problems and rapidly implement exciting innovations.

To learn more about this IBM Institute for Business Value study, please contact us at iibv@us.ibm.com. For a full catalog of our research, visit:

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Produced in the United States of America
January 2012

GBE03474-USEN-00