

Organizational network analysis

Understanding collaboration patterns across your organization



Imagine unlocking
a secret weapon
in your organization
that boosts productivity,
supercharges engagement,
and ignites innovation
—all without increasing costs.

Social capital: your untapped goldmine.

Social capital is the magic that happens when relationships brim with goodwill, allowing both teams and individuals to reap benefits like information, influence, and solidarity.

To put it succinctly, it's the currency of trust and collaboration.¹ The essence lies in the trifecta of goodwill, relationships, and the resulting benefits—each of which we'll delve into.

43% of leaders pinpointed the cultivation of social capital as the most formidable challenge in the era of remote and hybrid work.²

Leaders understand that social capital is the backbone of innovation, productivity, engagement, and overall wellbeing in the workplace.

¹ Adler, Paul S. and Kwon, Seok-Woo, Social Capital: Prospects for a New Concept. The Academy of Management Review, Vol. 27, No. 1, p. 17, January 2002, Available at SSRN: <https://ssrn.com/abstract=979087>

² [Microsoft Work Trends Index 2022](#)



Social capital serves two key benefits: bonding people together and bridging across groups.

Dive deeper, and you'll find that social capital serves two benefits. The first binds individuals into cohesive work communities, fostering trust and setting the tone for acceptable behavior. This isn't just about camaraderie; it's about creating an environment where teams operate at peak efficiency. It ensures that information flows seamlessly, decisions are made collaboratively, and everyone is aligned towards common goals. This communal "bonding" spirit not only combats isolation but also drives effective working, ensuring every team member feels integrated, valued, and empowered to contribute at their best.

Second, this goodwill acts as a bridge, connecting individuals across diverse groups. By interacting outside of their immediate circle, not only do people become adept at communicating across different knowledge spheres, but they also gain fresh insights. This cross-pollination of ideas amplifies innovation, as they merge external knowledge with their team's expertise. In essence, bridging social capital is the catalyst for groundbreaking ideas.

Microsoft Viva Insights includes two metrics focused on each of these two sides of social capital to make collaboration measurable.

Microsoft Viva Insights surfaces organizational data to help gain visibility into workplace activities, communication behaviors and collaboration patterns.

Organizational insights include social capital metrics that measure relationships within a company. We refer to the bonding-focused metric as '**Strong Ties**' and the bridging-focused one as '**Diverse Ties**'. These strong and diverse ties provide insight to business problems for top leaders.

Privacy by design

Viva Insights includes built-in safeguards like deidentification, aggregation, and [differential privacy](#) to protect individual identification.

Learn more about Viva Insights privacy at: [Employee Privacy and Data Protection](#)



Strong ties

Mark Granovetter introduced the idea of strong and weak ties to science fifty years ago. We bring it to today’s most cutting-edge organizational problems.³

We define strong ties between any two people in the organization as occurring under two conditions. First, when they collaborate with each other (i.e., they attend meetings together and/or each sends emails and Teams chat to the other in the time period). Second, when they collaborate with the same people (i.e., share a network).

Strong ties, defined this way, indicate that two individuals likely share similar information and perspectives. The presence of strong ties can foster a sense of belonging, support, and trust, as well as facilitate knowledge-sharing and problem-solving.

Individuals with strong ties play many roles that drive success across departments. For the CIO’s organization, these connectors could be the linchpin that elevate IT infrastructure, ensuring fluid tech transformations and the rapid spread of essential knowledge. In the realm of HR, these networked individuals can be invaluable assets, enhancing workforce cohesion, nurturing well-being, and refining the onboarding experience. Meanwhile, for the Chief Sales Officer, their networks may become instrumental in optimizing sales efforts and forging strategic partnerships that bolster our bottom line. Together, these ties weave a network of collaboration and innovation, positioning us for holistic organizational success.

Role	Strong ties
Chief Information Officer (CIO)	<ul style="list-style-type: none"> • Diagnosing team disconnects & silos • Streamlining knowledge transfer and learning • Realizing technology innovations • Identifying IT communication bottlenecks
Chief Human Resources Officer (CHRO)	<ul style="list-style-type: none"> • Elevating leadership development • Alleviating employee isolation • Optimizing new employee integration • Breaking down diversity & inclusion barriers
Chief Sales Officer	<ul style="list-style-type: none"> • Mitigating resistance during org. change • Navigating crisis communication breakdowns

³ <https://news.stanford.edu/2023/07/24/strength-weak-ties/>

When should we focus on strong ties



Chief Information Officer (CIO)

Harnessing technology, information flow, and innovation.

Diagnosing team disconnects & silos:

Measuring strong ties can pinpoint individuals pivotal for fostering collaborations, optimizing tech project outcomes, and ensuring a harmonized flow of information.

Streamlining knowledge transfer:

Recognizing those with strong ties is essential for rapid and effective dissemination of tech knowledge, ensuring that the organization stays ahead in innovation.

Realizing tech innovations:

Individuals with strong ties can be the keys to executing on good ideas, driving innovation at its peak.

Identifying IT communication bottlenecks:

By analyzing strong ties, potential chokepoints in tech processes can be identified and addressed, ensuring seamless project execution.

When should we focus on strong ties

Chief Human Resources Officer (CHRO)

Championing talent development,
employee well-being, and
organizational culture.

Elevating leadership development:

Recognizing those with strong ties can spotlight potential leaders, ensuring a robust leadership pipeline that thrives on influence and connection.

Combatting employee isolation:

Measuring strong ties can identify those who naturally support and uplift their peers, making them invaluable for employee well-being initiatives.

Optimizing new employee integration:

Individuals with strong ties can be instrumental in ensuring new hires seamlessly assimilate into the company culture, promoting faster productivity.

Breaking down diversity & inclusion barriers:

Analyzing strong ties can reveal the connectors that bring together diverse groups, ensuring a truly inclusive organizational culture.



When should we focus on strong ties

Chief Sales Officer (CSO)

Focusing on sales strategies, customer relationships, and revenue growth.

Mitigating resistance during organizational change:

During shifts affecting sales or customer relationships, measuring strong ties can identify change agents who ensure smooth transitions and maintain customer trust.

Navigating crisis communication breakdowns:

In revenue-impacting crises, individuals with strong ties are invaluable. Their interconnectedness ensures teams rally quickly, disseminating critical information and presenting a unified front to customers.



Now, let's get technical. How Viva Insights measures strong ties

Imagine that we have a network with 8 individuals: A, B, C, D, E, F, G, and H. They have a collaboration network as shown in Figure 1. The arrows and labels indicate the direction and amount of collaboration time the sender has given to the receiver (the time they spend in meetings and calls, and the time spent by the sender sending emails and chat to the receiver). The amount of time two people spend together does not have to be the same both ways, because of the imbalance of various types of collaboration tools (e.g., Person D sends person A lots of emails, but person A doesn't reply to all of them).

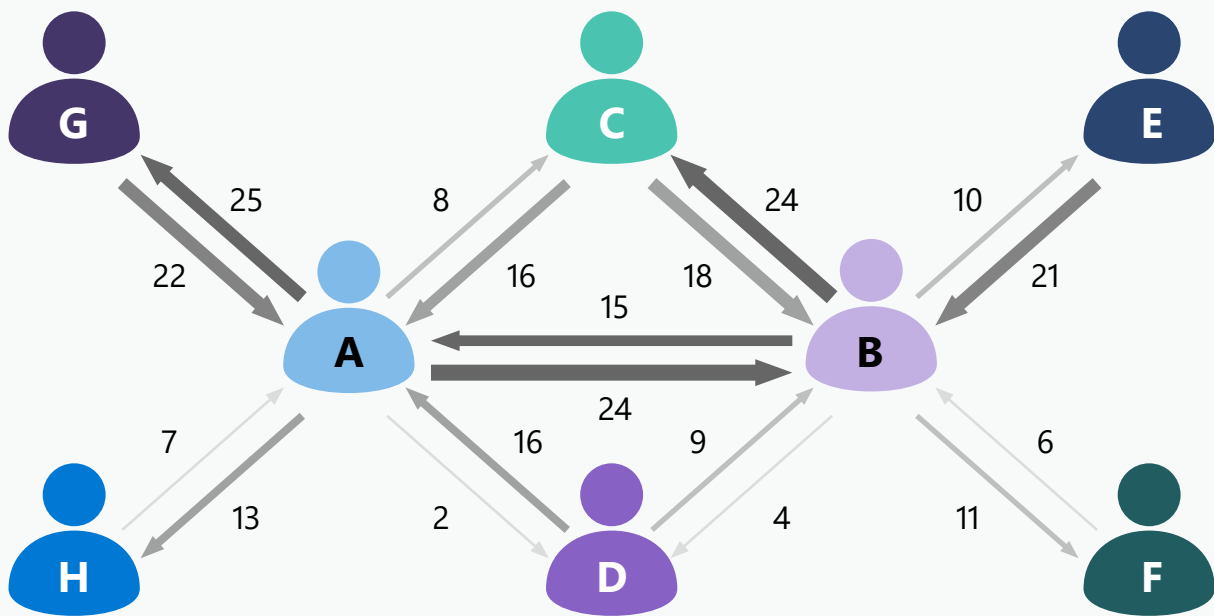


Figure 1. Collaboration Network of 8 individuals. The arrows indicate the direction of collaboration. The labels, thickness, and hue of the arrows indicate strength of connection.

Now we want to understand who in the network are Person A's strong ties. We start by looking at A's relationship with B and answer three questions:

Question

- Q1.** How much time does A spend in collaboration with B (in meetings and calls together, and the time A spends sending emails and chats to B).
- Q2.** How much time does A spend with B's connections
- Q3.** How much time does B spend with A's connections

Answer

- A1.** **24 hours** per the arrow pointing from A to B shows how much time A is collaborating with B.
- A2.** A & B are both connected to C and D, so A spends 8 hours + 2 hours for a total of **10 hours** with B's connections.
- A3.** A & B are both connected to C and D, so B spends 24 hours + 4 hours for a total of **28 hours** with A's connections.

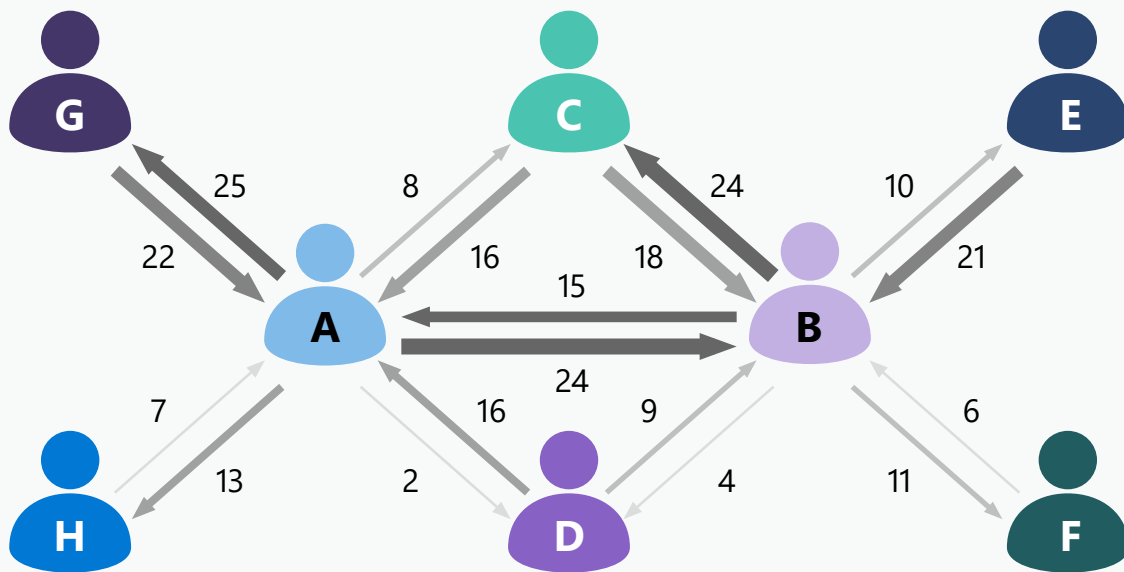


Figure 1. Collaboration Network of 8 individuals. The arrows indicate the direction of collaboration. The labels, thickness, and hue of the arrows indicate strength of connection.

Finally, we combine the three answers using the geometric mean or $\sqrt[3]{(24 \cdot 10 \cdot 28)} = 18.9$ hours. This gives us a score between A and B, telling us the strength of their tie.

Then, we look at all the people connected to A and calculate the strong tie score between them by answering the three questions and calculating the geometric mean. Once that is complete, we rank the ties from highest to lowest score. Those with the highest scores are classified as strong ties and those with the lowest scores are not classified as strong ties.

Continuing this example, A's connections ranked by their strong tie score are:

Sender	Receiver	Strong Tie Score	Rank	Classification
A	B	18.9	1	Strong tie
A	C	15.1	2	Strong tie
A	D	7.6	3	Moderate
A	H	0.0	4	Not a strong tie
A	G	0.0	5	Not a strong tie

In this example, we see that Person A has 2 strong ties: B and C. We can continue the process to determine how many strong ties all other individuals in the network have.

Now we can identify groups of people who are strongly connected and help leaders to understand where there are high concentrations of strong ties and how that impacts innovation, career growth and many other factors affecting their employees' experience.

A few notes on the strong tie assignment, the lowest score a tie can have is zero, which happens when two people don't have any shared connections other than themselves (e.g., connections between A and H or A and G). There is no maximum score. Also, if the collaboration between Person A and Person B is one-sided (e.g., Person A does not respond to any of Person B's emails), no strong tie will be calculated between the two.

Diverse ties

The concept of diverse ties draws from scientific research of structural holes (those holes in the structure of a network, where connections don't occur, but could).⁴

Diverse ties occur, similarly to strong ties, under two conditions. First, when employees both collaborate with each other (indicating some degree of reciprocity). And second, when the networks between two people are separate (i.e., you and I collaborate, but we don't collaborate with the same people). When two individuals have a reciprocal collaboration and a large, uncommon network, they are likely to represent a diverse tie.

Diverse ties, measured this way, indicate the potential for fresh information flow and can expose individuals to new ideas, insights, opportunities, challenge their assumptions, and stimulate their creativity.

Individuals with diverse ties serve as bridges, connecting disparate groups and facilitating the flow of unique information. For the CIO's organization, these bridge-builders are essential in integrating diverse IT ecosystems, ensuring seamless tech integrations and the introduction of fresh perspectives. Within the HR sphere, individuals who span diverse ties are crucial, promoting cross-departmental understanding, fostering diverse collaborations, and ensuring a holistic onboarding experience. For the Chief Sales Officer, these connectors are pivotal in bridging market gaps, tapping into new customer segments, and establishing alliances that might otherwise remain overlooked. Collectively, these diverse ties form conduits of innovation and opportunity, setting the stage for comprehensive organizational growth.

Role	Strong ties
Chief Information Officer (CIO)	<ul style="list-style-type: none"> • Bridging technological islands • Facilitating cross-platform innovations • Enhancing IT-business tech collaborations • Preventing knowledge stagnation
Chief Human Resources Officer (CHRO)	<ul style="list-style-type: none"> • Promoting cross-functional teamwork • Enhancing cultural exchange • Facilitating mentorship across hierarchies • Driving diversity & inclusion initiatives
Chief Sales Officer	<ul style="list-style-type: none"> • Mitigating resistance during org. change • Navigating crisis communication breakdowns

⁴ Burt, Ronald (1992). Structural Holes: The Social Structure of Competition. Cambridge, MA: Harvard University Press.

When should we focus on diverse ties



Chief Information Officer (CIO)

Harnessing technology, information flow,
and innovation.

Bridging technological islands:

By measuring diverse ties, CIOs can identify who connect different tech communities, ensuring integrated solutions and a unified tech landscape.

Facilitating cross-platform innovations:

In tech scenarios, those with diverse ties can introduce unique insights from one platform or team to another, fostering innovation that might not have occurred in isolation.

Enhancing IT-business tech collaborations:

For tech projects that require cross-departmental collaboration, individuals with diverse ties can be key in ensuring smooth communication and idea exchange.

Preventing knowledge stagnation:

Analyzing diverse ties can help in identifying those who bring fresh technological perspectives from varied sources, preventing teams from becoming too insular.

When should we focus on diverse ties

Chief Human Resources Officer (CHRO)

Championing talent development, employee well-being, and organizational culture.

Promoting cross-functional teamwork:

By identifying those with diverse ties, CHROs can foster collaborations between departments that might not typically interact, breaking down silos.

Enhancing cultural exchange:

Diverse ties, when measured, can help HR teams identify individuals who bridge different cultural or departmental divides, promoting a more inclusive workplace (this might be especially useful in mergers or similar reorgs).

Facilitating mentorship across hierarchies:

Recognizing those with diverse ties can help in setting up mentorship programs that aren't limited by departmental or hierarchical boundaries.

Driving diversity & inclusion initiatives:

By analyzing diverse ties, CHROs can pinpoint individuals who connect diverse groups, ensuring that different voices are heard and included in decision-making.



When should we focus on diverse ties

Chief Sales Officer (CSO)

Focusing on sales strategies, customer relationships, and revenue growth.

Identifying new market opportunities:

By measuring diverse ties, sales leaders can identify who bridge different market segments or customer groups, uncovering untapped revenue opportunities.

Strengthening partner ecosystems:

In the world of sales, individuals with diverse ties can be instrumental in connecting with varied partners, distributors, or stakeholders, ensuring a more robust sales network.

Enhancing customer insight exchange:

Analyzing diverse ties can help sales teams understand customers better by bringing in insights from different regions, segments, or product teams.



How Viva Insights measures diverse ties

Question

- Q1.** How much time does A spend with all their connections?
- Q2.** How much time does A spend with C's connections?
- Q3.** How much time does A spend with C?

Finally, we subtract the answers of 2 and 3 from 1 and this gives us a score between C and A. For example: 72 hours – 24 hours – 8 hours = **40 hours**. This score represents how much time A spends with people not connected to C, or approximately how much new information A has to offer C.

Let's continue using our example from strong ties. In this case, we want to understand who in the network are Person C's diverse ties. We start by looking at C's relationship with A and answer the following questions.

Answer

- A1.** Sum of all of the collaboration A sends to all of their connections B, C, D, G, and H: 24 hours + 8 hours + 2 hours + 25 hours + 13 hours = **72 hours.**
- A2.** Then we look at all of A's connections and C's connections and we find that they are both connected to B. So, the answer to the second question is **24 hours.**
- A3.** The answer to the third question is **8 hours.**

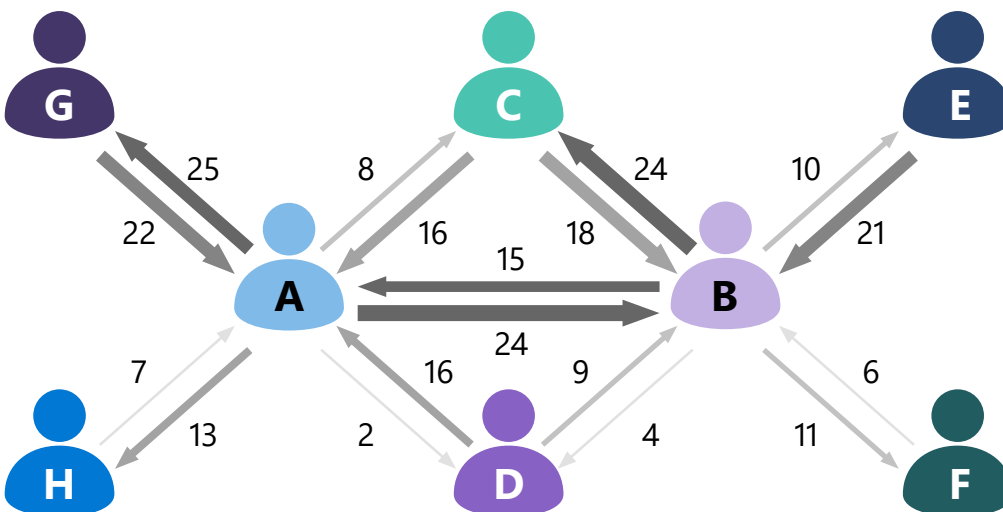


Figure 1. Collaboration Network of 8 individuals. The arrows indicate the direction of collaboration. The labels, thickness, and hue of the arrows indicate strength of connection.

Then, we look at all the people connected to C and calculate the diverse tie score between them by answering the three questions and taking the difference. Once that is complete, we rank the ties from highest to lowest score. Those with the highest scores are classified as diverse ties and those with the lowest scores are not classified as diverse ties.

Continuing this example, C's connections ranked by their diverse tie score are:

Sender	Receiver	Diverse Tie Score	Rank	Classification
C	A	40	1	Diverse tie
C	B	25	2	Diverse tie

In this example, we see that Person C has 2 diverse ties: A and B. We can continue the process to determine how many diverse ties all other individuals in the network have.

Now we can identify groups of people who have many diverse ties and help leaders to understand where there are high concentrations of these ties and how that impacts innovation, career growth and many other factors affecting their employees' experience.

A few notes on the diverse tie assignment, the lowest score a tie can have is zero, which happens when two people only collaborate with each other. There is no maximum score. Also, if the collaboration between Person A and Person B is one-sided (e.g., Person A does not respond to any of Person B's emails), no diverse tie will be calculated between the two.

Strong ties are independent of diverse ties and it is possible for a tie to be both strong and diverse, or for a tie to be neither strong nor diverse.

“As organizations face uncertainty and change, company leaders need visibility into how work is evolving and how changes are affecting the people whose creativity and innovation will propel their business into the future”

Jared Spataro

Microsoft CVP, Modern Work &
Business Applications Marketing

Organizational network analysis isn't just about understanding your organization. It's about comprehending how every individual is growing and building connections that foster innovation and success.

This data-driven approach helps provide insights into the programs and initiatives that could be most impactful for your business to foster ideation, knowledge sharing, and team collaboration.

Microsoft Viva Insights can help leaders better understand how their organization is networking, identify key influencers, and create opportunities to optimize performance.



Learn more about Microsoft Viva Insights

Workplace data can surface unforeseen insights, pinpointing opportunities to improve engagement and productivity.

We believe productive, agile organizations result from data-empowered leaders anticipating and responding to the needs of their organization.

Microsoft Viva Insights provides visibility into collaboration activities and patterns to streamline decision-making and improve business performance.



Neha Shah

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Learn more at:
aka.ms/VivaInsights