

# What Really Matters for Knowledge Worker Performance

## **THE SCIENCE LINKING THE WORKPLACE TO USER EXPERIENCE AND PERFORMANCE, PART 1**

What should organizations focus on to improve their knowledge workers' performance? A global research review has uncovered six key factors that have the highest statistical association with the performance of teams: social cohesion, perceived supervisory support, information sharing, vision and goal clarity, external outreach, and trust. These findings give organizations the opportunity to align their underlying culture, value structures, management behaviors, and infrastructure to support these factors.

*By Jan Johnson, VP of Design and Workplace Resources, Allsteel; Karen Plum, Director of Research & Development, AWA; Andrew Mawson, Founding Director, AWA.*

### **IN THIS WHITEPAPER:**

Research has identified the top six organizational management factors that powerfully correlate to the performance of knowledge teams. These findings are the best available evidence on the topic of knowledge worker performance.

### **WHAT YOU WILL LEARN:**

*Why measuring knowledge worker productivity is a challenge*

*How these Six Factors relate to the performance of knowledge worker teams*

*What an organization acting on these findings should consider*

*What these findings mean for the future of workplace making*

*How to assess the Six Factors in your own workplace*



## **A single productivity metric for knowledge work remains elusive.**

It's fair to say that everyone associated with creating an organization's workplace – including workplace strategists, planners, designers, real estate executives, facilities managers, furniture manufacturers, and the organization itself – would love to have a single universal, broadly applicable metric to measure knowledge worker performance. If we could easily, consistently measure productivity, we could prove that our recommendations – from the ideal panel heights and the perfectly right-sized workstation, to the right level of ambient noise – have a positive effect on performance (or not). We would have clear decision-making criteria to influence workplace investments and prove results, instead of relying on subjective opinions.

*Try as we might, it is widely agreed that we can't apply the same approach to measuring productivity in the knowledge work era that we've used in manufacturing for decades: inputs versus outputs.*

Knowledge work is so varied and its outputs often so intangible that it is not possible to come up with a single universal measure. More complex knowledge work seldom has one single correct or standard outcome, nor are those outcomes usually quantifiable or comparable. In addition, the value of those more complex forms of knowledge work is often determined by the customer demand for it.

In lieu of a single proven metric, many organizations use subjective measures like self-reported job satisfaction, customer satisfaction, or self-rated creativity. Alternatively, organizations may use more objective measures, like absenteeism, employee turnover, number of patents, or successfully completed projects; however, there is widespread academic agreement that these methods are generally not effective as proxy measures, as they are not scientifically valid or reliable.

That said, organizations *can* develop situationally-relevant productivity metrics for specific types of knowledge work within a specific organizational context. For example, team of product developers may have goals for a particular product, like shortening their usual cycle time or a target sales volume in the first six months after launch.

## **Answering the question of a universal metric, once and for all.**

So, what is known about effectively measuring knowledge worker productivity? To answer this question, Allsteel teamed up with eight organizations across knowledge sectors, including banking, energy, and telecommunications, to sponsor a research project conducted by Advanced Workplace Associates (AWA) and the Center for Evidence-Based Management (CEBMA).

The research team initially set out to find evidence, once and for all, of a single universal productivity metric for knowledge work. CEBMA conducted a rapid evidence assessment, combing through scholarly, peer-reviewed research published between 1990 and 2013. They extensively searched all major academic databases against a carefully defined set of criteria designed to ensure that only the best quality evidence was included in their study, disqualifying any research that represented merely collective opinions or the latest workplace fad. Given the challenges of measuring knowledge worker productivity, the initial outcome of the research is not terribly surprising: **a single universal metric doesn't exist.**

But the finding led the research team to a second question: Which of the factors that are related to the productivity of knowledge workers are most widely studied and what is known of their effect? Researching this question uncovered six scientifically proven, universally applicable factors that reliably correlate with high performing knowledge work teams. These Six Factors finally give the workplace community academically rigorous evidence on the topic of knowledge work productivity, as well as reliable proxy measures for performance.

The Six Factors summarize 109 single studies and 52 meta-analyses, culled from over 800 research papers. This represents the best available findings on the topic.

The following Six Factors have the highest statistical correlation to the performance of teams involved in knowledge work:

- **Social cohesion**
- **Perceived supervisory support**
- **Information sharing**
- **Vision and goal clarity**
- **External outreach**
- **Trust**

## Knowledge work is a team sport

The strongest correlations uncovered in the research are related to the performance of teams. Most of the studies conclude that knowledge worker productivity should be assessed on the team level, because:

- Knowledge work is not an individual task, but it is usually performed in collaboration with others on complex tasks, which individuals cannot perform alone
- Team productivity is not simply the sum of individual productivity
- Changes in productivity of an individual knowledge worker may not affect the productivity of other knowledge workers
- The overall productivity of the organization is dependent on the contribution that specific organizational levels (departments, business units, divisions) make towards overall organizational goals

The Six Factors are described below in the order of the strength of the correlation to team performance, beginning with the strongest: social cohesion.

### Factor One: Social Cohesion

In a knowledge business, every person is a knowledge asset, bringing to the team and organization the knowledge, experiences, and relationships gathered throughout their lives. It's the fusion of one person's knowledge with the knowledge of others in the organization that creates new knowledge, propelling the organization forward. For this fusion to happen, people need to be willing and comfortable contributing their knowledge and ideas.

More specifically, the strength of the correlation between social cohesion and performance depends on the type of team. For teams working with uncertain and complex tasks – like R&D – social cohesion strongly predicts performance.

*High levels of social cohesion create a psychologically safe environment in which team members feel free to innovate, explore new ways of doing things, take judicious risks, and interact with each other. As a result, the exchange of ideas is more likely.*

The research identified four activities that appear to be particularly associated with team performance. These include:

- Team bonding
- Promoting and sustaining a safe psychological environment
- Developing and deepening relationships
- Strong interpersonal skills that support development of social cohesion, like consideration, trust, and friendliness.

### **Factor Two: Perceived Supervisory Support**

When it comes to supervisory support, perception is everything. A supervisor could have the right experience for the role, but if the supervisor can't make their direct reports feel well supported, the overall team performance will suffer. It's the daily interactions with supervisors that allow team members to evaluate their conscious or unconscious expectations about their boss. The perceived gap between a worker's expectations and reality are what predominantly shapes their attitudes and motivations. Perceptions are strengthened by consistent experiences, like seeing the supervisor giving encouragement in time of need or recognizing the team for extra effort.

Perceived supervisory support is even more critical for teams with roles that cross boundaries, either those between teams within the organization, or outside of it.

Supervisors who treat team members well can expect them to be more satisfied in work, and more willing to work in ways that are mutually valuable.

Research shows that team members' perception of their supervisor's support impacts their performance, organizational commitment, job satisfaction, and turnover intentions. Recent research has also highlighted those particular behaviors and competencies that foster positive perceptions of supervisory support, such as:

- Setting a positive emotional tone and demonstrating integrity
- Proactive problem-solving of workload issues with the team
- Being available to the team, encouraging team discussion, and understanding what motivates both the team and the individual members
- Managing conflict fairly and following up on issue resolution

### Factor Three: Information Sharing

*We define information sharing as the extent to which teams utilize each member's distinctive knowledge for the team's benefit; and members are willing and happy to share their knowledge with others.*

Organizations that excel at sharing information ensure that knowledge is accessible to everyone across the organization, and isn't landlocked within teams or silos. It's important to note here that there is overlap across the Six Factors, particularly between information sharing and social cohesion – the more people like each other in an organization and regularly converse, the more likely they are to trust each other and share information.

Information sharing enhances innovation and team performance, and has particular importance when team tasks and problems are complex and involve developing new ideas. Information sharing is essentially how a team builds a mutual understanding of their collective knowledge and memory.

The sharing of information positively affects team performance in the following ways:

- **Decision-making:** As more team members share information, the better their decisions will be, leading to better team performance
- **Team processes:** Information sharing enhances coordination, fostering more efficient and effective team processes. Information sharing creates a common understanding of work being done, and awareness of 'who knows what' in the team

### Factor Four: Vision and Goal Clarity

Essentially, **vision** sets direction, and goal clarity specifies what the team should prioritize. It's no surprise that a clear team vision positively impacts team performance. A clear vision, owing to its future focus, provides both a rationale for the team's existence and standards by which team performance can be measured. Even though it seems obvious, it's worth stating that vision can't be merely implied or left to chance or interpretation. It must be crystal clear.

Clearly stated vision and goals help channel team efforts and give work meaning, which in turn, motivates teams to enhance their performance.

The research identified five topics that appear to be particularly associated with team performance:

- Sharing a team vision (ideally one everyone has contributed to)
- Setting goals that are challenging and achievable
- Discussing of long term goals with the team
- Providing regular feedback
- Establishing commitment to team goals

Goals, on the other hand, help team members channel their efforts in pursuit of their vision. When team members are committed to the team's goals, and share a sense of purpose and responsibility, team effectiveness is enhanced. Furthermore, clear goals help team members connect their personal values and team values, and experience more meaning and self-affirmation from their work.

A clear vision and commitment to long-term goals help encourage judicious risk-taking, experimenting with new approaches, and team accountability.

### **Factor Five: External Outreach**

High performing knowledge work teams are comfortable operating beyond the boundaries of their team. They are open to adopting new ideas – even ideas that originated outside of their team. They are proactive in engaging with outsiders, seeking out new information and resources, interpreting the information, and using their knowledge to shape external opinion. Teams participating in external outreach also experience better technical quality, faster delivery to market, and more often deliver within budget.

Research shows that external outreach requires teams to operate across boundaries, build bridges between teams, within and beyond the organization.

Teams involved in external outreach are found to undertake four types of activities:

- Mapping the environment outside the team in order to know who supports, or does not support, the team
- Persuading and influencing on behalf of the team
- Coordinating plans and deadlines, and negotiating to align them with other teams
- Synthesizing, interpreting, and contextualizing information from outsiders to integrate it into existing knowledge, so the team can act on this expanded view

Taking this one step further, the teams that not only connect with outsiders, but also seek a diverse range of perspectives will likely perform better. This diversity of connections enhances the likelihood a team will obtain new knowledge, reduce the pressure for the team to conform to existing assumptions, can spark the development of new ideas, and encourage team members to adopt new ways of doing things.

The research also identified three resources that appear to be closely associated with the performance of teams:

- Access to relevant and important external networks
- Activities that require people to interact beyond their own team, including cross disciplinary projects that involve working closely with other teams
- Support for new knowledge and ideas

### **Factor Six: Trust**

Trust is the bedrock of high performing knowledge work teams. Without team trust, the previous five factors would be compromised. Trust, as defined by the research, is "...created by the expectation that the actions of the other person(s) will be at one's benefit or at least not detrimental to him or her.."

Positive exchanges of expectations and experiences are important for building trust. Trust leads to positive consequences such as acceptance of influence, openness in communication, team commitment, and cooperation. Trust increases the efforts made by individual team members toward realizing team goals, the efficiency of teamwork when everyone is focused on the same goals, and the willingness to align with larger organizational goals. The more we trust, the less likely we need to check-in with team members to make sure they are doing what was agreed upon.

Demonstrating trust alleviates the worry that another person's actions will be based on self-interest. It's important to note that trust is developed in two directions:

- **Horizontal Trust** is directed at colleagues and team members. Teams expect that decisions made by other team members will take collective interests into account and we can trust each other to do what we say we will do.
- **Vertical Trust** is between employees and management. Teams expect that management decisions will consider the impact to employees. Management trustworthiness is also impacted by the fairness of the procedures used to determine organizational outcomes – like performance appraisal systems, professional development opportunities, and job security.

Trust in team members promotes a shared direction towards common goals over personal interests.

Team trust comes from:

- The efforts individual team members make towards realizing team goals
- The efficiency of teamwork when team members are focused on the same goals
- The alignment of team and organizational goals through developing and sustaining vertical trust

## So now what? An integrated perspective to organizational behaviors and workplace making

Social cohesion. Perceived supervisory support. Information sharing. Vision and goal clarity. External outreach. Trust. Each of these Six Factors are open to interpretation by team members, their managers, and their leaders; and may look and feel different from one organization to another, given the culture and climate of a given organization or other aspects that provide context. The Factors are consciously or unconsciously reinforced in aspects of behavior and social norms, like performance management systems i.e., in what's rewarded and what's punished, or manager training i.e., what forms does a supervisor's "support" take here?

Organizations, therefore, can and should assess and improve these factors in ways that are specific to their organization – consistent with their values, business strategies, etc. Behavior change can be encouraged by aligning the signals across space, resources, policies, culture, leadership and management practices – and all other forms of behavioral support in an organization.

While none of these factors are explicitly spatial in nature, they give those of us involved in workplace-making valuable insights into how team performance can be reinforced by the physical environment and the protocols for its use.

Examples of physical attributes that reinforce one or more of the Six Factors might include:

- Encouraging the expression of a team's identity/ownership of their neighborhood – whether that's a "totem" or banners, or a board with family pictures, or a table for Friday potlucks
- Leveraging unassigned seats to enable leaders to sit with their people and provide coaching, or for cross-disciplinary teams to co-locate for coordinating or consultation
- Providing white boards in a central location within the team to record and make visible their goals and objectives, milestones, and work-in-progress so it's accessible, and clear to the team and their neighbors

Organizations that depend heavily on the performance of their knowledge workers for business success should carry out a holistic and systematic review of their organization to assess the degree to which these factors are present in day-to-day business life. Once the baseline is established, a cross-disciplinary team can determine what aspects of their underlying culture, value structures, leadership behaviors, workplace design and infrastructure may need to change to move the needle for each of the Six Factors.

## The Takeaways

### **What the research didn't find:**

*The holy grail of workplace productivity.*

There is still no single universally applicable approach to measuring knowledge work productivity. What we did uncover in the research are Six Factors that strongly correlate with knowledge team performance. This is the best available, academically rigorous evidence on this topic, and can reliably act as proxy measures for team productivity.

### **What the research did find:**

*The Six Factors with the highest correlation to knowledge team performance.*

In order of the strength of the correlation to team performance, the top six factors are: social cohesion, perceived supervisory support, information sharing, vision and goal clarity, external outreach, and trust.

### **Conduct a systematic review**

Use the following Team Work Assessment to evaluate the Six Factors in your workplace.

### **Develop a holistic strategy**

A cross-disciplinary team should define the workplace tactics needed to enhance and enable the Six Factors, considering workplace design, underlying culture, value structures, leadership behaviors, and resources.



# Six Factors Insight to Action

## Six Factors Knowledge Work Assessment

*The purpose of the following assessment is to help organizations begin evaluating the Six Factors in their workplace. We suggest that you begin by having each team do a self-assessment, followed by a cross-team assessment (in which teams rate other teams). Many organizations already gather data through surveys or performance measurement tools, so it is worth analyzing what is already gathered before beginning this initiative.*

### STEP ONE: ASSESSMENT

Levels of Agreement:

**Strongly Agree = 5**

**Agree = 4**

**Neutral = 3**

**Disagree = 2**

**Strongly Disagree = 1**

### Social Cohesion

Please indicate your level of agreement with each statement below:

- Members of our team like to spend time together outside of work hours
- Members of our team do not get along with each other
- Members of our team actively seek opportunities to catch up socially throughout the day
- Members of our team defend each other from criticism by outsiders
- Members of our team do not help each other on the job

### Perceived supervisory support

Please indicate your level of agreement with each statement below:

- Our supervisor is not willing to extend him or herself in order to help team members perform to the best of their ability
- Our supervisor takes pride in our team's accomplishments at work
- Our supervisor tries to make the team's work as interesting as possible
- Our supervisor does not address team conflict
- Our supervisor encourages the team to make suggestions for improvements

### Information sharing

Please indicate your level of agreement with each statement below:

- Our team members do not share their work reports and official documents with other team members
- Our team members share their experience or know-how with other team members
- Information to make key decisions is not freely shared among the members of the team
- Our team members trust that other members' knowledge is credible
- Our team members are confident relying on the information that other team members bring to the discussion

## Six Factors Knowledge Work Assessment (continued)

### STEP ONE: ASSESSMENT

Levels of Agreement:

**Strongly Agree = 5**

**Agree = 4**

**Neutral = 3**

**Disagree = 2**

**Strongly Disagree = 1**

### Vision and goal clarity

Please indicate your level of agreement with each statement below:

- Our team has clearly defined goals
- Our team goals are not clear to everyone who works here
- It is not easy to explain the goals of our team to outsiders
- Our team has specific, clear goals
- If members of our team have more than one goal to accomplish, they know which ones are most important and which are least important

### External outreach

Please indicate your level of agreement with each statement below:

- Our team members use information obtained from external teams (either inside or outside the organization) every day
- Our team is contacted by external teams (either inside or outside the organization) for knowledge and information
- Our team does not scan the external environment for ideas and solutions
- Our team tasks demand creative and totally new ideas and solutions
- Our team does not meet delivery deadlines

### Trust

Please indicate your level of agreement with each statement below:

- Our team members generally trust each other
- Our team members do not share information with each other
- Our team members do not withhold information from management
- Management trusts the team to do their work well
- Team members can trust the information that comes from management
- Team members are not able to express their views and feelings towards management
- Management does not withhold important information from the team members

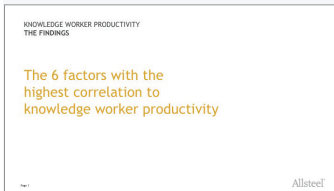
### Next Steps

While the Six Factors are not a roadmap with prescriptive instructions, they are directional, allowing you to assess and improve these factors in a way that is specific to your organization.

Once the baseline is established from the questions above, a cross-disciplinary team can determine the workplace design, underlying culture, value structures, leadership behaviors, and infrastructure required to move the needle in each of the Six Factors.

### STEP TWO: EVALUATE, PLAN, ACT, REPEAT

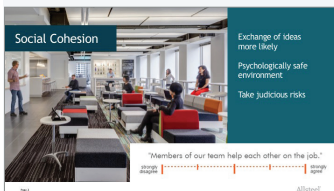
# Six Factors Slide Summary and Discussion Prompts



## Introduction: Measuring productivity in knowledge work

Introduction:

A global research review has uncovered six key factors that have the highest statistical association with the performance of teams. This included an exhaustive review of 800 individual research papers and 35 meta analyses. This is the best available, academically rigorous evidence on the topic.



## Factor #1: Social Cohesion

Discussion Prompts:

- How might we create spaces and support systems that encourage our teams to socialize throughout the day?
- What should we *start* doing to promote this factor? What should we *continue* doing? What should we *stop* doing?



## Factor #2: Perceived Supervisory Support

Discussion Prompts:

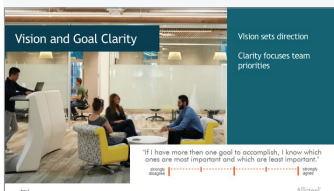
- How might leaders/managers demonstrate authentic support, accessibility, fairness and the like?
- What should we *start* doing to promote this factor? What should we *continue* doing? What should we *stop* doing?



## Factor #3: Information Sharing

Discussion Prompts:

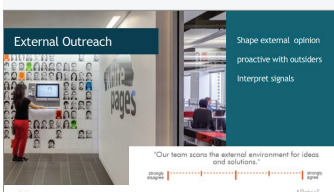
- How might we make our collective knowledge more widely known and visible?
- What should we *start* doing to promote this factor? What should we *continue* doing? What should we *stop* doing?



## Factor #4: Vision & Goal Clarity

Discussion Prompts:

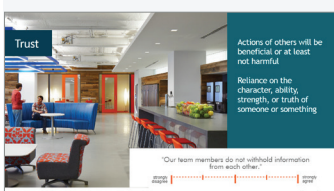
- How might we help our teams articulate their vision and goals, and keep them top-of-mind?
- What should we *start* doing to promote this factor? What should we *continue* doing? What should we *stop* doing?



## Factor #5: External Outreach

Discussion Prompts:

- How might we help teams make connections between people and information outside of their specific areas of expertise?
- What should we *start* doing to promote this factor? What should we *continue* doing? What should we *stop* doing?



## Factor #6: Trust

Discussion Prompts:

- How might we foster a sense of transparency and shared commitment in our workplace, underlying culture, value structures and leadership behaviors?
- What should we *start* doing to promote this factor? What should we *continue* doing? What should we *stop* doing?

## Workplace Advisory at Allsteel

The Workplace Advisory team listens. We apply research and our extensive workplace experience to assist organizations in the development and implementation of situationally appropriate workplace strategies. Strategies that align with organizational culture and business goals, support the ability to work effectively, utilize real estate assets as efficiently as possible, and adapt to changing business and work practice requirements.

**Jan Johnson** is the Vice President of Design and Workplace Resources at Allsteel, helping businesses drive meaningful change in the way they work, through fit-to-business furniture solutions and consulting services. Email: [JohnsonJan@allsteeloffice.com](mailto:JohnsonJan@allsteeloffice.com)

## About AWA

Formed in 1992, and based in London, Advanced Workplace Associates (AWA) is a leading change practice that uses workplace science to make a step change in organizational performance. AWA has a team of over 20 workplace professionals skilled in Business Strategy, Program Management, Workplace Strategy, Cultural Change Management, Space Planning, Facilities Management, Interior Design, and Technology.

**Karen Plum** is AWA's Director of Research & Development; **Andrew Mawson** is AWA's Founding Director.

## About CEBMa

CEBMa is a non-profit member organization dedicated to promoting evidence-based practice in the field of management. They provide support and resources to managers, consultants, teachers, academics, and others interested in learning more about evidence-based management. CEBMa is supported by several leading universities, including Carnegie Mellon, Stanford, New York University, University of Toronto, University of Bath, and the Free University of Amsterdam.

Looking for  
more?

Here are the  
references.

Portions of this paper were adapted from two other documents written by AWA and CEBMa:

"The 6 Factors of Knowledge Worker Productivity", 2015; and "Raising Office Worker Productivity", 2014.

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