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Challenges and Practices for Effective Knowledge Transfer for New Members in ad hoc Virtual Teams

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Abstract

For many organizations, knowledge transfer whether in a co-location setting or virtual setting is one of the most important and challenging aspects of overall knowledge management infrastructure. The purpose of this research report is to explore the challenges faced by ad hoc virtual teams for achieving effective knowledge transfer between the members. In the year 2020, due to a pandemic caused by COVID-19, many industries were forced to follow physical distancing guidelines for the health and safety of their employees. This required many co-location teams to become ad hoc virtual teams. As success of a new member(s) in a team can heavily depend on how well the knowledge was transferred during the on boarding period, research focus for this report further narrowed down to highlight the challenges organizations face to achieve effective knowledge transfer for new members in ad hoc virtual team settings. Literature review has been done and survey questions were developed based on learnings from literature review. Survey questions were formed to collect information from managers & team members on knowledge transfer challenges in virtual environments. 71 survey responses were received, and data was analyzed. Based on this analysis, few practices were proposed to potentially address some of the major challenges reported in the survey.

Introduction

In today's competitive world, effective Knowledge management is key to enable employees to expand their personal knowledge and apply it to their organization's needs [1]. Knowledge transfer is an important part of knowledge management which enables integration of knowledge across the boundaries of specialized knowledge domains [2]. It is a process of transferring knowledge from one person or group to another. Knowledge transfer involves two actions: Transmission and Absorption. Transmission is presenting or making the knowledge available to potential recipient(s). Successful knowledge transfer requires the receiver to absorb transmitted knowledge and use it to get things done in their organization. Without absorption, knowledge transfer is not complete [3]. Successful knowledge transfer involves donating behavior from the sender and collecting behavior from the receiver [4].

Knowledge can be classified into two categories: Explicit and Tacit. Explicit knowledge, which is conceptual/codified knowledge that can be found in internal/external documents & databases. This form of knowledge is easier to communicate. Another form is Tacit knowledge, which can only be gained from experience. This form of knowledge mainly resides in employee brains and is hard to codify and communicate. Both forms of knowledge are mutually dependent, and they reinforce each other. Explicit knowledge is necessary for what to do for successfully completing a work product and implicit knowledge is required to understand how & why the work product is being performed the way it is documented, so it can be improved if there are any changes in context or input parameters [5]. For new members to succeed and avoid costly mistakes, the team needs to make sure both forms of knowledge are transferred effectively.

It was observed that virtual team projects tend to have more risk of insufficient knowledge transfer than co-location team projects. This higher risk may be attributed to

inability to transfer certain types of intuitive knowledge and expertise without face-to-face interaction [6]. If a new member(s) work product is in the critical path of a project roadmap, and there is no backup available, then this risk can be even higher. Actual risk in a particular situation can depend on factors like new member's experience, Initiative, creativity, and level of commitment to excellence.

Many articles on this subject indicate that establishing interpersonal trust between sender and receiver is a very critical first step in the journey of achieving effective knowledge transfer. How quickly trust is established can depend on (but not limited to) how closely the cognitive preferences are aligned between the sender and receiver, how frequently they interact, how similar they are culturally & ethnically [7]. Achieving effective Knowledge transfer with a new member is challenging enough in a co-location setting. Achieving it in an ad hoc virtual team setting can become even more challenging, especially when the teams and individuals are not set up to deal with strains associated with rapid adaptation to the new norm.

Methodology

In this research paper, the team used a semi-empirical method to study the challenges associated with knowledge transfer in virtual teams. The team approached this research paper by first examining key articles in literature and designing survey questions based on learnings from the literature review. The study relied on survey results from 71 individuals within the greater Portland metro area and India. The individuals participating in this study were made up of colleagues and connections in various industries whose work was impacted by COVID-19 pandemic. The process of data collection and analysis was carried using google forms, and to a lesser degree using JMP.

Literature Review

Challenges of Knowledge Transfer in Virtual teams

Managing knowledge is necessary for an organization, like how other assets are managed. To gain and maintain competitive advantage, organizations heavily depend on the individual members experience that is considered as an important resource and critical success factor. Among many aspects of knowledge management, knowledge transfer is the crucial one. However, transferring knowledge is challenging because of the unstructured nature of the implicit knowledge and many obstacles that hinder the successful flow of knowledge.

Numerous studies on knowledge management and knowledge transfer in virtual teams have deliberated the different challenges each team encounters in diverse organizations. This paper summarizes few major challenges and discusses the main reasons that hamper knowledge transfer in virtual teams. In this regard, the constraints to knowledge transfer can be broadly classified into four categories:

Behavioral challenges

Most organizations have transitioned to remote work, making completely virtual training of new hires a necessity. With workers starting their new job from home without having any face-to-face interactions may face difficulty to build and gain trust within the team members. Trust is one of the critical factors that have a strong influence on

individuals to share knowledge. Team members generally fear transferring knowledge as there may exist some competition among them, and this may lead to insecurity and job threat. Another significant knowledge transfer barrier is that individuals think that if they transfer their knowledge, then they will lose their power/influence in the firm. Losing ownership, a position of privilege and superiority are essential factors that may influence knowledge transfer in the organization. Individuals who believe “knowledge is power” may not be willing to give out their knowledge [8].

Interest and attitude of individuals can also have a negative impact on knowledge transfer. If the new team member is not willing to gain the knowledge, it becomes challenging for the sender or the trainer to transfer the required knowledge. The inability for the receiver to gain the knowledge is also a barrier which not only hampers the knowledge transfer but, it also delays the whole process. Previous studies also denote that the hierarchy in the organization also impacts the knowledge transfer. It is believed in a hierarchical organization; the rules and the policies govern an individual’s actions and can result in less transmission of knowledge [9].

One of the most difficult tasks that managers face is establishing knowledge transfer in their organizations as knowledge can be neither forced nor controlled [9]. Lack of reward or recognition in an organization is another challenge that will have a negative impact on knowledge transfer. Past research elaborates that without the perks or recognitions it does not motivate the employees to transfer knowledge with the new team members. [9]

Communication Barriers

Communication skills of employees play a vital role in the knowledge transfer behavior. It is believed that in the workspace if communications among the team members are high, it may increase the knowledge transfer among them. Teams from different geographic locations use different processes, techniques, vocabulary, and different languages which may lead to conflicting assumptions. People working together in virtual teams may hold different experiences, views, and values, and convey differently. This may cause conflict to occur. The reason for this difference is that the employee’s principles, customs, and social connections are culture-based and imprinted into their minds to process the behaviors of others accordingly [9]. In culturally diverse and virtual team associations, each member may misunderstand the other’s objectives or distinguish their behavior and intentions as a threat, which may cause disagreement to occur between the team members [9]. Moreover, the knowledge transfer among virtual teams can be limited because people tend to misinterpret simple knowledge while connecting through technology communication media.

Technological challenges

Although technological challenges affect knowledge transfer in all settings, its effects on virtual teams is amplified. Information and communication technology (ICT) act as the mediating system which helps groups to come together and communicate using devices such as Email, video conferencing, voicemail, etc. Agreeing on a common mode of communication can be a challenge for the team members [9]. This lack of consensus on common mode can be due to different preferences or budgetary concerns especially

for cash-strapped enterprises which did not foresee such scenarios and forgo investing in needed infrastructures.

In addition, past studies have indicated that due to the lack of face-to-face communication and increased screen time, individuals start to feel stuck in their virtual environment and are less motivated to participate in knowledge transfer initiatives [10]. Lastly, for effective knowledge transfer, it is important for individuals to develop competency with IT systems, as IT systems play an important role in virtual communication and organization success [10]. Initially, newly hired employees face obstacles in adapting to new IT systems due to resistance to change and communication barriers. As the onboarding period comes with many learning curves, IT systems are often an afterthought that plays an important role in effective knowledge transfer.

Cultural and social challenges

Virtual teams mostly rely on computer-based communication, so it is difficult for team members to transfer knowledge without having a common ground (i.e., past experience of working together and having the intention to work together in the future) especially in case of a new hire in a team. The knowledge transfer among the team members depends on the concept of grounding in communication, which is easy when communicating by using body language. In the case of virtual teams, examining a problem becomes complex and it affects the team collaboration [11].

Individuals with different cultural backgrounds tend to have different behavior patterns. For this reason, cultural and social aspects are key factors that affect team performance. Socio-cultural differences such as values, norms, religion and traditions can affect the success of a team. In a diverse group, adding a new member can affect the coordination and balance among the team members [11]. These effects are exaggerated in virtual teams as the team is expected to navigate those challenges in a medium that is less than ideal for such tasks. Furthermore, the nature and complexity of the work itself can pose a challenge to the team. Complex tasks need more coordination and cooperation among the team members when compared with simple tasks. Because interdependent work needs more negotiation, which is very difficult to do at a distance. For Virtual teams, it is highly difficult to manage complex tasks and avoid misunderstandings that are raised due to complexity in work. Assigning a complex task to a newly hired member can affect the performance of the team [11].

Survey Results & Discussion

To start off, the current roles of participants were 72% Individual contributors (IC) while 28% of the respondents were in managerial capacity (Fig.1 in Appendix). This skewness towards individual contributors indirectly reflects the demographics of the research team, as most of the team are early-to-mid in their careers. Nonetheless, as individuals entering the workforce or are early in their careers, are heavily involved in knowledge transfer processes; the skewness towards ICs should yield a richer data that can give us a better insight into the challenges facing organizations in transferring knowledge within virtual teams.

Majority of the surveyed participants (90 %) have indicated that they were forced to become a virtual team due to COVID-19, with 10% not having to experience such changes in the workplace (Fig.2). Furthermore, 57.7% of the participants indicated they

have indeed added a new member to their teams post becoming a virtual team (Fig.3). This was an unexpected datapoint since unemployment rates have been on the rise post the outbreak of COVID-19 and major employers having frozen their recruitment both locally and internationally.

With the assumption of active recruitment being validated, the survey was further designed to understand limitations stemming from lack of internal processes that could affect knowledge transfer. The respondents were asked if their organizations had processes for virtual Knowledge and to rate their effectiveness. 88.7% of the surveyed stated that their organization did indeed have processes and mechanisms for virtual knowledge transfer, and the average rating for the processes in place to be 8 (on a scale of 1-10). Fig.5,6. This confidence in the systems in place was crucial for the thesis of this study, as the objective was to gauge the KT challenges within ad hoc teams.

To build on this, the survey next gauged the method of training used for new members. As onboard training is one of the most visible processes of knowledge transfer, the team equated this process to be a representative of the knowledge transfer process. 61% of the study population stated that training for new members was carried out in virtual face-to-face meetings (Fig.4). This was in direct contrast to the preference of in-person knowledge transfer by 87% of the surveyed population (Fig.14).

As for the challenges, the responders indicated that the main challenge seen from the survey was communication (~50%) followed by technological challenges with 28% (Fig.12). This percentage stays roughly constant when data is filtered to include only respondents who hired new members post becoming a virtual team (48% and 31% respectively). Digging deeper into these two main challenges, it is seen that for the communication challenges, the most pressing challenge identified is the “Lack of awareness of colleagues and their Context” with 57.7% of the responders. This was followed by “Poor or lack of documentation” with 40.8 % (Fig.11). As for the technological challenges, lack of competency with IT systems, was in the lead with 56.3% of the vote, with a distant second of “lack of infrastructure to support virtual training” with 42.3% of the vote (Fig.8).

Lastly, to get an estimate on how long the process of transferring knowledge to new members takes, the survey asked participants to compare how soon new members start contributing to the team. Though this doesn't necessarily reflect the point at which KT is complete, the assumption here was that it marks a point where the process of KT starts to plateau. The distribution of the results followed a lagging bell curve that showed a similar time frame between virtual and co-location (Fig.15). Filtering this data by the role shows different distributions. The distribution for IC roles was similar to the overall distribution, but the distribution for those in management roles skews to the right with both the median and mode between 4-5 months for virtual teams (Fig.16). The discrepancy between the two, can be explained by role bias. As the scope of managers is more holistic, they tend to have better visibility into the affairs of new employees. They are more aware of the natural variation in how long it takes to train new employees, and they tend to be more conservative in their estimates.

Best practices for effective knowledge transfer for new members in virtual teams

Based on the survey conducted and the personal experiences of the team members working on this research paper, identified some best practices which can help make knowledge transfer more effective for new team members. Most of the knowledge transfer takes place during the initial training sessions for the new team members.

Establish personal connections

New hires in a conventional team will be introduced to the team on their first day which helps in fostering personal connections at work. In this ad-hoc virtual environment, it is even more important to do that as it makes team members feel connected and involved in the project. Managers should facilitate these team introductions by setting up a virtual meeting preferably video enabled (makes interactions effective) and assign a welcome buddy to assist them during their first few weeks/months of employment which helps the new hire to contribute to the team goals quickly.

Effective Communication

As per the survey/literature review, one of the major challenges faced by the virtual teams is poor communication which is even more challenging in case of a new hire. The manager should explain the new hire team's objectives by having interactive sessions which are also recommended to be video enabled so that manager can get the visual cues of whether or not the new hire is receiving the message that he/she wants to deliver. Manager needs to set some small goals for him for training and frequent feedback is necessary during the training. Managers and mentors should understand the cognitive capabilities of the new hire in the initial training sessions and adjust the speed and method of their training accordingly.

Training and Resources

The new hire should be given an overview of what knowledge is required to contribute to the team's goals and the sources to acquire that knowledge from by manager/mentor. Recurrent meetings with the new hire are needed during the training. Maintaining a digital repository, recording training sessions, and documenting best known methods helps accelerate the training of new hires and reduces the mentorship time. Hands-on training along with theory can make knowledge transfer more effective. In traditional teams, shadowing plays an important role in learning for the new team members. In a virtual environment, it is challenging as it requires the mentor and new hire to be in proximity. Mentors virtually sharing work screens and having the new hire follow along and note down their questions for later discussions can be less burdening and act as a virtual shadowing. Encouraging new hires to attend daily stand-up meetings as they are a good source of knowledge as it exposes them to different phases of work, type of work, impediments, and team dynamics. Team members should also be encouraged to help the new hire with the best and fast ways of learning and problem solving.

Building trust and motivation

Building trust on a person whom you have never met or worked with before in a virtual environment is very difficult. New hires can set up short one on one meetings with

their team members to get to know them personally and professionally. Having these personal connections and being transparent can build trust among the team members. Managers should encourage the team members to be the mentors. Incentivizing the mentorship behavior within the team can motivate senior members to help new members.

Cultural and Technical

Aligning on goals, establishing transparency and openly discussing any issues with the team members can minimize cultural barriers to the new hire. Organizations need to provide the necessary training to the new hire to overcome the technical barriers. Correspondingly, feedback from the new hire and mentor should be incorporated into the training process for future training and create a positive feedback loop to enhance continuous improvement in the knowledge transfer process.

Conclusions

This study reaffirms findings in literature that communication and technological challenges hamper effective knowledge transfer especially in virtual teams. The communication challenges for virtual teams is exacerbated by the lack of awareness of team members and their context. This diminishes the effectiveness of the tacit modes of knowledge transfer, whether it be tacit-to-tacit or tacit-to-explicit [12]. Technological challenges, on the other, hand can affect both tacit and explicit modes of knowledge transfer. They can, however, be eliminated in any organization by investing in training and infrastructure to support virtual training. For new hires, organizations should develop or adopt practices to enhance effective knowledge transfer. A few practices ranging from effective communication, building trust, and training were discussed to help overcome the challenges associated with knowledge transfer to new members in virtual teams.

Limitations and further research

Inherent in this study are few limitations that need to be kept in mind when interpreting the data presented herein. The first of which is the survey participants. Study participants were geographically limited to two locales and are mostly individuals with engineering backgrounds. Though they are employed in diverse industries ranging from semiconductor, health, finance and education; the geographical and educational background limitation restricts the data from being a representative sample for broader application. Secondly, as knowledge transfer is a continuous, broad-scoped process; the study used training new employees as the main representative of knowledge transfer within an organization. This narrower focus allowed us to gauge the effectiveness of the virtual training process, in lieu of knowledge transfer process.

As the fallout from COVID-19 is still being experienced throughout the world, challenges posed to organizations regarding knowledge transfer are little understood. The findings from literature and in association this study, examine knowledge transfer in a temporary situation where the knowledge creation process is unaffected. Long term studies are needed to fully understand how ad hoc virtual teams' cycle through the processes of knowledge creation and transfer. Additionally, knowledge transfer to a new member in a virtual setting is little under explored in literature.

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Appendix

What is your current role within your organization?

71 responses

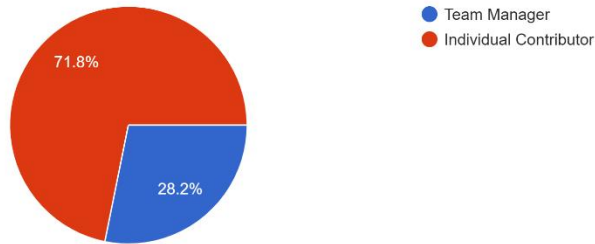


Figure 1: Question #1

Did your entire team/part of your team become a virtual team (Work from home) due to COVID-19?

71 responses

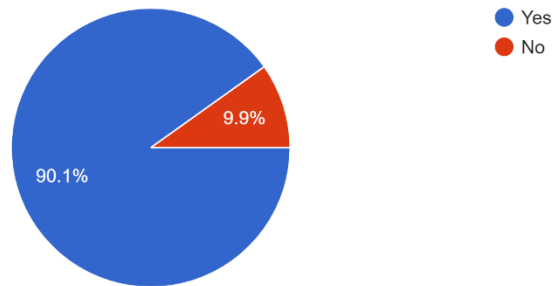


Figure 2: Question #2

Has your team hired members who needed to be trained virtually?

71 responses

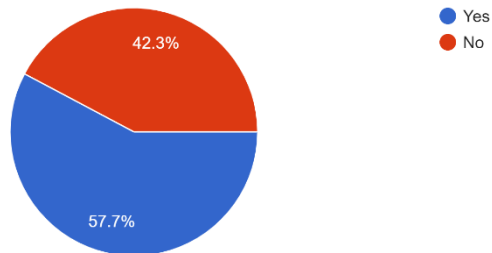


Figure 3: Question #3

What modes of training does your team utilize?

71 responses

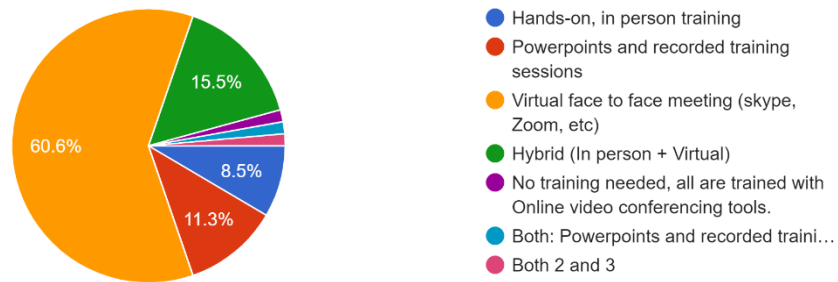


Figure 4: Question #4

Does your organization have processes/mechanisms for virtual knowledge transfer?

71 responses

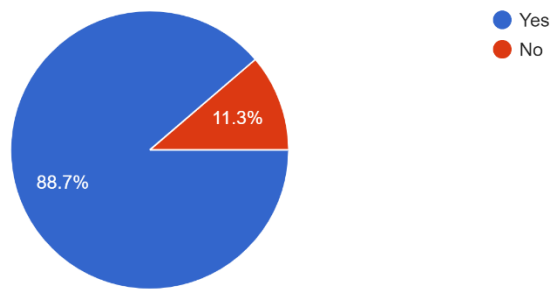


Figure 5: Question #5

If you have processes in place, How do you rate their effectiveness in facilitating knowledge transfer?

68 responses

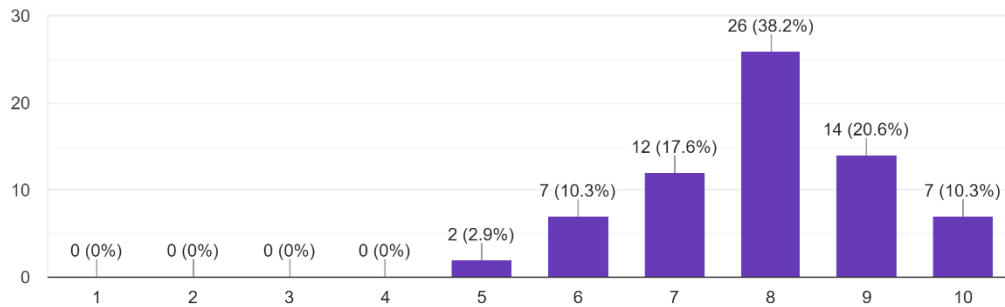


Figure 6: Question #6

In a virtual environment, for new members to succeed, do you think it's important to have well-designed processes for knowledge transfer?

71 responses

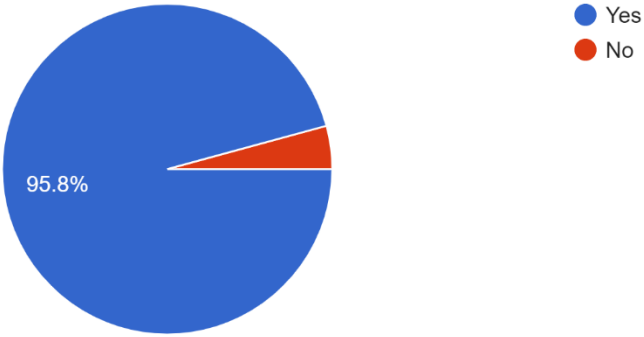


Figure 7: Question #7

What are the major "technological" challenges affecting virtual knowledge transfer within your organization?

71 responses

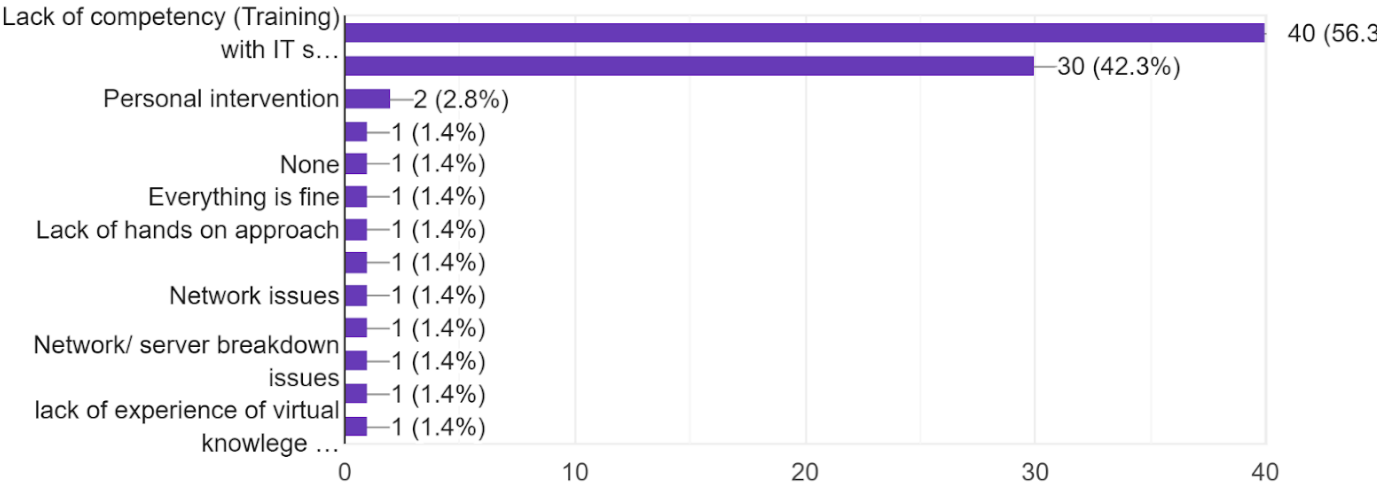


Figure 8: Question #8

What are the major "behavioral" challenges affecting virtual knowledge transfer within your organization?

71 responses

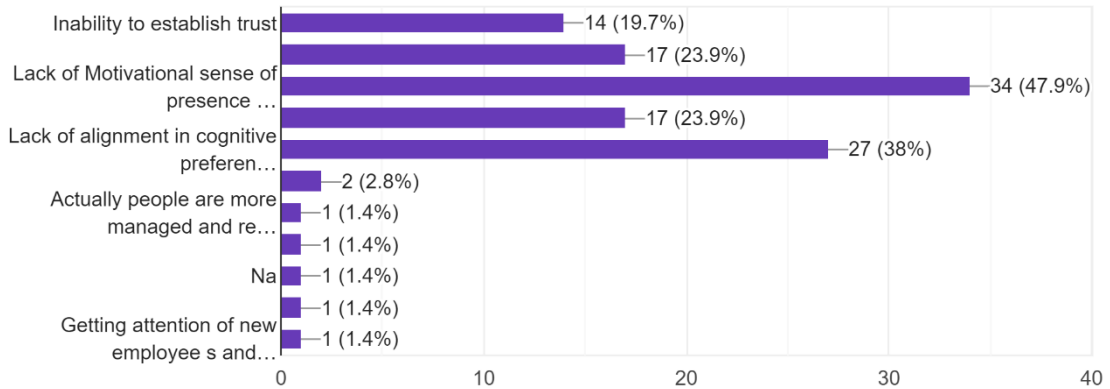


Figure 9: Question#9

What are the major "cultural and social" challenges affecting virtual knowledge transfer within your organization?

71 responses

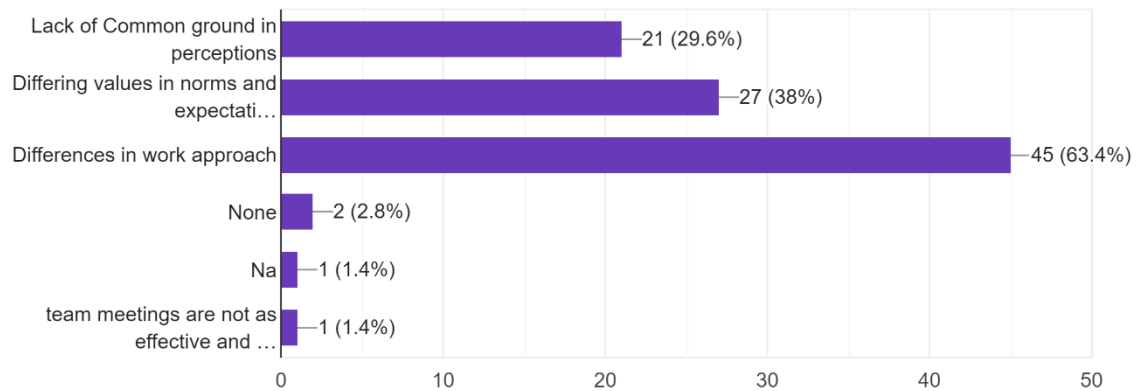


Figure 10: Question #10

What are the major "communication" challenges affecting virtual knowledge transfer within your organization?

71 responses

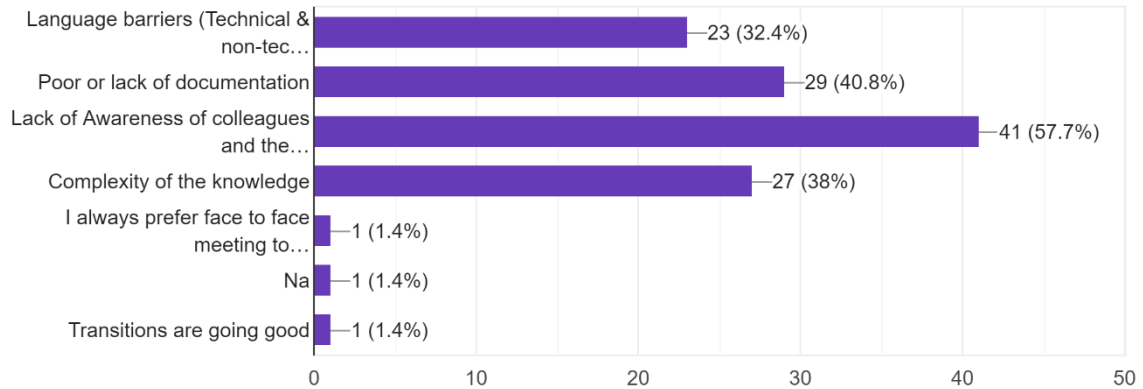


Figure 11: Question #11

What is the major category of challenges facing your organization relating to virtual knowledge transfer?

71 responses

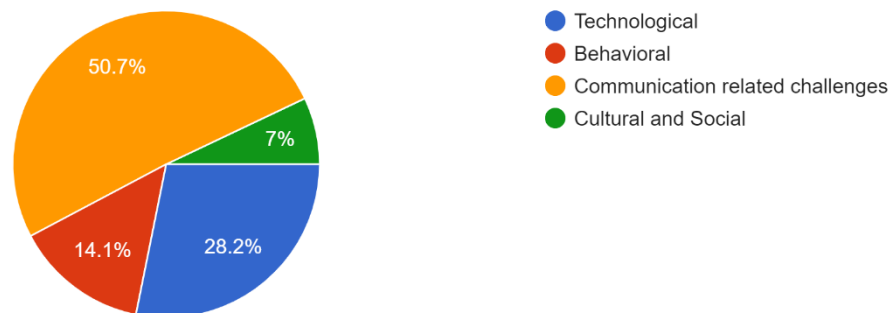


Figure 12: Question #12

Which practices below do you think will have the most effect on the efficiency of virtual knowledge transfer?

71 responses

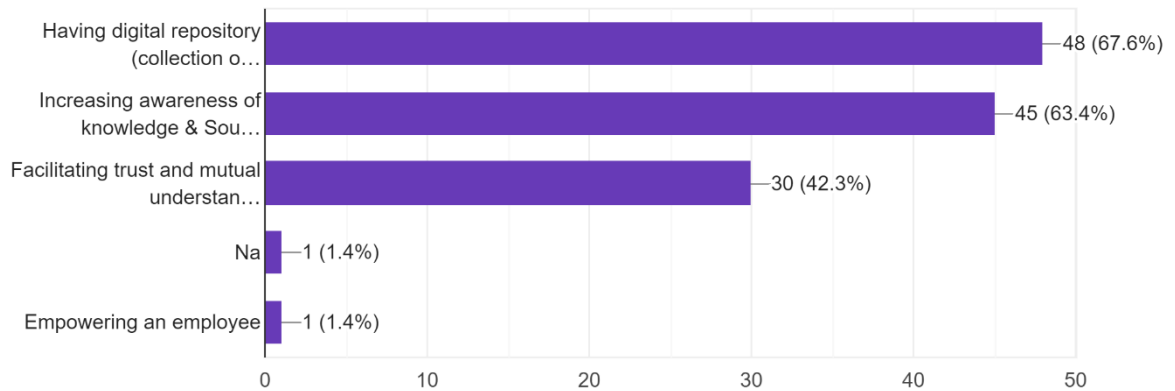


Figure 13: Question #13

What mode do you generally prefer for knowledge transfer?

71 responses



Figure 14: Question #14

Open ended questions:

1. If it takes 3 months in a co-location for a new member to start contributing to the team, How much time (in months) do you think it will take in a virtual team within your organization?

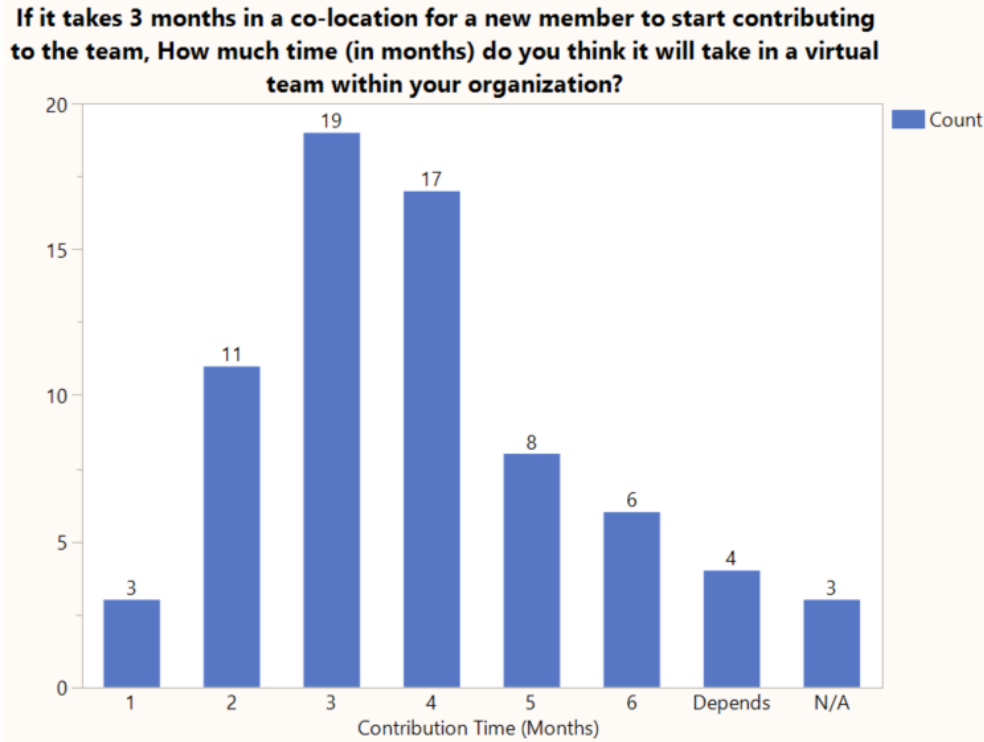


Figure 15: contribution time in virtual Vs. co-location

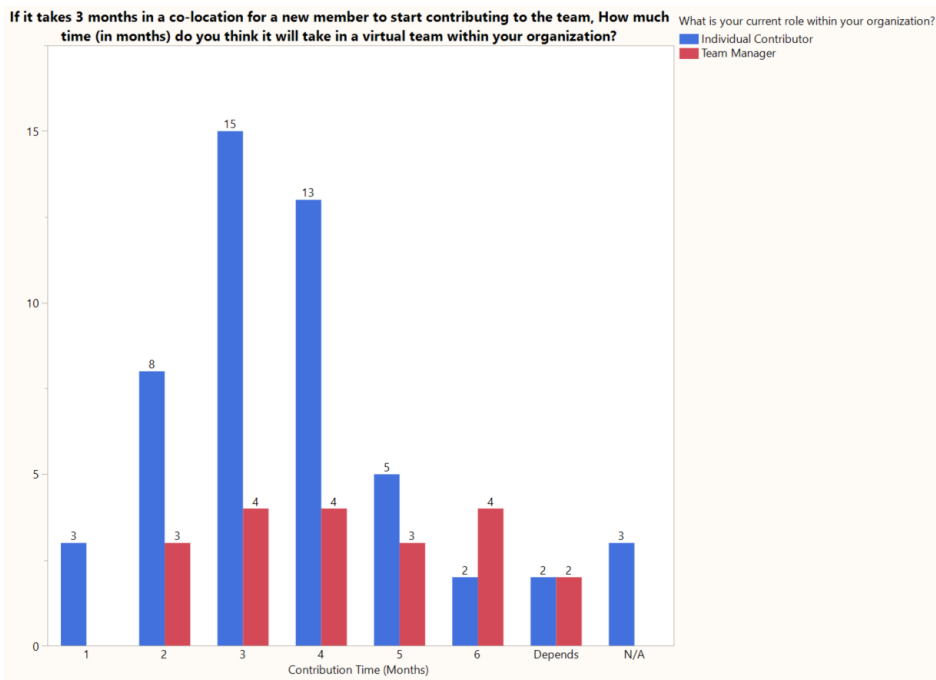


Figure 16: contribution time in virtual Vs. co-location by role

2. What has been planned/implemented in your organization to overcome the challenges faced by knowledge transfer in virtual teams (list top 2)?