

Decision Making in Diverse Swift Teams: An Exploratory Study

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Abstract

In the digital age swift teams are becoming the new norm. These work groups are ad-hoc and have very little knowledge or previous interaction with other group members. Dynamics of these groups are complicated because of the group member's diversity and short duration of the projects. Diversity studies have focused on categorization such as ethnicity, gender, culture, sexuality differences on one hand and functional diversity which relates to task-related knowledge, skills, opinions and perspective on the other hand. This paper goes a step further and studies group productivity in term of social diversity of group members in the context of face-to-face groups. The members of a typical swift group are different in race, gender, nationality and backgrounds; different in relation to task-related expertise and initial familiarity with each other. Groups in face-to-face classes mimic diversity that is often related to real life swift teams. Instead of re-inventing the wheel, we can learn from groups used in face-to-face courses and extend those experiences to swift groups. Our research revealed that diversity is associated with decision making in swift groups. We also found evidence that social diversity creates sub-groups which is associated with group decision making. Future research areas are also discussed.

1. Introduction

Swift teams are formed quickly and group member work together during one of a kind event like disasters, terrorist attacks, damage control etc. These work groups, maybe dispersed or co-located, are becoming frequent [26,70,73], consisting of members of different race, gender, nationality and expertise. Zijlstra et al (2012) define these swift groups as “..ad hoc teams formed for immediate task performance, such as emergency or rescue teams or aviation crews, with highly trained members who have generally not previously worked together as a team”. Meyerson et al (1996) describe swift teams as, ‘..organizational analog of

“one-night stand”. They have a finite life span, form around a shared and relatively clear goal or purpose, and their success depends on tight coordinated coupling of activities.” Adding to the complexity is the “diversity” component of these teams.. Commenting on diversity, Neale et al (1999) argue that “People tend to think of diversity as simply demographic, a matter of color, gender, or age. However, groups can be disparate in many ways. Diversity is also based on informational differences, reflecting a person's education and experience, as well as on values or goals that can influence what one perceives to be the mission of something as small as a single meeting or as large as a whole company.” Van Knippenberg et al (2005) define diversity as, “as differences among individuals on any attributes that will lead to the perception that others are different from oneself”. Several theories related to diversity have emerged. William and O'Reilly(1998) suggested two theories that may influence group behavior; social categorization and information and decision making (functional). Social categorization defines groups based on categories like gender, age, race etc. and information and decision making theory defines diversity based on task related skills. There are no clear results and literature has provided conflicting evidence in support and against diverse group performance. Diversity problem becomes more complex when groups are ad-hoc in nature. In addition to social level and functional diversity there is another form of diversity “social-tie diversity”. We define social-tie diversity as the level of diversity which group members have *before* joining the swift team. In other words, social diversity measures the level of group member's knowledge of each other before joining the group. This could be social and/or work interaction. We did not differentiate in the nature of social-tie among members. Given the current conflicting state of diversity research, it is important to continually validate existing research and add to the existing knowledge. This paper, in addition to surface level diversity, addresses social-tie diversity and its association with group performance.

The first section describes current literature on diversity and swift teams, followed by study and discusses results and limitations of this study. In addition, we provide directions for future research.

2. Literature Survey

More and more groups are becoming mirror images of the general U. S. population. The U. S. Census Bureau, Population Division [70], reports that race, gender and age diversity in U.S. population is increasing. Group diversity is real and must be studied in great detail. Modern teams reflect the changing national demographics and changing business models [20]. Managing diversity is becoming increasingly important. Organizations must learn how to manage people of different color, race, national origin, religion and others. Understanding decision-making in diverse teams is also becoming important [2,11,14,22,41,65,67]. Williams & O'Reilly (1998) examined over forty years of research and have provided a comprehensive review of literature. William & O'Reilly (1998) summarized their research and identified diversities based on two theories: social categorization and information and decision making categorization. Social categorization relates to variables like gender, race, nationality, social etc. and information and decision making relate to diversity due to differences in education, skills, abilities, knowledge etc. In parallel, researchers in business and social sciences [35,53, etc] have categorized diversity as "visible" and "invisible" while others [31,49, 52,53,54,55,58,68] in organizational sciences have categorized diversity as "surface" and "deep". These classifications are quite similar. Visible diversity refers to "visible" factors like race, gender, religion and nationality and invisible factors refers to "non visible" factors like skill, knowledge, sexual orientation, etc. There is an abundance of research in the areas of group working, how groups make decisions, and emerging leaders in groups [9,23,76, etc.]. It is well established that diversity brings a wealth of knowledge to the group [16,17, 20, 24,53,62,63,67,69,71], however, diverse group effectiveness is still a debatable issue see [2, 23,34, 40,56] for complete review. Many researchers [44,52,53,62,67] agree that diverse groups, if managed properly, can provide a positive effect. This has tremendous potential for organizations that

can create distributed groups that can tap the expertise of its diverse workforce at a lower cost. However, group decision making is complicated when groups are distributed and work in a virtual environment. More studies are needed to understand diversity and performance of such groups. Knippenberg and Schippers (2007) summarized diversity research and concluded in social categorization perspective as "...People tend to favor in-group members over out-group members, to trust in group members more, and to be more willing to cooperate with them. The result of such categorization processes may be that work groups function more smoothly when they are homogeneous than when they are more diverse, and that group members are more satisfied with and attracted to the group when it is homogeneous and they are similar to the other group members." Categorization becomes important in face-to-face swift teams where members may not know each other and their beliefs and trust level are based on stereotyping/social categorization. Researchers have suggested that category based trust, in the absence of other factors is based on stereotypes of teammates characteristics [39,43,74,78].

Research on swift teams have focused on Trust [39,42,47,74,78] and level of interaction and roles among team members [1,18,25,77]. Fahy (2012) examined collaborative relationships among the Fire Department of New York (FDNY) and New York Police Department (NYPD). His thesis examines the concept of swift trust which he defined as "... a unique form of trust that occurs between groups or individuals brought together in temporary teams to accomplish specific tasks, often under time constraints". He developed a swift trust matrix to study the impact of factors on swift trust and examined swift trust formation in military, business, and virtual collaborative teams. He found "...Among the factors affecting the formation of swift trust between NYC first responders were initial interactions and communications, identification of roles and assigned tasks, formulation of a team identity, and organizational culture. The conclusions drawn from this research revealed organizational and procedural barriers prevented the formation of swift trust at interagency incidents. Additionally, he concluded current training is largely ineffective at developing swift trust. Wildman et al (2012) Summarized swift trust and concluded that "...swift teams do not have the luxury of time to develop and adjust to the demands of teamwork prior to performing". They argue that

development of trust is often a critical issue for team's effectiveness. They suggest it is "...important to understand how the affective, cognitive, and behavioral processes involved in trust development differ in swift teams so that these teams can be managed and trained to achieve levels of trust necessary for effective team performance." Lionel et al (2009) categorized trust in two different categories, swift and knowledge-based trust. They argue that swift trust develops initially and maybe based on "...Category-matching process based on team member characteristics, not on their behavior."

These studies suggest that in the absence of other external factors, initial swift trust is based on categorization. Since swift trust affects [1,37, etc.] performance, we can take the social view of ad-hoc teams which theorizes that homogenous teams would perform better in face-to-face environment. This is the approach we have taken in this study.

Research on social-ties is conflicting. One groups of researchers have argued that social-ties create sub groups within groups which could lead to negative outcomes [6,28,29,57,59]. Sung and Oh (2003) argued that subgroup tie characteristics affect group effectiveness. Their study showed. "...it is counterproductive for a group's functioning when a group has multiple competing subgroups and a greater variation in the size of competing subgroups..". Most social studies have discussed the negative implication of having multiple subgroups in a work group [6,28,29,59]. Frequent interaction among sub groups may serve as a strong source of identification with subgroups for the members [13], which may result in sub-groups having different goals than the group goals [33,59,66]. In addition, differences in sub groups may cause conflict which in turn may affect group performance [28,29,50]. The other group [1,4,5] has argued that social-tie influences team outcomes. For example, Adams et al (2007) explored "whether the regimental identity (social-tie) could influence the swift trust in team members" in Canadian Armed force reservists. They found "... shared regimental identity promoted swift trust at the very early stages of working as a team."

Based on above research, we argue sub group association would be more prevalent in face-to-face groups where sub-group actions are more visible. Summarizing various theories and experiments on sub-groups, Carton and Cummings (2012)

identified subgroups within a group as an important factor in a group's outcomes and developed a model which identifies underlying factors of the sub groups as: identity, resources, and knowledge. In this study we focus on identity form of social-ties.

3. The Proposed Model

Researchers [2,8,39,41,75] have suggested model(s) to study the impact of contextual variables in learning environments. We have extended their model to include social-tie diversity [1,40] in addition to surface level diversity, for this study (see Figure 1).

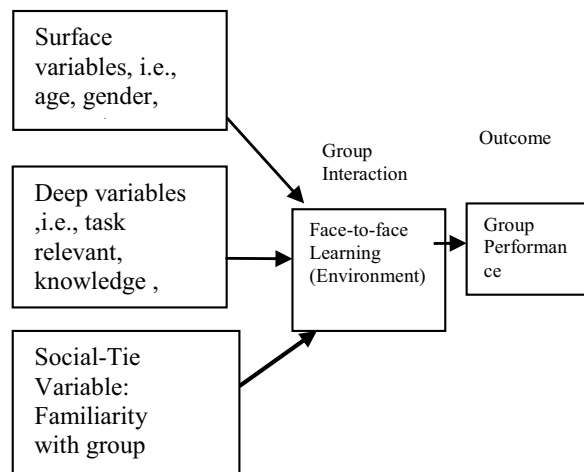


Figure 1: Diversity model

3.1 Diversity and its impact on group performance

There are many dimensions of diversity, as previously stated, but we have restricted this study to surface level and social level diversity due to its impact on swift groups [2, 12, There are many. We have followed Harrison and Klein's (2007) model to recognize diversity as a "variety" construct and have used categorical levels as measurement [27, 63, 64]. The study itself used face-to-face class to mimic swift group working environment.

3.2 Group Performance:

Group performance was measured as the score received by each group on the assignment. Peer

evaluation was used to study an individual's contribution and their satisfaction with the group. Individual grades were adjusted based on peer evaluation.

4. Research Questions

The following research questions were developed.

4.1 The “Social categorization” and “Social Identity” View

Homogeneity and categorization play an important part in building trust in face-to-face ad-hoc groups [4,37,41]. Lionel et al (2009) concluded that “Given that swift judgments based solely on team members characteristics linger on and influence trust judgments made after individuals have knowledge of other's behaviors, we believe that more research is needed on swift trust and the factors that influence initial trust judgments before knowledge of behaviors has been gained”. Mannix and Neale (2005) summarized different views of diversity as self-categorization/social-identity and similarity-attraction (Pessimistic view) and information processing approach (Optimistic view). The pessimistic view ..”creates social divisions that, in turn, creates poor social integration and cohesion, resulting in negative outcome for the group”. Aggarwal [2] also noted that homogenous groups perform better in the short run. In the optimistic view several researchers [2, 3,6,15,22,26,69,73 etc] noted that “.. heterogeneous groups produced higher-quality solutions than did homogenous groups for complex decision-making problems”. This perspective focuses on task performance of the group and emphasizes that people bring different views to the group and there is information sharing and information seeking outside the group resulting in better outcomes. These conflicting views have created confusion which Milliken and Martins (1996) referred to as “a double -edged sword. In addition, Kravitz, (2005) summarized the state of research on diversity, stating, “As one might expect from these incompatible theoretical perspectives and predictions, results are complex and inconsistent. Some types of diversity (e.g., race, gender, and age) are more likely to have negative effects, whereas other types of diversity (e.g., functional background, personality) are more likely to have positive effects, at least when the group process is

controlled”. There is conflicting research related to the effect of diversity in group decision making [2,40].

Since swift groups are ad-hoc groups and are affected more by surface level diversity, we are taking the self-categorization/social-identity approach [24,28,40], in developing our research questions that social-tie diversity does not help swift group performance.

Accordingly, we developed following questions for social diversity:

H1: Is the level of social-tie associated with swift group performance?

In addition, we wanted to study if diverse perform better than non-diverse groups. We developed the following question to study performance among diverse groups.

H2: Do socially-tie diverse swift group perform better than non-(less) socially-tie swift diverse group?

Following [37,40] we also study group level diversity and its impact on swift group performance.

H3: Is the level of diversity associated with swift group performance?

5. Research Design

5.1 Participants:

Face-to-face teams can be used as a surrogate for swift teams. Students work in ad-hoc teams with little prior experience with each other and have different ethnic, race, cultural and national backgrounds, and work in a group to achieve certain goals. Both face-to-face and teams operate in a similar environment. Students have diversity and work in groups with members who may have never met, have different ethnic, race, cultural and national background, and work in a group to achieve certain goals. Many authors have used students as the surrogate for their study to study diversity [8,21,40,60,61], and we also used MBA students for our study

The present study was conducted at an urban public university in the Mid-Atlantic area. The university has diverse student population. The model in Figure 1 was used to assess a diverse swift

group's outcome in a face-to-face course in the MBA program. The first management information system (MIS) course in the MBA was selected for the study, which is required and typically the first course many students take. This course was selected since it requires extensive group work and has first year students who have very little previous contact with their colleagues.

5.2 Methodology

As already mentioned, diversity consists of many social and economical factors, but for the study, we selected surface level diversity which consisted of gender, race, nationality and social (friendly) ties. We restricted our study to surface and social-tie diversity since it impacts the swift group the most [37,43,45]. A questionnaire was used to identify each of the above diversity. Regression analysis was used to study questions one and three, and independent mean comparison test was used to test differences among group performances for question two.

Group Project score = f (race, gender, nationality, social tie)

Gender was coded as 0 and 1 for male and female respectively. Nationality was coded as US and non-US citizens as 1 to n, where n is the number of distinct nationalities. Race was coded as 1 to 6 for American Indian, Native Hawaiian, Asian, African American, Hispanic and white respectively. Social tie was coded as 0 to n; 0 for no social tie to n as total number of social ties.

The next section discusses the study.

6 The Exploratory Study

The study was conducted in the Fall 2012 with a total of 17 students. For group assignments, classes were divided into groups of three or four students, based on their past experience and familiarity with the subject matter to provide parity among groups. There were five groups in the course, two groups with four members and three groups with three members. Groups worked on three projects, however groups were told that group composition will change for each project. Each group was an ad-hoc group which met for the sole purpose of completing the project. Individual grades were based on overall project grade adjusted for peer evaluation. Task was structured in nature and required intense group communication. The

task involved designing a budget using a spreadsheet. Project included several topics requiring extensive group discussions. Groups were free to communicate face-to-face, in conference area or their choice of social sites. Conference area for each group was created in our course management system (SAKAI). Only group members and the instructor had access to the group area. Instructor did not intervene in group discussion and all clarifications were provided via e-mail.

All diversities were calculated based on Blau's [7] index which is defined as $D = 1 - \sum p_i^2$ where d is the diversity score and p is the proportion of team members that belong to class i and i is the total number of categories in group i. We also calculated Group diversity index as:

Group diversity index = f(gender, race, nationality, social tie)

The next section discusses results.

7. Results & Discussion

SPSS was used for analysis. A regression analysis was used to study the association of diversity on swift group performance. Tables 1(a) and 1(b) summarize the result of group performance on project one.

Model	R	R Square
1	.771 ^a	.594

Table 1(a) Model Summary: Social Ties impact

Model	df	F	Sig.
1 Regression	1	4.389	.127
Residual	3		
Total	4		

Table 1(b): ANOVA for Social Ties

Tables 1(a) and 1(b) do not show statistical significance of social ties influence on group performance. The results, however, do show a negative association between social ties and group performance suggesting that the more social ties may be associated with worse group's performance. This contradicts some of the current literature [1,4,18]. The differences may be due to the nature of these studies which were conducted for regulatory agencies like the navy, army, police etc. These groups have hierarchical structure, rigid culture and discipline and cohesiveness is expected. The student groups may not show level of trust in the swift groups even with some social ties. Our results, however, are consistent with most social science researchers [6,28,50,51,66] who have argued that social-tie can create sub groups which can lead to sub group performance.

The second question was studied by dividing the group into two independent groups of different social-tie index. A mean score of 0.375 was used to create two groups. A score higher or equal than 0.375 implies high level of tie-in diversity and a score of <0.375 shows low level of tie-in diversity. Differences in the means statistical tests were used. Tables 2 (a) and 2(b) summarize the results of comparison of means for research question 2.

blausocialtrust	N	Mean
grade >= .375000	3	49.0000
< .375000	2	53.5000

Table 2(a): Two independent groups

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
grade	-2.242	3	.111

Table 2(b): Difference between Means

Tables 2(a) and Tables 2(b) do not show statistical significance among groups at $\alpha = .05$, however it shows significance at $\alpha = .111$. This is a

very weak support for the question. Table 2(a) also shows that groups with higher diversity had a mean score of 49 as compared to low diversity group which got a score of 53.5. These outcomes provide weak support to the current research [6,27,50,51,66] that groups with low social ties tend to perform better than groups with higher social ties. As Sung & Oh (2003) reported "... it is counterproductive for a group's functioning when a group has more than two competing subgroups and a greater disparity in the size of competing subgroups because of increasing competition and conflict among subgroups". Our study supports this argument.

Research question three was also studied using SPSS. Tables 3(a) through and Table 3(c) summarize the results.

Model	t	Sig.
1 (Constant)	12.884	.001
blautotaldiversity	-2.433	.093

Table 3(a): Model Summary

Model	df	Mean Square	F	Sig.
Regression	1	25.751	5.920	.093 ^a
Residual	3	4.350		
Total	4			

Table 3(b): ANOVA

Model	t	Sig.
1 (Constant)	12.884	.001
blautotaldiversity	-2.433	.093

Table 3 (c) : Coefficient

As seen in Tables 3(a) and 3(b), question three is not supported at $\alpha=.05$ but supported at $\alpha=.10$ level of significance. Table 3(c) also shows a negative diversity coefficient suggesting higher diversity is associated with poorer results which is consistent with the pessimistic view [37,40]. The social theory researchers view is summarized by Kravitz (2005) as, “The pessimistic view concentrates on affective problems, as predicted by the similarity–attraction paradigm (birds of a feather really do flock together) and by social-categorization and social-identity theories (with the resulting distinction between in-group and out-group). This work typically defines diversity in terms of tenure and social categories such as race and sex.” Our results support categorization theory which states that homogenous (less diverse) groups tend to perform better than heterogeneous (more diverse) swift groups [37,78].

7.1 Discussion:

In this study, we explored the effect of diversity on face-to-face swift groups. We included tie-in (social diversity) identity-based diversity which creates sub groups within groups. Based on previous research, we proposed a model that studied not only tie-in social diversity but also level of tie-in diversity to group performance. Diversity definition and measurement were based on previous research. The study does not support that tie-in groups affect group performance. However it provided weak support that low tie-in diverse group perform better than high tie-in diverse group which is consistent with most social science research. In addition, we also created a group diversity index. The results from this measure supports social categorization view [31,40] that homogenous group perform better in swift groups. The study raises some interesting questions of swift groups and group composition. Since homogenous groups perform better than heterogeneous groups for structured tasks, question remains: should managers create less or more diverse groups? Should subgroups be avoided for swift groups unless the task is complex and functional diversity becomes important [2,33,40]. The study, though not conclusive, have implications for managers and may provide some guidance on this issue. Our study indicates that surface level diversity and tie-in diversity has negative association on group performance for routine tasks in the short run suggesting diversity is not good for swift groups

[66]. For swift groups, managers may want to balance group membership to avoid many subgroups since this can lead to intergroup conflict and less than optimal group performance. Several outcomes of our study have the potential of providing managers with a different way of thinking about group formation for swift groups. First managers may want to create group with less social ties which could lead to sub groups which in turn could lead to sub optimal performance [6, 66]. Second managers may want to create swift group with less diversity for routine tasks.

8. Limitations

As with any study, the results should be interpreted with caution. The study has several limitations, including the sample size and needs to be replicated and validated. In this study, only small groups were considered and group size was not considered, it is possible results may differ if it was a factor. Our study compare favorably with past studies of group performance because it combines diversity at various levels for swift groups. Nevertheless, caution must be exercised in generalizing the results of our study. We only considered one type of tie-in (identity), it would be desirable to look at various types of tie-ins (resources and knowledge) as suggested by Carton and Cummings (2012). We did not differentiate between social-ties. Future researchers may want to study different form of social ties, i.e., casual ties, previous work or group related ties and/or relationship ties. It is possible that one form of tie (relationship) may create stronger subgroups than other form of ties (casual). We did not differentiate between non-us members. For future studies researchers may want to categorize this further based on countries and/or sub continents. It would also be interesting to study other factors like leadership, group size and nature of task and combine them to study their impact on group performance. We are continuing our efforts in this direction by extending this exploratory study to include different nationalities, studying the affect of group size and by changing the nature of task.

9.Future Research

There are many interesting research areas related to diversity and swift groups. Future research could build upon existing research by replicating it over time across different groups,

group sizes [36] and virtual distributed groups [21, 48]. Also, it may be desirable to have a wider range of diversity as suggested by Harrison and Klein (2003); i.e., groups with no diversity and groups with maximum diversity. This would help to further validate the study. In addition, this study should be replicated with different group sizes to study the impact of size and diversity on group performance. It may be desirable to include leadership among group as a variable [38,44] and study its impact on groups. Most of the current research looks at diversity traits in isolation, it would be challenging to study multiple attributes (both deep, surface, tie-in) and their impact on group performance. Another important area of interest would be to change the nature of the task from structured to semi-structured and to study diversity's impact on group performance [19]. As long as research produces mixed results, there will be a continuous need for validation and replication of experiments.

10. Conclusions

This study provides an important step in measuring diversity at the group level. The study explores existing literature's social theory view that swift diverse groups do not perform better for routine tasks. Under the condition of this study, we observed a negative correlation between tie-in diversity and group performance. It may be useful to explore this relationship more fully across a variety of conditions.

Diversity is a fact of life, be it skill level, gender, race, nationality or any such factor. Diversity becomes important in swift teams due to its short duration. It is important to understand group composition, group process and group outcome for swift teams. Many swift teams fail due to their composition or lack of communication and trust. It is necessary to study the interaction of diverse swift teams and its impact on problem solving. We provide directions for future research and suggest topics that future study could examine. This paper is an attempt in that direction.

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