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Team Implicit Coordination and Emergency Team Performance

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Abstract

Coordination in trauma teams to cope with the challenges of new emerging situations on site and in emergency wards require aligning teams' actions to plans, schedules, targets, etc. Performance of trauma teams in such critical situations needs improvement to save lives. Implicit coordination behavior is an answer to improve the existing situation and can serve as a landmark in achieving high performance by trauma teams. The study was conducted on teams of emergency wards of public hospitals and Rescue 1122 operating in Lahore. It explores the relationship between implicit coordination behavior among team members and team performance by using statistical technique; factor analysis. The data on team implicit coordination processes framework is collected after developing a structured questionnaire.

The study shows that there exists positive relationship between team performance and implicit coordination behavior of team members. The study provides guidance to trauma team managers, directors of emergency health service wards and human resource experts to enhance the team implicit coordination behaviors and resultantly, the team performance by saving human lives.

Keywords: Trauma teams, team performance, implicit coordination, Rescue 1122.

1. Introduction

Team implicit coordination is of utmost importance in teams of emergency wards and Rescue 1122 since the situations keep on emerging requiring proactive decisions on the part of team members for achieving the desired performance. This team situation modeling in emerging situations is on the basis of knowledge structure that exists in emergency teams. Proactive decisions to help team members and their alignment with the performance of objectives are of crucial importance in emergency situations. This study therefore focuses on all such proactive actions of the team members which result in implicit coordination thus improving team performance through saving human lives.

2. Team Implicit Coordination

The trauma team management has to make decisions within seconds to meet the emerging situations. In contrast to traditional teams in which most of the teams were trying hard to meet the targets and were mainly reactive to the situation, team members need to think proactively in order to meet the challenges they face today, particularly when the situations keep on emerging in the emergency wards of hospitals and on the spot where Rescue 1122 teams are in operation.

Implicit coordination is originally applied to explain the capacity of decision-making and to maintain optimum levels of performance under critical working situation by reducing intra team communication. Implicit coordination finds its basis in predicting the needs of the task and team members and adjusting their behavior accordingly. In emergency team implicit coordination, the behaviors are mainly on the basis of task relevant information, knowledge or feed back to other team members proactively without a request. It finds its way in sharing a workload or helping colleague proactively. It monitors the progress of activity and performance of team members who adapt behaviors according to the expected actions of others.[2] A study conducted on measurement of team implicit coordination found positive relation between longevity, trust, group efficacy and sharedness accuracy, essential for team implicit coordination processes.

This leads to the final conclusion that managers need to recognize and address the dynamics of shared cognition and implicit coordination operating in the work teams, which is beyond traditional explicit behavior focused actions to enhance the overall team performance in the emergency wards.

3. Team Performance

Team performance can be viewed from various perspectives but rationally for team implicit coordination the most important among them are process objectives, team objectives, organization objective, timeliness performance, number of events, successful achievements and the cost. Team processes objectives are important because it is in them that team members make proactive decisions and dynamically adjust themselves according to the situations. The team processes objectives means the observation of the defined processes by the team members. Process improvement is analogous to team learning,[5] it means activities carried out by team members through which team obtains and processes data that allows it to adapt and improve.[6] It is suggested that a properly designed and administered program may invoke feelings, and this may enhance commitment and performance.[7] They further emphasized that these positive outcomes may lead to increased organizational competitiveness.

The timeliness is of utmost importance from team performance perspective. Particularly when the teams are facing emergent situation either on the spot, in case of Rescue 1122 or in the emergency wards of hospitals, timeliness finds totally new meanings. Team performance is strongly related to team empowerment and is a strong predictor of process improvement.

4. Hypothesis

The situations keep on emerging in emergency wards of hospitals and on the spot where Rescue teams have to rush for immediate help. These situations normally occur in identical fashion but their handling each time requires a different attention. Team implicit

coordination and team performance relationship in such emerging situations needs to be seen into. Accordingly the following hypothesis has been developed:

H_0 There is no relationship between implicit coordination and team performance in emergency wards.

H_1 There is a relationship between implicit coordination and team performance in emergency wards.

5. Designing the Questionnaire

The questionnaire was developed by going through a three phase process. The first phase of preliminary observation was carried out in order to find out the working environment of the teams and the setting in which the teams are functioning. In the second phase, interviews of individual and teams in a particular setting after performing a specific task were conducted and in the third phase, a questionnaire was developed for pilot testing. The final questionnaire was developed by incorporating the information collected during the earlier phases and repeatedly, consulting the literature.

All these three phases help in understanding the formation of teams, their participation in the specific events and understanding the application of team mental models, team situation models, and knowledge based learning of the team members, and finally proactive adjustment of team members in accordance with the requirements of team members and the tasks.

Based on the process followed so far, a questionnaire was designed and launched for pilot testing on five teams of emergency wards of public hospitals and two teams of Rescue 1122. The results showed that the questionnaire was in line with the study. However, miner amendments were made before finally launching it for data collection.

Guided by the process followed for designing the questionnaire and encouraged by the results of launching the questionnaire for pilot study, the final questionnaire was designed for measuring the items.

Validity of the questionnaire was checked through statistical techniques. The reliability of the questionnaire was strengthened by discussing the contents with a professor / psychiatrist, and secondly, the pilot testing of the questionnaire was conducted on five teams of emergency wards and two teams of Rescue 1122 for reliability purposes. The results of pilot testing of the questionnaire were encouraging and did not show any inconsistency.

The data on all the ten variables pertaining to team implicit coordination behaviors are collected through Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). SPSS and Statistica are used for data analysis.

6. Population and Sample

There are 15 public hospitals in Lahore where 232 emergency teams are operating and at 12 Rescue stations, 57 ambulance vehicle teams and 30 fire vehicle teams are in operation at the time of collection of data.

Randomly selected team members are approached to complete the questionnaire at one point in time. From the total population of 319 teams, 15 teams with different attributes such as dental surgery, gynae, night cover and Sunday cover were made part of the sample in order to ensure their representation. Sample from amongst rest of the 304 homogenous

teams of the population was drawn on the basis of confidence level at 0.95. Thus total 31 random sample teams were drawn. In this way 6 ambulance teams, 4 fire vehicle teams, 16 medical teams, 10 surgical teams, 3 dental surgery teams, 6 gynae teams, 3 night cover teams and 3 Sunday cover teams were selected in the sample and thus, the total respondent teams were 46.

7. Data Collection and Analysis

The medical superintendents of respective hospitals allowed the researcher to go to the emergency wards of the hospitals and get the required information. Similarly, director general Rescue 1122 formally allowed visiting the Rescue 1122 stations and getting the questionnaire completed from the sample. The doctors and nurses in case of public hospitals and the medical and fire teams in case of Rescue 1122 stations completed the questionnaire in September, 2008.

Factor analysis about the structure of the factor loadings and inter-correlations for implicit coordination are performed according to standard factor analysis. Several different fit indices for two facets of implicit coordination are compared in Table 1.

Table 1: Factor Analysis of Implicit Coordination

	F1	F2
1. Anticipate the action of team members without communication	0.813	**-0.102**
2. Anticipate the needs of team members without communication	0.806	**0.065**
3. Change adjust and adopt contribution to attain common goals	**0.695**	**-0.065**
4. Provide task relevant information without request	**0.579**	**0.284**
5. Proactively share a workload	**-0.007**	**0.686**
6. Monitor the progress of activity and performance	**0.013**	0.738
7. Adopt behavior to the expected action	**0.009**	**0.677**
8. Coordinate the team interaction behavior	**0.590**	**0.126**
Principal component analysis with Varimax (Kaiser Normalization)		

This level of goodness-of-fit proves that the implicit coordination is two facets model for this data and the scales used. Implicit coordination is an aggregate of two facets (F1 and F2) explaining the needs and actions of team members without communication, and monitor performance respectively.

Among the seven items for team performance only four with objectives and no. of events have factor loading above 0.7 i.e. significantly high factor loading as shown in Table 2.

Table 2: Factor Analysis of Team Performance	
	F1
1. Ranking in process objectives	**0.816**
2. Ranking in achievement of team objectives	**0.809**
3. Ranking in achievement of organization objective	**0.777**
4. Ranking in achievement of timeliness performance	0.672
5. Ranking in achievement of no. of events	**0.722**
6. Ranking in successful achievement	0.697
7. Ranking on the basis of cost	0.443
Principal component analysis with Varimax (Kaiser Normalization)	

The factor analysis help in understanding the relevance of developed questionnaire to the items. After factor analysis, only those items are considered for further analysis, whose factor loading is above 0.70 in order to validate the argument of relevance of construct for measurement. The factor analysis also helps in determining the various facets from which the item has been approached.

7.1 Model Variables

After conducting factor analysis the items that have factor loading above 0.70 related to team implicit coordination and team performance have further been measured. The mean and S.D of these variables and sub variables of the sample male and female population have been taken in the following table.

Table 3: Model Variables							
Item	**Male**		**Female**		**Combined**		**Sig. (2-tailed)**
	Mean	**S.D**	**Mean**	**S.D**	**Mean**	**S.D**	
Longevity	3.814	.732	3.914	.725	2.25	1.227	0.453
Knowledge diversity	3.520	1.127	3.365	1.187	3.445	1.154	0.355
Trust	3.745	.624	3.846	.563	3.794	.596	0.243
Group Efficacy	4.109	.535	3.968	.618	4.040	.579	0.093
Sharedness Accuracy	3.423	.537	3.340	.566	3.383	.552	0.305
Implicit coordination	3.680	.711	3.728	.700	3.703	.704	0.644
Team Performance	3.814	.732	3.914	.7247	3.863	.728	0.343

7.2 Team Performance

Team performance has been established through four items after factor analysis of seven items; i.e. ranking in achievement of process objective, timeliness performance, number of events, and on the basis of cost. The combined mean and S.D of all these sub-variables ranges from 3.72 to 3.96 and 0.82 to 0.95 respectively (Table 4).

Table 4: Variables of Team Performance						
Item	Male		Female		Combined	
	Mean	S.D	Mean	S.D	Mean	S.D
1. Ranking in process objectives	3.67	1.003	3.76	0.914	3.72	0.959
2. Ranking in achievement of team objectives	3.88	0.790	3.96	0.871	3.92	0.82
3. Ranking in achievement of organization objectives	3.94	0.895	3.98	0.884	3.96	0.88
4. Ranking in achievement of No. of events	3.77	0.961	3.96	0.820	3.86	0.898

8. Correlation Analysis

The null hypotheses are formulated for testing the empirical relationship between variables. Bivariate correlation 0.34 significantly shows the relationships of the variables of the models and confirms that implicit coordination behavior has something more to explain than the explicit coordination. Means, standard deviation, bivariate correlations and reliability estimates are 3.93, 0.47, 0.15 0.66. It can be seen that all reliability estimates (Cronbach's alpha) are above 0.66 cutoffs.

9. Conclusion

This empirical study is conducted in team setting of Rescue 1122 and emergency wards of public hospitals at Lahore for measuring and achieving high performance trauma teams in emergency situations. Findings of the study suggest the importance of the role of TIC to gain efficiency in trauma teams of public and private sectors. The study finds positive relationship between trust, group efficacy and sharedness accuracy and team implicit coordination processes. The study further concludes that factors such as trust, group efficacy and sharedness accuracy enhance the performance of trauma teams. Heads of trauma centers and rescue teams may take benefit from this study after having new idea of TIC modeling as better measure of achieving the team performance than traditional approach.

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HOSPITALS INCLUDED IN THE STUDY

1. General Hospital
2. Mayo Hospital
3. Shaikh Zayed Hospital
4. Jinnah Hospital
5. Children Hospital
6. Gulab Devi Hospital
7. Kot Khawaja Saeed Hospital
8. Mian Munshi Hospital
9. Lady Wellington Hospital
10. Lady Aitchison Hospital
11. Nawaz Sharif Hospital
12. Social Security Hospital – 1
13. Dental Hospital
14. Social Security Hospital – 2
15. Services Hospital