

Managing such teams requires understanding the relationships between the following areas: (Rhinesmith, 1993):

- Personal styles
- Stages of team development
- Effective team functioning
- Stage of professional development
- National culture
- Corporate culture
- Functional culture

Rhinesmith notes that it is a mistake to automatically assume that "cultural differences [are] the primary driving forces in multicultural interaction. Many observers have found, however, that most multicultural teams are driven first by personal factors and issues of team development such as roles, responsibilities, power, and conflict." At the same time, culture plays an undeniable role: "The mistake made by many managers is not that they leap to cultural solutions from personal differences, but that they do not know enough about cultural differences to determine whether or not they are a factor." (Rhinesmith, 1993, pp. 131-2).

In the face of the complex factors influencing the functioning of global teams, some kind of method is required to disentangle the threads of interactions. Team Leaders and their managers cannot be assumed to be experts in this area; if help is not forthcoming, leaders, managers, and team members must peer into the "soup" of such relationships and guess which ingredients are contributing to, and which detracting from, team effectiveness. Such guesswork may often be misguided and in any event guesswork is difficult to standardize. Great team leaders may be intuitive, but intuition cannot be passed on to others and is often inconsistently effective.

The Global Team Process Questionnaire™ (referred to below as the "GTPQ") is a device which has been designed to identify those factors contributing to and detracting from team effectiveness for both team leaders and members. These factors include communications, roles and responsibilities, leadership, trust and other factors (see the list of questions in Table 1) identified as critical to healthy team process.

Using such a tool as the GTPQ, improvements can be made through a targeted and efficient approach. Some of these improvements may be in the training and development of the team leader and team members; some may require personnel changes; and some organizational development interventions. The GTPQ is a diagnostic tool which allows decision-makers to take actions using better, more targeted information.

Five years ago a Swiss-based pharmaceutical company asked ITAP

Developing a Consulting Tool to Measure Process Change on Global Teams: The Global Team Process Questionnaire™

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As international organizations strive to improve their global reach, the role of distributed teams and the role of human processes in improving performance on these teams are important success factors. However, there are few studies of such teams using instruments whose psychometric properties are understood, instruments that can both measure changes over time and compare teams. The Global Team Process Questionnaire™ is described and researched in this paper to identify its properties.

Key Words: Consulting; Teams; Intercultural

Companies using global teams (this term will be used for teams distributed regionally or globally) have found that such teams are required to expand internationally with effectiveness. "For the first time since nomads moved into towns, work is diffusing rather than concentrating. . . . In all industries and sectors, people are working across space and time." (Lipnack & Stamps, 1997, pp. 2-3) Global teams are utilized for research and development, to operate lines of business in a networked or matrix fashion, to serve the requirements of global customers in their locations and to implement innovations and change on a wide-scale basis. Organizations have found that global teams can be a competitive advantage and that not all teams are equally productive, even though they may be similarly constituted in terms of the professional qualifications of team members.

International, a consulting firm located in Princeton, New Jersey, USA, to develop a method for measuring process performance on three global teams. The teams were composed of scientists from Europe, the Americas, and Japan. They met four times over a period of two years, and continued their team responsibilities during the intervening periods. Their purpose was to reduce research and development time in three drug delivery areas: oral, skin, and subdermal. The teams were tasked with similar assignments and because the composition of the teams was similar, they became ideal candidates for studying differences in human processes on global teams.

A questionnaire was developed to measure human process on these teams, and was administered four times over the two-year period that these teams met together. At the end of the two years, specific questions from the GTPQ were compared with peer rankings provided by the participants and these correlated positively; in other words, the highest-peer ranked team also had the highest GTPQ results on the questions tested. In addition, measures on team process on all teams fell when the teams' parent company was merged with another company, providing support for the notion that the questionnaire results were reflecting the impact of "real world" events. (Bing & Smith, 1995).

Over the past five years, the questionnaire has been further developed and provided to other global teams, many of them working in the pharmaceutical industry, and it has also been provided to employees in the consumer products and information technology fields and to the United Nations Industrial Development Organization (UNIDO).

The research outlined in this paper was conducted within the past year on two sister teams within a pharmaceutical company. Each team is focused on coordinating drug development within a single therapeutic area, or closely related area. The teams consist of representatives from traditional departments within the pharmaceutical company but the primary coordination and focus for drug development within therapeutic areas are the responsibility of the team and the team leader. These traditional departments include marketing, operations, clinical trials, regulatory affairs, and so on.

The stakes for the team, for the team leader, and for the company, are large. Very few compounds survive the rigorous weeding process required for registration and successful marketing of a drug, and generally there are few teams which manage to pull off such a success. Success is, of course, impossible with a compound which does not survive the process. However, in an odd way, certain kinds of failure are shadow successes; for failed compounds must be identified quickly and accurately to insure that the team

accomplishes its mission of bringing only safe and effective drugs to market. Conversely, long, drawn-out processes which eventually lead to the withdrawal of a compound cost the company time and money and are double failures.

The teams studied herein completed the questionnaire for the first time some months ago, and the results are compared in this study. The questionnaires were administered electronically. Each team consists of about ten members. The results of this first iteration of the questionnaire has been reported to the team leaders.

Problem Statement

Teams are one of the principal mechanisms by which the operations of organizations are globalized, that is to say, are carried out internationally. It is likely that those teams that have the most effective levels of human process will assist the organization as a whole to be more productive. However, in order to test this hypothesis, it is necessary to develop cross-team human performance metrics and then to statistically compare these metrics with other measures of productivity. This paper presents an approach to the first half of this challenge.

A global team is defined here as a team which is located in more than one country, or that has participants from more than one country temporarily working in the same location. Pharmaceutical teams of the kind described in this paper typically have both configurations.

Theoretical Framework

Various superb quantitative and qualitative approaches have been undertaken to better understand national cultural differences (Hall, 1976; Hofstede, 1984; Trompenaars, 1993). These studies have been successful in widening awareness of the influence of culture on relationships, performance and effectiveness within organizations.

Group dynamics within a multicultural and global context has also been explored for some time, often in the context of studies on management and human resources (Adler, 1986; Hofstede, 1991; Odenwald 1993; Berger, 1996; Harris & Moran 1996; Black, Morrison, & Gregersen, 1999). In some of these studies, the influence of culture on organizations was studied primarily in terms of the entire organization or upon individuals working within the organization. It is only within the more recent past that the importance of global teams has been recognized as a key factor within international organizations.

Since the Global Team Process Questionnaire™ was created it has been utilized with global and multicultural teams in the pharmaceutical, chemical, consumer product, and information technology industries. There have been over twenty teams studied.

Team sizes range from 4 to 32 members.

The Global Team Process Questionnaire™ is constructed of three parts. The first section consists of "base" questions which are used with all clients.

These form the statistical core of the questionnaire. These questions have been developed and redeveloped over time. For example, the question:

"Are the objectives of your team clear?"
was originally written:
"Is the agenda of your team clear?"

and was revised because the word "agenda" was sometimes taken to refer to the more limited sense of "calendar." Other questions were similarly revised over time. The questions have always been written in English because it has been the business language utilized by all of the teams studied.

The second section of the questionnaire consists of questions requested by different team leaders. These are typically related to process on one specific team, and are therefore unavailable for comparison with teams in other organizations, although they may be utilized for statistical comparisons on the same team over time or on a sister team in the same department or organization which uses the same question set. This is in fact the case reported in this paper.

Of course there are qualitative measures which provide insight into the processes and issues on these teams but which are not suitable for statistical manipulation. Therefore questions which require written responses are utilized to expand the information provided by the Likert-response questions and to serve as a check against the natural limits of closed questions.

How would measurement results from a questionnaire of this type differ on global and multicultural teams from domestic or monocultural teams? There is very little in the literature on this subject. However, landmark studies on national differences on questionnaire surveys by Hofstede, André Laurent, and Trompenaars have shown that certain questions will provoke responses that differ along national lines. For that reason the next step in questionnaire research on this subject should be to compare results based on demographics of global team members. These demographics will be added to the next iterations of the questionnaire mentioned herein. In the meantime, questions on communications and other human processes (goal-setting, trust-building) which have been shown to be especially sensitive to cross-cultural differences will likely indicate cultural differences; however we have no way of knowing which component is cultural,

and which should be attributed to other causes. Even a question in this survey specifically related to culture, "What impact have cultural differences had on team performance?" is interpretational in nature and responses depend upon the respondents' concept of, for example, the roles culture and personality play in everyday life. Therefore, the data we now have available will not answer the question of the extent to which culture influences human processes on teams; that must follow the addition of demographic variables to the statistical analytic process.

This is an important theoretical question. From a practical point of view, however, team leaders and their managers are not particularly interested in the extent to which, for example, culture influences communications on their teams. They are very interested, however, whether communications as a whole on such teams are good or bad because in general they believe that this will effect the productivity of those teams. And when other forms of analysis implicates cultural factors, then in general managers and team leaders appreciate interventions to raise the awareness and skills of team members to understand and positively utilize these differences.

Methodology

Table 1 lists the questions utilized as "base" questions in the version of the GTPQ used in this study. Respondents use a six-level Likert Scale in assigning values as answers.

Two global teams performing similar work within a pharmaceutical company (developing discovered compounds from clinical trials through regulatory approval to market) were administered the GTPQ with the same questions within the same time period of one month. The teams contained twelve members each in number and were composed of medical doctors and professionals with doctorates in related fields. At the time the questionnaires were administered, both teams had members located in the U.S. and Belgium. The team leaders were also located one in Belgium and the other in the U.S. The questionnaires were administered by email and returned by email. The results were provided to the teams within one month of the initial administration of the questionnaires. These results were provided in two formats:

For each question, statistical averages for the team's response and in addition, where available, pharmaceutical industry averages on the same questions. Comments were also collected and anonymized to provide an additional level of meaning to each question.

"Spidergrams," sometimes called radargrams, were produced. These showed how each (anonymous) respondent had answered each question, and whether the respondents were in agreement or disagreement on the response to these questions.

One-way ANOVAS were run for the groups. The results were compared in order to determine the significant differences between the two teams on specific questions. The measurement level requirement for a data analysis with ANOVA is an interval scale. Although Likert scales are strictly speaking not interval scales (the difference between the scale items is not exactly the same for all respondents because of their assumptions), scales like the one used in the GTPQ are commonly treated as if they would provide this measurement level. The ANOVA table was chosen to display the significant differences between the two teams here in this report. To check the significance of differences on a higher statistical level a General Linear Model (GLM-Univariate) was computed for each question. The reported results were confirmed. (Krukenberg, 2000).

The results are compared to determine if these can yield recommendations to the team leaders to improve process effectiveness on the teams. Since neither group is a "control" group, and since neither group received an experimental treatment, the purpose of the comparison is not to determine whether a specific treatment did or did not have an effect, but rather to take a first look at whether the questionnaire can discriminate between teams in a useful way. "Useful," in this sense, means that recommendations for improvements in team process can be made from information provided through the use of the questionnaire.

Results and Findings

The following questions showed significant differences between the two teams at the .05 level.

- 5. How effective is the work of your team?
- 9. Group communications: My team has excellent / fair / poor communications.
- 10. Relevance of my team's work to the company's strategic goals?
- 11. Level of trust on team.
- 12. Ways of resolving conflicts.
- 13. Problem resolution on team.
- 16. Effectiveness of team leadership.
- 17. Consistency of direction from team members.

Table 1: One-way ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1. Have your skills and capabilities increased through participation in your team?	Between Groups	.01	1	.009	.008	.93
	Within Groups	21.56	19	1.135		
	Total	21.57	20			
2. Do you have time for work on your team's activities?	Between Groups	.01	1	.009	.008	.93
	Within Groups	20.56	19	1.082		
	Total	20.57	20			
3. Are the objectives of your team clear?	Between Groups	.02	1	.025	.016	.90
	Within Groups	28.78	19	1.515		
	Total	28.81	20			
4. Are the roles and responsibilities of the team members clear?	Between Groups	3.11	1	3.111	2.05	.17
	Within Groups	28.89	19	1.520		
	Total	32.00	20			
5. How effective is the work of your team?	Between Groups	5.00	1	5.001	4.33	.05
	Within Groups	21.95	19	1.155		
	Total	26.95	20			
6. Have you had	Between	.04	1	.036	.018	.89

the opportunity to inform others in your functional area of the work of your team?	Groups					
	Within Groups	36.92	19	1.943		
	Total	36.95	20			
7. Have you had the opportunity to learn of comments on the work of your team from others in your functional area?	Between Groups	1.02	1	1.016	.32	.58
	Within Groups	60.22	19	3.170		
	Total	61.24	20			
8. How do you rank the importance of the team to your company's future success?	Between Groups	1.59	1	1.587	1.70	.21
	Within Groups	17.72	19	.933		
	Total	19.31	20			
9. Group communications: My team has excellent / fair / poor communications.	Between Groups	22.92	1	22.921	18.36	.00
	Within Groups	23.72	19	1.249		
	Total	46.64	20			
10. Relevance of my team's work to the company's strategic goals?	Between Groups	7.68	1	7.683	6.11	.02
	Within Groups	23.89	19	1.257		
	Total	31.57	20			
11. Describe the level of trust on this team (strong - moderate - weak).	Between Groups	9.53	1	9.528	8.99	.01
	Within Groups	20.14	19	1.060		
	Total	29.67	20			

12. Are ways of resolving conflicts within the team clear / somewhat clear / unclear?	Between Groups	12.44	1	12.444	7.82	.01
	Within Groups	30.22	19	1.591		
	Total	42.67	20			
13. When problems have arisen, have the team members resolved them effectively / somewhat effectively / not effectively?	Between Groups	10.94	1	10.938	8.46	.01
	Within Groups	24.56	19	1.293		
	Total	35.50	20			
14. What impact have cultural differences had on team performance?	Between Groups	1.65	1	1.648	2.92	.11
	Within Groups	8.47	15	.565		
	Total	10.12	16			
15. Is your functional area management aligned with the goals of the Global Team?	Between Groups	1.43	1	1.433	1.37	.26
	Within Groups	19.81	19	1.042		
	Total	21.24	20			
16. How effective is the team leadership?	Between Groups	15.50	1	15.501	11.80	.00
	Within Groups	24.95	19	1.313		
	Total	40.45	20			
17. Are team members pulling in the same direction?	Between Groups	13.35	1	13.349	23.65	.00
	Within Groups	10.72	19	.564		
	Total	24.07	20			

18. Do the team's goals align with the business strategy?	Between Groups	.55	1	.546	1.63	.22
	Within Groups	5.36	16	.335		
	Total	5.90	17			
19. Is your functional area integrated into the team's overall activities?	Between Groups	.52	1	.525	.48	.50
	Within Groups	20.78	19	1.094		
	Total	21.31	20			
20. Do you feel that much of your time is spent listening to issues not relevant to your functional area?	Between Groups	3.57	1	3.571	1.22	.28
	Within Groups	55.67	19	2.930		
	Total	59.24	20			

All of the significant results were on the positive side for one team (Team A), and negative on the other (Team B). In other words, Team A showed consistently higher scores on team process than Team B for those questions which reliably distinguished the two teams. (For questions at a lower level of significance, the results were more scattered.) What kind of conclusions can be made from this limited information?

First, there is a difference in perceived process effectiveness between these two teams. The members of Team A clearly have a better opinion of their team's work than members of Team B. Interviews with members of both teams conducted during a preconference needs assessment confirmed these findings.

Second, there were broad areas cited for problems on Team B, including leadership, trust, and conflict resolution. Two months after the administration of this questionnaire, the leader of team B was reassigned to another position.

The purpose of this questionnaire is to analyze process effectiveness on teams and to suggest ways in which ineffective or harmful process can be reduced. By identifying specific areas for improvement, targeted change interventions can be made, either through training and development efforts or through other

approaches. Conversely, the topics embedded in questions that elicit a positive response are not good candidates for useful interventions to improve team performance, since they are already highly rated.

For example, one of the areas that often comes up in the GTPQ analysis as one for improvement is question #3: "Are the objectives of your team clear?" However, in this case, there was very little difference between the two team responses, and the responses were within the normal range for pharmaceutical teams. (ITAP International has established a database of responses for teams by industry so that industry averages can be computed.)

On the other hand, another question (Question #9 in Table 1) which has in the past correlated with team performance (Bing & Smith, 1995) refers to the quality of group communications. Here, Team B's score is both significantly lower than Team A's response, and it is also significantly lower than the pharmaceutical industry average on this question. Therefore, any work with the team which focuses on communications has the assurance of targeting a significant problem. Other problems on Team B that can be approached to improve process effectiveness on the team are leadership, trust, problem and conflict resolution, and team cohesiveness.

Such a targeted approach can save an organization both time and money, since team leadership and upper management can make decisions on change and interventions based on a more assured understanding of the problems on such teams.

Conclusions and Recommendations

Clearly, this is only the beginning of research to determine both the effectiveness of this tool and what can be accurately described in terms of process effectiveness on global teams. Here are some areas which need to be researched:

Demographic research: How do nationality or cultural difference influence the process effectiveness of teams? Do teams with members of many cultures have significantly different results on group process than do teams with fewer cultures? How does homogeneity or heterogeneity of age or gender influence processes on such teams?

Measures over time: Do teams tend to improve their functioning in general over time without interventions?

What is the relationship between types of interventions to improve team effectiveness and GTPQ-measured changes in effectiveness?

Relationship of teams to the larger organization: What conditions in the larger environment foster team process effectiveness? What

conditions can decrease such effectiveness? Are global teams in merging companies generally negatively impacted (replicating an earlier study)?

Relationships of teams to each other: Can teams with high process effectiveness mentor those with lower effectiveness?

How this research contributes to new knowledge in HRD

Although there has been much research conducted on teams with respect to process effectiveness, there is less research in the area of global or cross-cultural team development, with some notable exceptions. (Berger, 1996; Devereaux & Johansen, 1994, Saphiere, 1996). However, little emphasis has been placed on two aspects of global team development: Long-term, longitudinal studies of individual teams, and cross-team comparisons. This paper focuses on cross-team comparisons; longitudinal study of teams is in progress utilizing these same two teams. There is some evidence already that longitudinal studies will detect both internal team changes and external influences on these teams.

Second, team development is typically handled through generic training courses, in which principles of good team development are provided. The same has been true for global team development. The approach taken through the GTPQ and documented in this paper offers the opportunity for team members, leaders, and managers of these teams to take specific steps both to remediate problems on such teams and potentially to have effective team leaders assist other teams in their business or academic areas with ways to improve process. Such targeted intervention should be both more effective in bringing desired results and in addition should be an investment to improve productivity.

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