



12th International Strategic Management Conference, ISMC 2016, 28-30 October 2016, Antalya, Turkey

## Factors Affecting Multinational Team Performance

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### Abstract

In recent years, many empirical studies about the factors affecting multinational/multicultural team performance has been published. But these studies mostly focused on a single factor or only a maximum of three factors. Studies analyzing the complex relationships between these variables or their interrelations and how they influence team performance are missing. An interpretive structural modeling (ISM)-based approach has been employed to model the variables effecting multinational team performance. Societal factors and institutional factors are the major drivers for the performance of multinational teams. Organizational factors and education, which have high driving power and low dependence in the ISM Model, have emerged as the critical factors for improving performance of multinational teams. Management emerged as a linkage variable. Finally, Team Culture, Team Climate, Team Factors and CQ are weak drivers and strongly dependent on other variables. This paper provides a comprehensive model including direct and indirect effects of factors effecting multinational/multicultural team performance and their interrelations.

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Peer-review under responsibility of the organizing committee of ISMC 2016.

*Keywords:* Innovation, Open Innovation, Innovation in SMEs, Open Innovation in Developing Countries

### 1. Introduction

In our globalized world, multinational/multicultural teams became prevalent and important both in private and public organizations that operate internationally. This led to an increasing interest in research about multinational/multicultural teams. While these studies show many interesting results, they mostly focused only on single variables such as demographic diversity, informational diversity, language, management etc. But they rarely analyse the complex relationships between these variables or concepts.

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Demographic diversity has been the most popular factor in these studies. However, empirical studies gave conflicting results. According to Thomas et al. (1996) there exists a negative relationship between cultural diversity and team performance, while Cox et al. (1991) and Gibson (1999) found a positive relationship. Earley and Mosakowski (2000), on the other hand found a curvilinear relationship between national diversity and performance, but after reviewing 40 years of diversity research, Williams and O'Reilly (1998) came to the conclusion that diversity does not have an effect on team performance.

Haas and Nuesch (2013) studied national diversity and team performance and found that nationally diverse teams perform worse than teams with less national diversity, because of complicated team collaboration and increased team conflict. Hoogendoorn and Praag (2012) studied the relationship between ethnic diversity and team performance and found that a moderate ethnic diversity has no effect on team performance while more ethnic diversity has a positive impact. Bar et al. (2007) studied the effects of informational diversity and social category diversity and found that while informational diversity has a positive impact on team performance, social category diversity has a negative impact.

In addition to demographic, ethnic and social category diversity, the effect of trust, comfort, motivation, cohesion and communication on the performance of virtual teams analysed by Sridhar et al. (2007), the relationship between cross-cultural communication competence and multicultural team performance investigated by Matveev and Nelson (2004) and recently Tenzer et al. (2013) investigated the influence of language barrier on trust formation in multinational teams. There also exists academic studies which investigated the relationships between two or more factors that affect team performance. For example, Calimano (2006) focused on errors caused by differences in language and cultural diversity in multinational companies. Henderson and Salminen (2011) studied the relationship between language and trust formation.

However a more comprehensive model including direct and indirect effects of these factors and their relationship is missing. After examining 51 theoretical and empirical articles from leading journals, Fink et al (2004) noticed that only a limited number of variables are applied together in one article. Then they selected 25 empirical articles and found out that only a maximum of 3 variables used as a predictor of team performance in each article. They suggest that further research using broader and more recent/advanced sets of factors and their complex relations is needed.

Similarly, Stock (2004) alleged that most of the previous studies analyse relationships between factors that affect team performance within very simplistic one-stage models. Unfortunately, the understanding provided by these one stage models is limited. More specifically, distinctions between direct and indirect effects on team performance cannot be analysed within these models. This limitation is important since some factors affect performance indirectly, rather than directly. In this study, we analysed these factors using ISM methodology which allows for the simultaneous analysis of both direct and indirect effects within a single model. For a better understanding of what is meant by multicultural teams, we would like to give definitions of `team`, `culture` and `multicultural team`.

Bailey and Cohen (1997) defined the team as a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and are seen by others as an intact social entity, embedded in one or more larger social systems and who manage their relationships across organizational boundaries (p. 241). Culture, on the other hand, can be defined as the assumptions, values, and artefacts that are shared by the members of a group (society) (Schein, 1985). And finally, multinational or multicultural teams, which is our main focus on this paper, can be defined as "a collection of individuals with different cultural backgrounds, who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and are seen by others as an intact social entity embedded in one or more larger social systems, and who manage their relationships across organizational boundaries and beyond" (Halverson and Tirmizi, 2008).

The goal of this paper is to define the factors affecting multinational team performance, the relationship between those factors and their direct and indirect effects on team performance by using ISM methodology. The following section gives the definitions of factors. Next section represents the ISM methodology, the data analysis, and findings. This paper concludes with discussion of results.

## **2. Factors Affecting Multinational Team Performance**

*2.1 Societal Factors:* Societal factors include cultural standards, subculture and social identity as well as national culture. For a better understanding of what we mean by societal factors, we provide the definitions of concepts implied.

- **National Culture;** Every nation or every culture has its own beliefs, values which define the shoulds and the oughts of life (Hofstede, 1980; House et al., 2004; Lane et al., 2009).

- **Subculture and Social Identity;** People within a national culture might differ in age, religion, race, locality, or other subgroup. Thus, individuals from same nation bring different behavioral expectations to a team (Brannen, 1994). In other words, members of a team represent both the national cultures that they come from and many other subcultures and identities (Halverson and Tirmizi, 2008).

- **Cultural Standards;** processes of perception, thought, evaluation and action that for the majority of the members of a particular culture are regarded, for themselves and for others, as normal, typical and obligatory. Some of the examples of cultural standards are; punctuality, meeting deadlines, negotiation styles, collectivism or individualism etc.

**2.2 Institutional Factors:** Implies the sector of work (development, education, military etc.), industry (high tech, manufacturing etc.) and also the differences between profit and non-profit, private and public, national and international organizations etc.

**2.3 Organizational Factors:** Include organizational culture (sets of norms developed around organizations according to their purpose), organizational structure (structure that help create teams and promote teamwork) and organizational arrangements (e.g. compensation system, performance management system, training and development system etc.).

**2.4 Team Factors:** Team factors include size, type and goal of the team.

**2.5 Informational Diversity:** Informational diversity is attributed to the differences in knowledge base and perspectives.

**2.6 Cultural Intelligence (CQ) of members:** Cultural intelligence (from now on referred as CQ) is defined as individuals ability to “be skilled and flexible about understanding a culture, learning more about it with his/her ongoing interactions with it, and gradually reshaping his/her thinking to be more sympathetic to the culture and his/her behaviour to be more skilled and appropriate when interacting with others from the culture” (Thomas and Inkson, 2004, p.14).

**2.7 Education:** Includes both educational background of team members and in-service training and education offered by companies during employment.

**2.8 Language:** Implies the mother language of the team members which was traditionally seen as part of national culture. Although culture and language are closely related, we argue that the effects of language and culture on multinational team performance are different. Whereas cultural diversity may have a positive or negative impact, language diversity is more related to communication between team members.

**2.9 Management:** Management and leadership of multicultural teams involves effectively and creatively dealing with a variety of challenges that emerge as people from different cultural backgrounds interact with each other to accomplish the team task.

**2.10 Team Culture:** Members of multinational teams must actively cope with cultural differences in order to bridge cultural boundaries. One such mechanism is the formation of a team culture, which is considered as another factor effecting team performance in this paper.

**2.11 Team Climate:** Team climate is defined as shared perceptions of the kinds of behaviours, practices, and procedures that are supported within a team (Basaglia et al., 2010, p. 544). Team Climate implies trust, commitment, cohesion and efficacy.

### **3. ISM Methodology**

A methodical, systematic and logical approach is required to comprehend and simplify the complex interrelationships between various elements (Sahney et al., 2008). ISM is an interactive and interpretive method in that the group’s judgment decides whether and how items are related, it is structural in that, on the basis of the relationship, an overall structure is extracted from the complex set of items, and it is modelling in that the specific relationships and overall structure are portrayed in a diagram model (Singh et al.,2007). ISM methodology helps to impose order and direction

on the complexity of relationships among elements of a system (Sage, 1977).

A number of factors may be critical for the performance of multinational/multicultural teams. The cause and effect relationship among these factors describes the better situation than the individual factor taken in isolation. ISM helps understanding of these complex relationships. The application of ISM would help those who manage multicultural teams prioritizing and improving the understanding of the relationships among factors. The various steps involved in the ISM methodology are;

- Identification of elements, which are relevant to the problem or issues, this could be done by literature review and through discussions with the experts in the area of problem being taken.
- Establishing a contextual relationship between elements with respect to which pairs of elements will be examined.
- Developing a structural self-interaction matrix (SSIM) of elements, which indicates pairwise relationship between elements of the system.
- Developing a reachability matrix from the SSIM, and checking the matrix for transitivity. Transitivity of the contextual relation is a basic assumption in the ISM which states that if element A is related to B and B is related to C, then A will be necessarily related to C.
  - Partitioning of reachability matrix into different levels.
  - Based on the relationships given above in the reachability matrix, draw a directed graph (diagraph) and remove transitive links.
  - Convert the resultant diagraph into an ISM, by replacing element nodes with statements.
  - Review the ISM model to check for conceptual inconsistency, and make the necessary modifications.

### 3.1 Structural Self-Interaction Matrix

For developing contextual relationship among factors, the opinion of total 14 experts, 10 people who has multicultural team experience and 4 academicians who studied multinational team performance, have been taken. To express the complex relationships among different factors for the multicultural/ multinational team performance, four symbols have been used to denote the direction of relationship between the factors  $i$  and  $j$  (here  $i < j$ );

- V: Parameter  $i$  will lead to parameter  $j$ .
- A: Parameter  $j$  will lead to parameter  $i$ .
- X: parameter  $i$  and  $j$  will lead to each other.
- O: parameters  $i$  and  $j$  are unrelated.

Based on contextual relationships the SSIM is developed in Table I.

### 3.2 Reachability Matrix

The SSIM has been converted into a binary matrix, called the initial reachability matrix by substituting V,A,X,O by 1 and 0. The substitution of 1s and 0s are as per the following rules:

- If the  $(i, j)$  entry is V, the  $(i, j)$  entry in the reachability matrix becomes 1 and the  $(j, i)$  entry becomes 0.
- If the  $(i, j)$  entry is A, the  $(i, j)$  entry in the reachability matrix becomes 0 and the  $(j, i)$  entry becomes 1.
- If the  $(i, j)$  entry is X, the  $(i, j)$  entry in the reachability matrix becomes 1 and the  $(j, i)$  entry becomes 1.
- If the  $(i, j)$  entry is O, the  $(i, j)$  entry in the reachability matrix becomes 0 and the  $(j, i)$  entry becomes 0.

The initial reachability matrix for factors affecting multinational/multicultural team performance is developed by the above rules. In Table II, the driving and dependence power of each factor is also shown. Driving power of a factor is the total number of factors (including itself), which it may help to achieve. And the dependence power is the total number of factors (including itself), which may help in achieving it. Final reachability matrix is developed by adding driving and dependence power of factors to initial reachability matrix. These powers will be used in classification of factors into four groups of autonomous variables, dependent variables, linkage variables and driver (independent) variables.

Nu.	Factor Affecting Multinational Team Performance	1	2	3	4	5	6	7	8	9	10	11
1	Societal Factors		X	V	V	O	V	V	O	O	V	V
2	Institutional Factors			V	V	V	V	V	X	O	V	V
3	Organizational Factors				V	V	V	V	V	O	X	V
4	Team Factors					A	X	A	A	A	A	X
5	Informational Diversity						V	O	A	O	X	V
6	Team Culture							A	A	A	X	X
7	Cultural Intelligence								A	O	X	V
8	Education									O	X	V
9	Language										V	V
10	Management											X
11	Team Climate											

Table I- Structural Self-Interaction Matrix (SSIM)

Nu.	Factor Affecting Multinational Team Performance	1	2	3	4	5	6	7	8	9	10	11	Driving Power
1	Societal Factors	1	1	1	1	0	1	1	0	0	1	1	8
2	Institutional Factors	1	1	1	1	1	1	1	1	0	1	1	10
3	Organizational Factors	0	0	1	1	1	1	1	1	0	1	1	8
4	Team Factors	0	0	0	1	0	1	0	0	0	0	1	3
5	Informational Diversity	0	0	0	1	1	1	0	0	0	1	1	5
6	Team Culture	0	0	0	1	0	1	0	0	0	1	1	4
7	Cultural Intelligence	0	0	0	1	0	1	1	0	0	1	1	5
8	Education	0	1	0	1	1	1	1	1	0	1	1	8
9	Language	0	0	0	1	0	1	0	0	1	1	1	5
10	Management	0	0	1	1	1	1	1	1	0	1	1	8
11	Team Climate	0	0	0	1	0	1	0	0	0	1	1	4
	<b>Dependence Power</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>11</b>	<b>5</b>	<b>11</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>10</b>	<b>11</b>	

Table II- Final Reachability Matrix

3.3 Level partitions

Level partitioning follows the previous steps described above. Here, the reachability and antecedent sets for each factor are found from the final reachability matrix. The reachability set consists of the element itself and other elements to which it may help achieve, whereas the antecedent set consists of the element itself and the other elements which may help achieving it (based on the opinion of the experts as described previously in Section (a), i.e. SSIM). Then the intersection of these sets is derived for all elements. The elements for which the reachability and intersection sets are same, is the top-level element in the ISM hierarchy. The top-level element of the hierarchy would not help achieve any other element above their own. Once the top-level element of the hierarchy is identified, it is separated out from other elements. Then by following the same process, the next level of elements is found. These identified levels help in building the diagraph and final model. In Table III, it is shown that the Team Factors, Team Culture and Team Climate are found at level one. So it would be positioned at the top of ISM hierarchy. This iteration is repeated till the levels of each factor are found out as shown in Tables III-VII. The identified levels help in building the final model of ISM.

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
1	1,2,3,4,6,7,10,11	1,2	1,2	
2	1,2,3,4,5,6,7,8,10,11	1,2,8	1,2,8	
3	3,4,5,6,7,8,10,11	1,2,3,10	3,10	
<b>4</b>	<b>4,6,11</b>	<b>1,2,3,4,5,6,7,8,9,10,11</b>	<b>4,6,11</b>	<b>I</b>
5	4,5,6,10,11	2,3,5,8,10	5,10	
<b>6</b>	<b>4,6,10,11</b>	<b>1,2,3,4,5,6,7,8,9,10,11</b>	<b>4,6,10,11</b>	<b>I</b>
7	4,6,7,10,11	1,2,3,7,8,10	7,10	
8	2,4,5,6,7,8,10,11	2,3,8,10	2,8,10	
9	4,6,9,10,11	9	9	
10	3,4,5,6,7,8,10,11	1,2,3,5,6,7,8,9,10,11	3,5,6,7,8,10,11	
<b>11</b>	<b>4,6,10,11</b>	<b>1,2,3,4,5,6,7,8,9,10,11</b>	<b>4,6,10,11</b>	<b>I</b>

Table III- Iteration 1

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
1	1,2,3,7,10	1,2	1,2	
2	1,2,3,5,7,8,10	1,2,8	1,2,8	
3	3,5,7,8,10	1,2,3,10	3,10	
<b>5</b>	<b>5,10</b>	<b>2,3,5,8,10</b>	<b>5,10</b>	<b>II</b>
<b>7</b>	<b>7,10</b>	<b>1,2,3,7,8,10</b>	<b>7,10</b>	<b>II</b>
8	2,5,7,8,10	2,3,8,10	2,8,10	
9	9,10	9	9	
<b>10</b>	<b>3,5,7,8,10</b>	<b>1,2,3,5,7,8,9,10</b>	<b>3,5,7,8,10</b>	<b>II</b>

Table IV- Iteration 2

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
1	1,2,3	1,2	1,2	
2	1,2,3,8	1,2,8	1,2,8	
3	3,8	1,2,3	3	
<b>8</b>	<b>2,8</b>	<b>2,3,8</b>	<b>2,8</b>	<b>III</b>
<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>III</b>

Table V- Iteration 3

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
1	1,2,3	1,2	1,2	
2	1,2,3	1,2	1,2	
<b>3</b>	<b>3</b>	<b>1,2,3</b>	<b>3</b>	<b>IV</b>

Table VI- Iteration 4

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
<b>1</b>	<b>1,2</b>	<b>1,2</b>	<b>1,2</b>	<b>V</b>
<b>2</b>	<b>1,2</b>	<b>1,2</b>	<b>1,2</b>	<b>V</b>

Table VII- Iteration 5

### 3.4 Classification of Factors

Factors defined and described earlier are classified into four clusters as shown in Figure-1. The first cluster consists of the ‘autonomous factors’ that have weak driving power and weak dependence. These factors are relatively disconnected from the system with which they have only few links, which may not be strong. The “dependent factors” constitute the second cluster which has weak driving power but strong dependence. Third cluster has the “linkage factors” that have strong driving power and strong dependence. Fourth cluster includes the “independent factors” having strong driving power but weak dependence. The driving power and dependence of each of these factors are shown in Table II. In Table II, an entry of “1” added along the columns and rows indicates the dependence and driving power, respectively. Subsequently, the driver power-dependence diagram is constructed as shown in Figure 1. For illustration, the factor 2 having a driving power of 10 and dependence of 3 is positioned at a place corresponding to driving power of 10 and dependency of 3 in Figure 1.

Similarly all other factors considered in this study are positioned on different quadrants depending on their driving power and dependency.

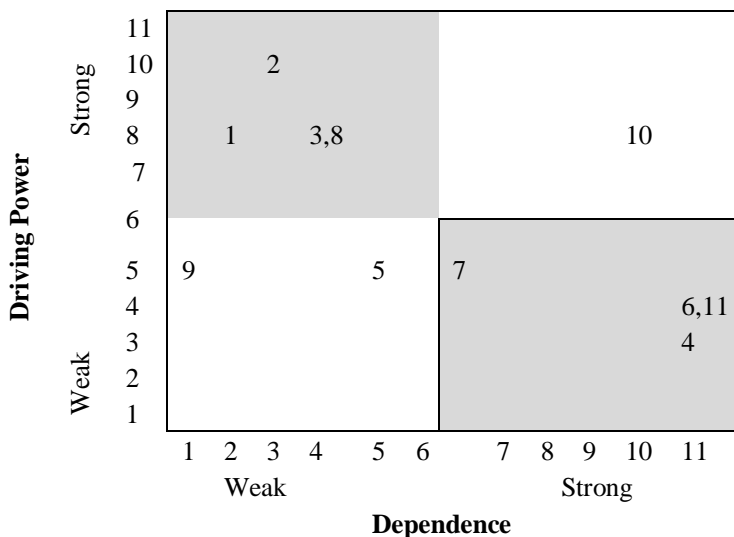


Figure 1- Driving Power and Dependence Diagram

### 3.5 Formation of ISM-based Model

The structural model is generated by means of vertices or nodes and lines of edges from the final reachability matrix (Table II). If there is a relationship between factors i and j, this is shown by an arrow which points from i to j. This graph is called a directed graph or diagraph. After removing transitivity, the diagraph is finally converted into ISM as shown in Figure 2.

## 4. Results and Discussion

The main objective of the ISM model in this research was to develop a hierarchy of factors that would affect performance of multinational/multicultural teams. These variables must be incorporated to analyze the performance of multinational teams according to their driving power and dependencies. The driver power-dependence diagram indicates that independent variables such as societal factors, institutional factors, organizational factors and education are at the bottom of the model having greater driving power. It can be seen that these variables help to achieve the desired result which appear at the top of the ISM hierarchy.

The factors which has high driving power and exist at the bottom of the hierarchy are institutional and societal factors. Societal factors include subcultures, cultural standards and social identity, which are strongly affected by and strongly



tied to the national culture. Organizations must adapt their practices to local cultural conditions to achieve good performance, because organizations and management reflect the values of the society in which they are created (Newman and Nollen, 1996). Thus, organizational factors are affected by societal factors. We further argue that, as the final ISM-Based Model shows, organizational factors are directly affected by institutional factors too. Institutional factors imply sector of work and industry, public and private and national or international organizations. For example, in an industry where the speed of innovation is high, firms focus on new developed products which requires knowledge from multiple disciplines, namely informational diversity and creativity. On the other hand, national firms operating in a single country doesn't require intercultural interaction in contrast to international firms which operate in several countries.

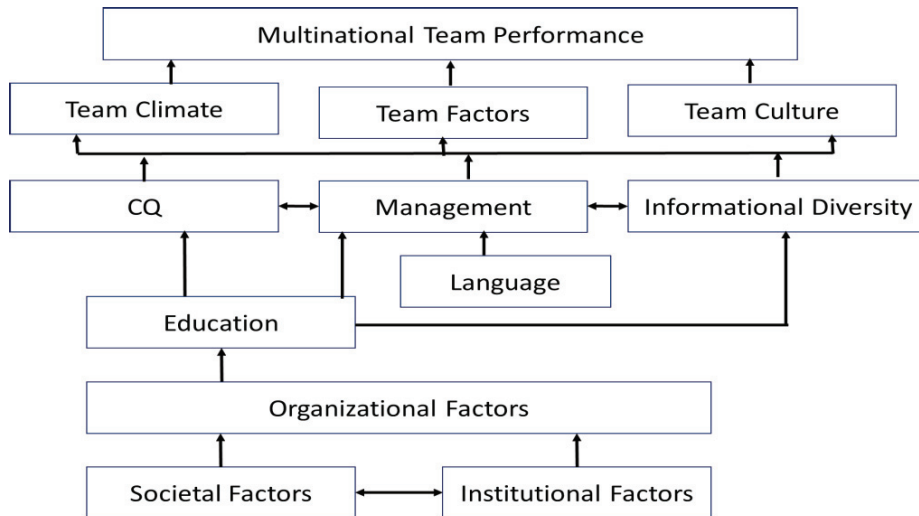


Figure 2- ISM-Based model

Organizational factors, which include organizational culture, structure and organizational arrangements, also have a high driving power. Organizational factors, especially organizational arrangements like training and development system has a direct effect on education of team members. Education, on the other hand, directly affect management, CQ and informational diversity. Matveev and Nelson (2004), after surveying American and Russian managers, argued that in culturally complex workplaces there exist a need to train managers to become more effective.

CQ can be enhanced through experience, education and training, it is a statelike individual difference (Ang and Dyne, 2008). Similarly, Crowne (2008, p.393) argues that the more countries one visits for education and employment, the higher the level of CQ. These findings are in line with our model which says Cultural Intelligence and Management is affected directly by education. In addition to CQ and management, Informational Diversity is another factor which is directly affected by education in our final model.

Cross-cultural communication competence, which is included in Cultural Intelligence in our model, is an important component of a manager's ability to address any performance challenges (Matveev and Nelson, 2004). Earley and Masanowki (2004), argue that one's level of CQ can determine his/her management style. These arguments are consistent with our final model and we further argue that CQ of team members and management affect each other. In other words, managers' management style differs according to CQ of team members and it also helps enhancing CQ of team members by creating suitable conditions, appropriate organizational arrangements.

In our model management and Informational Diversity are also interrelated and affect each other. First, informational diversity, decides the number of alternatives to be evaluated and criticized, the range of networks and perspectives the team has access, team's creativity and problem solving skills. Existence of different perspectives may cause conflicting ideas and complexity, which needs to be managed in order to prevent its possible negative effects on performance, because high informational diversity will cause more conflicting ideas and complexity, which might affect team performance negatively if it doesn't managed wisely. By considering the fact that teams are shaped by



different views of management practices, we argue that the informational diversity level of the team and management affect each other.

Language, more specifically, mother language of team members has a weak dependence. In other words mother language of team members doesn't depend on factors which appear at the bottom of the hierarchy. However, it affects the factors placed at the top of the hierarchy. Berg and Holtbrügge (2010) showed the pivotal role of communication media and language skills in multinational teams. They argue that when the members of global teams are not able to communicate effectively, positive outcomes of teamwork can hardly be expected. Chen et al. (2006) similarly argued that different native languages can lead to communication problems and misunderstandings, which affect productivity and performance. Feely and Harzing (2002), argued that miscommunication, uncertainty, mistrust and conflict triggered by Language diversity needs to be managed professionally, otherwise they will bring detrimental consequences for the business and its relationships. And they listed a range of different approaches to manage language diversity. All these findings are also in line with our model saying management is affected by language.

Thomas and Ravlin (1995) found that team performance was positively correlated with management. We further argue that the role of management in multicultural environments is more crucial and strategic than in homogenous teams, because the possibility of conflicts to appear in multicultural environments is higher than that in homogenous teams. According to our final model, management has strong driving power as well as strong dependence, thus it is seen as a linkage variable. Management, affects team factors, team culture and team climate directly. By considering the fact that each member of a team brings his/her own set of values and norms to the team, we argue that building a hybrid team culture, and climate requires effective management. According to our final model, team factors, team climate and team culture is directly affected by CQ and informational diversity in addition to management.

Several researches have showed the effect of cultural intelligence on creating a hybrid culture (Earley, Mosakowski 2000), interpersonal trust, team acceptance and integration (Ang, van Dyne 2008) in multicultural teams. Similarly, our final model illustrates that CQ of team members directly affect team climate, team culture and team factors. We further argue that these factors are also affected by informational diversity, because informationally diverse teams require more interaction among team members which increases the possibility of conflicts, thus affects team culture and team climate. Finally, Team Culture, Cultural Intelligence, Team Factors and Team Climate are weak drivers but strongly dependent on other variables. They are seen at the top of the ISM hierarchy. These variables represent the desired objectives of multinational team performance.

To conclude, the final model of this research provides a comprehensive structural cause and effect relationship among various factors to the managers and provides the direction to for designing and implementing appropriate policies in order to enhance the performance of multinational/multicultural teams.

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