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Research on Global Information Technology Teams and Project Success:
Research in Progress

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ABSTRACT

The objective of this project is to determine how the composition of cross-cultural information technology (IT) development teams contributes to project success. Increasingly, IT projects are conducted across cultural boundaries, and this research will address the issues relevant to project success in this context. A cross-cultural IT team is defined as a project team responsible for an IT project. Part of the team is responsible for one phase of the project, and another part of the team is responsible for another phase of the project. For example, the requirements definition of the project may be handled by the U.S., and the implementation may be handled by Indian developers.

The composition of cross-cultural teams will be defined by the cultural difference factors identified by Hofstede (2001). These factors include: Power Distance Index (PDI): society's endorsement of inequality, hierarchy; Individualism Index (IDV): individuals look after themselves, not the overall good; Masculinity (MAS): assertive, competitive orientation; and Uncertainty Avoidance (UAI): feeling of discomfort in an unstructured situation.\

Keywords

Information systems projects, cross-cultural teams

OBJECTIVES AND DEVELOPMENT OF A MODEL OF CROSS-CULTURAL TEAMS

The objective of the research is to determine how the composition of cross-cultural IT development teams contributes to project success. A cross-cultural IT team is defined as a project team responsible for an IT project. In many projects, part of the team is responsible for one phase of the project, and another part of the team is responsible for another phase of the project. For example, the requirements definition of the project is typically handled by the U.S., and the implementation handled by Indian developers (Rottman and Lacity, 2006).

The composition of cross-functional teams will be defined by the cultural difference factors identified by Hofstede (1980).

These factors include:

- Power Distance Index (PDI): society's endorsement of inequality, hierarchy
- Individualism Index (IDV): individuals look after themselves, not the overall good
- Masculinity (MAS): assertive, competitive orientation
- Uncertainty Avoidance (UAI): feeling of discomfort in an unstructured situation

The cross-cultural teams will consist of various combinations of countries, such as: US + Norway, US + India, India + Pakistan, and Sweden + New Zealand. Each cultural team will be classified and depicted as an "effective team" vs. an "ineffective team," using the cultural ratings. These cultural ratings will be used to categorize the types of teams, because effective teams have certain characteristics, including shared commitment, a specific team purpose that the team delivers, mutual accountability, collective work products, and shared leadership roles. Teams are engaged in active-problem solving, active participation in work, and collective assessment of work products (Miles and Watkins, 2007; Katzenbach and Smith, 2005). These characteristics are consistent with Low PDI, Mid-Range IDV, Low MAS, and Mid-Range UAI. The linkage between team characteristics and Hofstede's dimensions will be validated with input from expert reviewers.

We will classify country combinations using the model of the effective team. For example: the combination of US + India would result in an ineffective team rating because team characteristics would not be consistent with the team effectiveness characteristics above.

Team-effectiveness rating	Cross-cultural indices	Average (Ave) for 2 countries
Mid	PDI	58.5
High	IDV	69.5
Mid	MAS	59.0
Low	UAI	43.0
Ineffective team		

Table: US + India

In another example, a combination of US + Brazil would create an effective team; as such the US + Brazil team would be a rational choice.

Team-effectiveness rating	Cross-cultural indices	Ave for 2 countries
Low	PDI	54.5
Mid	IDV	64.5
Low	MAS	55.5
Mid	UAI	61
Effective team		

Table: US + Brazil

The model for understanding the impact of cross-cultural teams on project success will look like this:

	Model recommends forming a cross-cultural team	Model recommends no team should be formed
Actual choice: Cross-cultural team (Requirements: one nation; implementation: another nation)	U.S. + Brazil Requirements: U.S. Implementation: Brazil **Rational choice**: Effective cross-cultural team	U.S. + India Requirements: U.S. Implementation: India **Irrational choice**: Ineffective cross-cultural team
Actual choice: No cross-cultural team (Requirements and implementation)	**Irrational** (no cross-cultural team)	**Rational**: 100% project completed in the U.S. (example)

Model for Cross-Cultural Teams

REVIEW OF THE LITERATURE

Performance of Cross-cultural Teams

A number of studies indicate that distributed teams report more task and interpersonal conflict, but effective communications and shared identity can mitigate this conflict (Hinds and Mortensen, 2005). In diverse teams, it is important to facilitate activities which enable team members to identify with group values (Fiol and O'Connor, 2005). There is a large body of research indicating that cultural differences in teams matter. In a study characterizing the dimensions of collectivism and uncertainty avoidance among Mexicans and Americans, Jarvenpaa and Leidner (1998) found that Mexicans had a high collectivist culture which caused them to develop extensive personal and professional networks. Additionally, Mexicans were high in uncertainty avoidance and preferred clear rules, structure, and standard operating procedures to obtain greater certainty. But, high trust and effective communications among team members can mitigate these differences (Connaughton and Shuffler, 2007; Jarvenpaa and Leidner, 1999). High-trust teams were proactive, relied upon frequent communication, and valued predictable, substantive feedback (Jarvenppa, Knoll, and Leidner, 1998). Even when high-trust teams had higher cultural diversity, extensive communications and feedback reinforced trust (Jarvenpaa, Knoll, and Leidner, 1998).

Other studies reinforce the importance of effective communications among members of cross-cultural teams, in spite of language differences. In a study of cross-cultural teams in the United States and Norway, Saker and Sahay (2002) noted that both the Norwegian and American members felt at a disadvantage because of only knowing one language well. Other cultural differences, such as information systems development strategies, caused the teams to separate some of their work tasks and to allocate specialized responsibilities to the different locations. While cultural differences can impact decisions, use of similar technologies, standardization, and effective communication can reduce the impact of these cultural differences (Tse, Lee, Vertinsky, and Wehrung, 1998) even among cultures as different as those in China, Hong Kong, and Canada.

Project Success

Studies dealing with risk factors which complicate project success describe issues of organizational factors, skill set, management support, software design, user involvement, technology planning, project management, and project escalation. Project success, as measured by the ability to complete projects on-time, on-budget, and with the quality needed to address user requirements, requires minimizing these risk factors.

Some risk factors are associated with organizational factors, including the extent of changes being proposed, sufficiency of resources, and magnitude of potential loss (Barki, Rivard, and Talbot, 1993). Project managers may have to address issues

over which they have no control, such as changing scope/objectives and conflicts between user departments (Keil, Cule, Lyytinen, Schmidt, 1998). Lack of development expertise, lack of application-specific knowledge, and lack of user experience all contribute to project risk (Barki, Rivard, and Talbot, 1993; Ewusi-Mensah, 1997).

Lack of senior management commitment (Keil, Cule, Lyytinen, Schmidt, 1998) and lack of agreement on a set of project goals/objectives (Ewusi-Mensah, 1997) are factors leading to time/cost overruns. Misunderstanding requirements and continuously changing requirements contribute to project risk. Lack of an effective methodology and poor estimation can lead to cost and time overruns (Keil, Cule, Lyytinen, Schmidt, 1998). Software risk factors include developing the wrong functions, developing the wrong user interface, shortfalls in externally furnished components, and shortfalls in externally performed tasks (Boehm, 1991).

Lack of user commitment, ineffective communications with users, and conflicts among user departments are all sources of risk (Keil, Cule, Lyytinen, Schmidt, 1998). Lack of adequate technical expertise and lack of an adequate technology infrastructure to support project requirements contribute to escalating time and cost overruns and are associated with project abandonment (Ewusi-Mensah, 1997). Technological newness (need for new hardware, software), application size (project scope, number of users, team diversity), application complexity (technical complexity, links to existing legacy systems) and failure of technology to meet specifications are all project "hazards" (Barki, Rivard, and Talbot, 1993).

In information technology projects, there is a tendency to discount problems and their severity may remain unknown for a long period of time. When projects run into difficulty, there is a tendency to escalate projects because of societal norms (e.g. needing to save face) and to keep pouring resources into a failing project. This creates greater risk of failure (Keil and Montealegre, Spring 2000).

In the cross-cultural context, the risk factors associated with information systems projects may pose even greater challenges. Minimizing these risk factors by employing effective project management and control strategies may not be sufficient to overcome challenges which arise because of context and communications differences. This study will attempt to examine these differences and to identify strategies to address them as well.

PROCEDURES FOR THE STUDY

Research Question: Will effective cross-cultural teams contribute to project success, as compared with ineffective cross-cultural teams?

Selection of Sample Projects: We have identified a number of cross-cultural IT projects which can be used in the proposed study. These projects will be comparable in terms of type and scope. Additional projects will be added to provide a representative sample of IT projects in each quadrant of the model.

Effective team	Ineffective team
US + Brazil	U.S. + India
Nestle Purina (Insurance Project)	Monsanto (SAP Project)

Control Group: We will compare the cross-cultural project environments with the conduct of projects without a cross-cultural team. The projects in the control group will be comparable in type and scope to the cross-cultural projects.

Identification of Effective Teams vs. Effective Teams: The Model for Cross-Cultural Teams will be used to depict effective vs. ineffective cross-cultural teams. For example, according to the model, a team consisting of the U.S. + India would be an ineffective team, and a team consisting of the U.S. + Brazil would be an effective team.

Grounded Theory Approach: The research will use the grounded theory approach to information systems research. In the grounded theory approach, data is gathered from interviews and case studies, and the data are analyzed and used to build theory (Glaser and Strauss, 2008, Strauss and Corbin, 2007). The reason the grounded theory approach makes sense in this study is that it will enable us to identify the social, political, organizational, and economic factors associated with information

systems project management in a cross-cultural context. The interview results will depict a number of variables which can be used to build theory. As such, the theory will have practical and intellectual value for further research dealing with cross-cultural teams.

Development of a Structured Interview Form. A structured interview form will use the project retrospective methodology proposed by Nelson (2005) in his research on project characteristics. Nelson's project retrospective methodology includes a structured interview form with questions dealing with:

1. Project management, leadership, and organization.
2. Project justification, including business and system benefits.
3. Project timeline, including planned vs. actual completion dates and project timelines.
4. Lessons learned, including symptoms of project failure (lack of strategic alignment, lack of stakeholder involvement, poor planning, and poor execution).
5. Project risk assessment, including skill sets of IT and user personnel, requirements analysis, and organizational factors.

Measures of Project Success. Project success will be measured by the extent to which projects are completed on-time, on-budget, and meet user requirements. In addition, we will use interviews to find out how different people from these different cultural groups feel they contributed to project success. These individuals will be asked to describe their role in the project and to explain their contribution outside of completing a specific task or group of tasks.

TIMELINE AND RESULTS

The results of the case studies will be used to build a framework depicting the social, political, organizational, and economic factors relevant to project success in each of the quadrants associated with the Model for Cross-Cultural Teams. This research has excellent chances to gain external project funded support, because global IT workforce issues are of great interest to the research community.

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