

Success of Virtual Environments

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CROSSING BOUNDARIES

While work has been conducted across geographical distances as long as humans have been engaged in work, advances in technology as well as changes in the global economy have increased both the requirement and the potential for teams to work together effectively across geographical and organizational boundaries (Hinds & Kiesler, 2002). Research conducted in the 1960s and 1970s on group development process provides a foundation for understanding and supporting the development of high-performance virtual teams (Tuckman, 1965; Tuckman & Jensen, 1977). Coupling group development process with groupware, computer-supported cooperative work (CSCW), and new peer-to-peer technologies, virtual teams have the support to move through the development stages until they become high-performance virtual teams. In fact, a recent benchmarking study determined that virtual teams have the potential to function even more productively than co-located teams (Majchrzak, Malhotra, Stamps, & Lipnack, 2004).

VIRTUAL TEAMS

According to Katzenbach and Smith (2003), a team consists of a relatively small number of people, working together to achieve a common set of goals. Teams are usually established in such a way that they include members with complementary skills. Members are expected to work together in order to achieve specific results for which they hold themselves and each other accountable (Katzenbach & Smith, 2003).

A virtual team may be referred to as a geographically dispersed team (GDT) and has the following characteristics:

- A group of people working together
- Team members work interdependently and share a specific purpose
- Team work is accomplished across boundaries of space, time, and/or organizations
- Virtual teams use technology to support their work as a group (Lipnack & Stamps, 2000).

A number of factors underlie the current trend toward establishing virtual teams (Lipnack & Stamps, 2000):

- Employees with specialized skills may be located in various places
- Workers themselves desire flexibility in where they live and work
- Knowledge workers expect to be supported by advanced technologies
- With virtual teams, organizations can be more agile and therefore more responsive to customer needs and changes in the market
- Members of virtual teams can spend less time traveling to and from work or meetings
- Increased globalization affects both tasks and organizations
- Depending on the location of its members, a virtual team may work different shifts and be able to cover more than 8 hours in a work day
- Current work environments require cooperation among different organizations as well as competition between them
- There has been a shift in expectations of ways that workers participate in their organizations
- The transition from production to knowledge or service types of work promotes the move to virtual teams
- Human resources are more apt to be geographically and structurally distributed in a more horizontal organizational structure.

Interactive technologies are now available and collaborative tools are under development to support teams sharing information and resources and working together across time zones and continents. Virtual teams engage in rapidly changing, fluid environments, which demand good teamwork and clear communication. Many virtual teams encounter problems and do not succeed because they do not adequately address issues in team building or group process or they do not adjust to the differences which stem from working at a distance (Lipnack & Stamps, 2000).

CRITICAL SUCCESS FACTORS

The following equation describes the components of virtual teams:

Virtual teams = teams + communication links + groupware

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Lipnack and Stamps (2000) identify four words as describing the essence of virtual teams:

- **People:** who lead and participate in virtual teams
- **Purpose:** which drives the focus of the team
- **Links:** the interconnections through relationships, channels, and interactions, which are supported by technology
- **Time:** the milestones, schedules, calendars which the team must meet

Hartzler and Henry (1994) indicate two important characteristics of virtual teams that directly affect the effectiveness of virtual teams:

- The team views all members as accountable for the results of the team
- Joint problem solving and decision making occur among team members

However, Hackman (1990) believes that most distributed groups do not become real teams in that they do not maintain a stable and consistent membership with a shared working process and pursue a common goal that the team embraces and knows can only be achieved through the work of the team.

Research has demonstrated that teams experience five different stages in the development of their group (Tuckman, 1965):

- **Forming:** orientation, introductions, agreeing on initial goals for the group
- **Storming:** dealing with differences of opinion and conflicts
- **Norming:** resolving difficulties and focusing on the work at hand
- **Performing:** functioning as a team, working together on a group project
- **Adjourning:** terminating their work together when they have achieved their performance goals

In effective teams, members are not only committed to the purpose and goals of the team but they are also committed to each other (Katzenbach & Smith, 2003).

Meyrowitz (1985) feels that the patterns of information flow determine the nature of the interactions among virtual team members and that a feeling of “groupness” is achieved through three aspects of group work that underlie the formation of virtual teams:

- Identity based on sharing some privileged information among themselves that is not shared with people outside the group

- Socialization which is handled through both formal methods of orientation and training and informal methods of sharing suggestions on how things are done within the group
- Rank and authority, which depend on access to places containing knowledge restricted to those of a certain rank in the organization

Horvath and Tobin (2001) view three areas as forming the core of high performance in teams:

- Context
- Process
- Psychosocial traits

Furthermore, empirical research has demonstrated a positive relationship between the performance of virtual teams and the following six competencies:

- Communication
- Relationship building and management
- Leadership
- Decision making and implementation
- Collective understanding
- Swift trust (Horvath & Tobin, 2001)

GROUPWARE

Virtual teams are supported by groupware technologies and computer-supported cooperative work (CSCW). According to Saikali and David (2001), CSCW proposes a set of tools and methods that cover three fundamental aspects:

- **Communication:** to enable the exchange of information among team members
- **Cooperation:** to provide tools that support team members working together, including a shared workspace, where team members can share the same tools, files, documents, and data
- **Coordination:** to manage interactions among team members and tasks

Groupware can be divided into three main categories of applications:

- Document and forms-based groupware
- Transaction-based high-volume information management groupware
- Organizational communications groupware

A common way to explain different types of groupware systems is to place them in a framework using the two

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