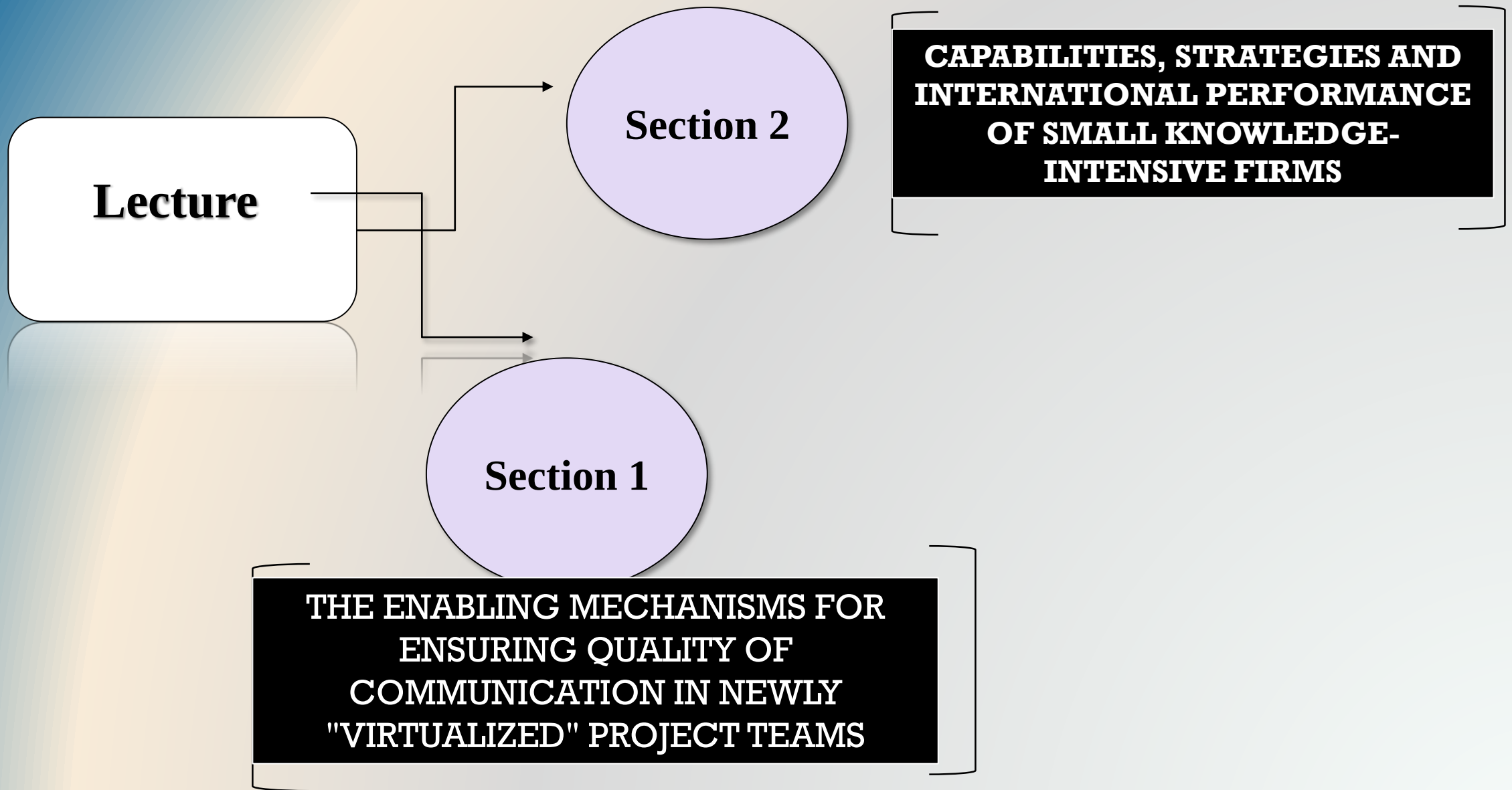


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Section 1

**CAPABILITIES, STRATEGIES AND
INTERNATIONAL PERFORMANCE OF SMALL
KNOWLEDGE-INTENSIVE FIRMS**

INTRODUCTION

Knowledge, i.e. knowledge-based competition and knowledge-management has become a focal point of interest to management scholars and practitioners. In many recent studies, knowledge is seen as the most important source of competitive advantage and knowledge capabilities or resources are seen to contribute most to performance.

An important aspect of well-known resource-based view concerns the ability of the firm to generate rents from different types of capabilities and resources. To emphasize the importance of the dynamic aspects of knowledge creation in the search of sustainable competitive advantage, in many recent studies the RBV has often been called as knowledge-based view (KBV) of the firm.

INTRODUCTION

Our study follows this principle and explores the relationship between different capabilities and skills and the international performance of small knowledge-intensive technology-based firms.

Growth by internationalization is an important strategic option for small-and medium sized enterprises (SMEs). During the last two decades, there has been a lot of published evidence and research on the internationalization of small knowledgeintensive firms. Brush and Vanderwerf (1992) notice that prior studies have shown that a combination of different factors increase the possibility of international expansion by new venture firms. These include for example industry factors, institutional factors, and organisational factors (e.g. company characteristics, corporate objectives, and capabilities). There are many different theories and models explaining the internationalization process of the firm (for a review of models and their applicability, and studies in SME context.

INTRODUCTION

The RBV has been used in some studies to explain internationalization or the choice of international growth strategy and it can be seen as a useful approach in the search of explanations for the international performance. Knudsen and Madsen (2002) argue that the creation and co-ordination of new knowledge and routines inside of the organisation is the crucial part in developing the important determinants of export (i.e. international) performance. The study attempts to extend the relevant literature by examining the different possible determinants of international performance in the context of small knowledge-intensive technology-based firms from the knowledge-based perspective.

INTERNATIONAL PERFORMANCE

There is a substantial body of empirical research published on export or internationalization success factors, and numerous variables have been identified as determinants of success.

Different determinants with which international (or export) performance has been conceptualised can be integrated into three groups:

- 1) managerial characteristics,
- 2) organisational factors,
- and 3) environmental forces.

INTERNATIONAL PERFORMANCE

Of these, the first two groups are part of a firm's internal knowledge base. According to the KBV, these firm based capabilities should contribute most to performance.

Traditional performance measures include economic goals (e.g. profitability and sales). Depending on measurement purposes, and sample etc., different non-financial measures have been used (e.g. market-related and product-related measures, and measures such as managers' satisfaction with export performance, as well as fulfilment of export objectives).

KNOWLEDGE-BASED VIEW OF THE FIRM AND INTERNATIONALIZATION

Knowledge-based view of the firm, while accepting much of the content of the RBV of the firm, emphasizes more the process or path by which the specific capabilities evolve and develop over time. The firms are seen as repositories of knowledge.

The proponents of the dynamic capability or knowledge-based tradition, Teece and Pisano (1994: 537) interpret firms as generators of specific dynamic capabilities, which help "in appropriately adapting, integrating and re-configuring internal and external organizational skills, resources and functional competences toward changing environment." Dynamic capabilities are "rooted in high performance routines operating inside the firm, embedded in the firm's processes, and conditioned by its history".

KNOWLEDGE-BASED VIEW OF THE FIRM AND INTERNATIONALIZATION

Eisenhardt and Martin (2000) see dynamic capabilities as "best practises", or tools by which firms can manipulate their resource configurations. Firms, which can create, manage and transfer knowledge that is valuable, rare, and hard to substitute (i.e. asset specific) in an international context are more capable of outperforming their competitors in the long run. Development of knowledge through learning and an ability to change are seen as key components in evolutionary knowledge management.

KNOWLEDGE AND INTERNAL CAPABILITIES AS DETERMINANTS OF PERFORMANCE

Knowledge and expertise in different functional competencies have been found to be positively related to international growth. There are several typologies of the properties of resources or capabilities. Spanos and Lioukas (2001) divide them into organisational, technical and marketing capabilities.

Lee et al. (2001), in their study of small technology-based firms, use a classification of internal capabilities consisting of entrepreneurial orientation, technological capabilities and financial resources. In this paper we use a classification combining these two lattermentioned studies, as entrepreneurial orientation can be seen as an important aspect of growth and internationalization.

KNOWLEDGE AND INTERNAL CAPABILITIES AS DETERMINANTS OF PERFORMANCE

In addition, received financial investments and new technology-based firms' linkages with venture capitalists have been found to be important indicators of performance. All these capabilities form the knowledge base of the firm.

FUNCTIONAL CAPIBILITIES

Marketing capabilities:

Even for technology-based small firms marketing capabilities, for example, ability to learn customer needs and position its product successfully are often significant determinants of success. Existing knowledge related to the market is seen as an important skill, as in many cases small firms follow focus/niche type strategies with an aim to service chosen market segment needs. For example, Wolff and Pett (2000) argue that customer service and high quality marketing strategies need a much narrower resource base than e.g. brand strategy, and are then more possible for SMEs.

FUNCTIONAL CAPIBILITIES

Technical capabilities:

Technical capabilities are among the most recognized determinants of success in small knowledge-intensive firms. They can be seen as the sum of knowledge and skills which determine the ability of technologybased new ventures to develop and offer different types of products and services.

FUNCTIONAL CAPIBILITIES

Organizational capabilities:

According to Teece et al. (1997) organizational capabilities include e.g. managerial competence related to organizational and managerial processes, knowledge and skills of employees altogether, with an efficient organisational structure. In internationalization, the role of the management team and strategic planning have been highlighted in many studies.

FUNCTIONAL CAPABILITIES

Financial capabilities:

Smaller firms tend to have fewer financial resources and have more difficulties in obtaining the necessary funds for product development, marketing, exporting and internationalization in general. Firm's ability to obtain financial resources (i.e. connections to different types of investors) and manage these resources may enable the firm to secure new markets and operate successfully in them.

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FUNCTIONAL CAPABILITIES

Financial capabilities:

Financial capabilities in the SME context have been studied through different types of measures, including e.g. investments made in the firm in a certain time period.

INTERNATIONAL CAPABILITIES

Learning about internationalization is a cumulative process, in which all the steps or activities at international markets add experimental knowledge to the firm. The implications of the learning process of the firm (or management) are that the past contributes to its current knowledge base. As in development of all capabilities, the internationalization skills are path dependent.

INTERNATIONAL CAPIBILITIES

Internationalization capabilities are often measured through the experience of the firm in international operations (e.g. countries served, years of operation, capability to engage itself in international operations), or through management experience and orientation towards international activities (experience in international activities, perceived importance of internationalization, international entrepreneurial orientation) Some authors (e.g. Knight 2001) see international entrepreneurial orientation as fundamental corporate posture reflecting firms' overall proactiveness and aggressiveness in its pursuits of international markets. It is associated with managerial vision, innovativeness and proactive risk taking competitive posture. Here we see international entrepreneurial orientation and experience in international operations as an internationalization capability of the firm.

Section 2

**THE ENABLING MECHANISMS
FOR ENSURING QUALITY OF
COMMUNICATION IN NEWLY
"VIRTUALIZED" PROJECT TEAMS**

Introduction

Project management has clearly entered the "virtual" arena over the last few years. The radical transformations in industry have brought about new ways of conducting projects; the same is true of the organization and management of production. The ongoing development and increasing availability of information and communication (IC) technologies have opened up a wide array of new possibilities for organizations.

Introduction

Tapping into expertise from various specialized sources and reducing travel costs are among the advantages that these technologies can offer to project teams. From the project manager's perspective, these technologies can provide access to even more information than traditional methods. In this context, it is no longer possible to structure a project management approach without considering the use of IC technologies. Examples illustrating this state of affairs are regularly reported in both professional and academic publications.

Introduction

However, the successful use of IC technologies is not as smooth as it seems at first glance. In some cases, it represents a real challenge for project managers who are not used to these kinds of tools, hi terms of quality of communications, it has been shown that tools such as e-mail, videoconferencing and other electronic meeting devices may result in a decrease in the richness of the information. Even with modern technologies, working on a distributed basis may impede the project manager's ability to "feel" his/her project and to be proactive in dealing with conflicts that may emerge from time to time as the project progresses. In the traditional, face-to-face way of conducting projects, it seems easier to contain conflicts and to avoid escalation when conflicts do occur.

Introduction

Working in a virtual or distributed team may also impact on team spirit or make it more difficult to establish a solid, unified view of the project. This can be even worse if team members have never met each other or worked together, if they do not report to the same person or are acting on several projects simultaneously, or if they do not share a common professional, organizational and/or national culture. Finally, some authors have argued that, even with sophisticated IC technologies such as those widely in use nowadays, one cannot completely eliminate the risks associated with information "bulimia," that is, an overdose of information).

Introduction

Considering that communication is viewed as one of the most important success factors in project management, one can view the above factors as major obstacles for successfully conducting virtual projects. In order to avoid their negative effects, organizations and project teams therefore need to consider certain mechanisms

Introduction

The nature of such mechanisms is a topic that has attracted many researchers in recent years. As it is shown in the following section, the list of mechanisms varies substantially and so does their impact on the quality of communications. A succinct review of those mechanisms leads to three groupings, forming the basis for the empirical investigation that follows. Overall, the objective is to identify which mechanisms appear the most useful for project managers who have little experience with virtual project management in a context of engineering/innovation-related projects.

Importance of communication

The importance of communication in project management is well recognized. In a recent book on "radical" project management, Thomsett (2002: 89) encapsulates this idea in his rule no. 15: "[as project managers] you cannot not communicate!" Beyond the catchy wording, Thomsett reiterates the fact that communication can be a two-edged sword. In this context, it is really up to project managers to make sure they communicate effectively.

Importance of communication

In day-to-day duties, communication is the vital link between project managers and stakeholders. It is used for numerous reasons, including sharing information and ideas concerning the project's objectives, assigning responsibilities, keeping people informed about the project, making decisions, managing conflicts, etc. Good communications require the editing, collection, diffusion, storing and processing of project-related information in a precise, timely and adapted manner. When done properly, communication can help reduce unproductive activities, duplicate information and errors. Moreover, it has been shown that good communication stimulates teamwork and improves motivation in a team.

Importance of communication

With an increasing number of projects being undertaken on a distributed basis, communication has become even more important for managing projects successfully. Practitioners who deal with these projects recognize that relying on electronic means to communicate may be challenging. As face-to-face meetings are less frequent, teams are most likely to lose some of the richness of communication and therefore to face a higher risk of conflicts.

Communication-related mechanisms

In order to support project managers in their duties, certain communication-related mechanisms can be put in place within the organization:

A first category focuses on tools and systems that must exist if people are to share information and communicate. In a context of virtuality, one often tends to see information systems as being at the center of the communication issue.

Communication-related mechanisms

In order to support project managers in their duties, certain communication-related mechanisms can be put in place within the organization:

For example, recent studies have shown that information sharing is a fundamental aspect of engineering work since activities such as design and marketing of products are inherently collaborative. Based on previous studies, this author reports that engineers involved in development projects spend between 40% and 60% of their time communicating with colleagues or partners.

Communication-related mechanisms

In order to support project managers in their duties, certain communication-related mechanisms can be put in place within the organization:

Furthermore, the current interest in knowledge management and the systems that support it is also indicative of the importance people attribute to information technologies when thinking about teamwork, information and communication. In the context of projects, managers and team leaders therefore need to rely on tools and systems that allow them to share, save, and consult relevant information anywhere and at any time.

Communication-related mechanisms

In order to support project managers in their duties, certain communication-related mechanisms can be put in place within the organization:

According to Kimball and Eunice (1999), tools such as an intranet increase the efficiency of a virtual team by allowing people to retain a global vision of the project, enabling them to "keep in touch" with the sponsoring organization, and even facilitating informal communications. Other examples show how beneficial central servers can be for a company which has multiple teams spread out around the world.

Communication-related mechanisms

In order to support project managers in their duties, certain communication-related mechanisms can be put in place within the organization:

A second category of mechanisms focuses on the process whereby project teams choose to exchange information and communicate. In other words, beyond the tools and systems available, how project team members actually use these tools needs to be thought out. In practical terms, this refers to the establishment of rules, protocols and/or processes that provide a framework for the people involved in a project. The notion of rules is particularly important in a context where a project is not only geographically dispersed but is also characterized by diversity of national and/or organizational cultures.

Communication-related mechanisms

In order to support project managers in their duties, certain communication-related mechanisms can be put in place within the organization:

A third category of mechanisms can be associated with the need "to make the thing work," that is, to ensure an adequate level of participation and buy-in from the various stakeholders involved in the project. This category represents the human side of communication management whereby team members, and particularly team leaders, must create an atmosphere that fosters communication. For example, Perlo and Hills (1998) suggest that the role of "coach" is particularly important for project managers in charge of virtual teams. This person needs to know how to stimulate people and to overcome the obstacles often associated with physical, technological or cultural distance. Developing abilities as a good listener and good communicator (oral/written) seems to be particularly important in virtual teams.

Communication-related mechanisms

Team leaders are also responsible for building trust among team members and communication is an important tool for that purpose. As argued by Handy (1995), managing projects at a distance depends on trust and so project managers must stimulate exchanges within the team. Lipnack and Stamps (1999) have also shown how informal conversations and other non-work-related discussions represent important steps towards building trust, which, in turn, contributes to more effective working relationships.

Communication-related mechanisms

This overview of communication-supporting mechanisms shows how diverse and intermingled they are. For virtual project management to be effective, leaders need to pay attention to all three categories simultaneously. Despite the studies cited above, several areas of virtual project management and communication still remain unexplored or have been studied under conditions that may seem debatable. For example, the fact that many studies use samples of students as respondents could be seen as a limitation. It was to alleviate some of these problems and focus on certain types of projects that this research was undertaken.

BRIEF DISCUSSION AND AVENUES FOR FUTURE RESEARCH

The widespread diffusion of IC technologies has led people to believe that projects could easily be managed and conducted even in the context of distributed or virtual teams. In fact, the professional literature abounds in such cases.

However, the use of sophisticated technology does not necessarily represent a panacea for ensuring quality communications, hi the case of project managers who are new at virtual project management, dealing with communication issues continues to be a challenge.

For these managers, face-to-face kick-off meetings are unquestionably important, not only because they provide a rich communication context but also because they create an opportunity to build trust right at the beginning of the project.

BRIEF DISCUSSION AND AVENUES FOR FUTURE RESEARCH

In situations where no meeting of the sort occurred, it was more due to a lack of financial resources than to a lack of interest, as is often the case.

Finding no. 1: In cases where project team members do not rely on previous, mutual experience of virtual management, investing in richer communication means, such as face-to-face meetings at the "front end" of the project can have a positive impact on the communication throughout the project.

BRIEF DISCUSSION AND AVENUES FOR FUTURE RESEARCH

In situations where no meeting of the sort occurred, it was more due to a lack of financial resources than to a lack of interest, as is often the case.

With regard to communication tools and systems, project managers rely heavily on centralized systems (database and servers) to support information management.

Without an adequate infrastructure allowing the sharing and archiving of project-related documents, no team can claim to be efficiently managing its virtual project. But the presence of such a system is not sufficient as it requires close attention to ensure that information is easily accessible to all the people.

BRIEF DISCUSSION AND AVENUES FOR FUTURE RESEARCH

In situations where no meeting of the sort occurred, it was more due to a lack of financial resources than to a lack of interest, as is often the case.

Top managers therefore need to invest resources, both financial and human, to make these systems really support management.

Exchanging information and communicating in virtual mode also imply that team members have agreed on certain rules such as a communication protocol. As Bartoli (1990) reports, and as repeated by the respondents in this study, communication can quickly be affected by various "pathologies" if people do not share certain rules.

BRIEF DISCUSSION AND AVENUES FOR FUTURE RESEARCH

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E-mail systems are typically seen as generators of such pathologies (misunderstandings, information overdose, etc.).

Finding no. 2: Information management is critical for managing virtual projects and therefore cannot be left up to individual initiative. Organizations need to make sure that systems, procedures and behaviors are congruent with the project's goals.

BRIEF DISCUSSION AND AVENUES FOR FUTURE RESEARCH

In situations where no meeting of the sort occurred, it was more due to a lack of financial resources than to a lack of interest, as is often the case.

Another important point that this research has revealed is how important it is, in the context of virtuality, that certain roles be assigned to key individuals so that interest in communication is sustained throughout the project's lifespan.

During the preliminary stages of the project, it may benefit from having a person who champions the setting up of systems and rules, but as the project unfolds, it clearly requires the role of facilitator / moderator/ stimulator. Most often, these roles are assumed by project managers themselves even though, in some cases, they are visibly unprepared to do so.

BRIEF DISCUSSION AND AVENUES FOR FUTURE RESEARCH

In situations where no meeting of the sort occurred, it was more due to a lack of financial resources than to a lack of interest, as is often the case.

Finding no. 3: Projects that are considered to be virtual require that communication roles be forefronted and that specific individuals be associated with them. These roles do not necessarily rest with project managers.

What I expect from you?



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thank
you!