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Joseani Schreiber, Sergio Eduardo Gouvêa da Costa, Fernando Deschamps and Edson Pinheiro De Lima

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DEVELOPING A FRAMEWORK FOR PERFORMANCE ASSESSMENT OF GLOBAL DISTRIBUTED TEAMS

J SCREIBER1 , SE GOUVEA da COSTA2, F. DESCHAMPS1, EP de LIMA2

1. Graduate Program in Production and Systems Engineering, Pontifical Catholic University of Paraná, Rua Imaculada Conceição 1155, Curitiba, Paraná, Brazil

2. Graduate Program in Systems and Production Engineering, Federal Technological University of Paraná, Av. Prof. Seven of September 3165, Curitiba, Paraná, Brazil.

Abstract:
Virtual teams are considered the answer to many organizational problems today. Advances in information technology, along with competitive pressures, have led to the increasing use of virtual teams for activities as diverse as product development, customer service, systems design and programming, implementation of strategic programs and projects, among others. Despite the fact that research on team performance is increasing on understanding virtual teams, there is still much to be learned in order to fully understand their potential. Performance appraisal is considered a challenging task by many business managers. With virtual team members distributed globally and coming from different cultures and backgrounds, it is important to ensure that the entire performance review process is perceived as fair and correct by all stakeholders. The objective of this study was to build a framework to measure the performance of globally distributed teams. To meet the objective, a systematic review of the literature was sought, in which 76 articles were found, "aspects that hinder and facilitate the development of globally distributed teams" where some criteria were identified that contribute to organizations to evaluate the performance and managing globally distributed teams. The proposed framework was operationalized with the application of the PROMETHEEII-ROC method, based on the multicriteria decision support approach, useful in situations where there is inaccurate information related to the importance of the criteria in the decision context. The framework was operationalized in three stages: the presentation of alternatives, the association of alternatives with the criteria and the matrix of consequences. As a result of applying the framework, the ordering of actions to be taken to increase the performance of globally distributed virtual teams was obtained, producing results for the model and for the method (learning of use and application) and also had a relative contribution to the literature of teams distributed in the problem structuring process itself

Keywords:
globally distributed teams; performance evaluation; framework; organizations; MCDM/A; PROMETHEEII-ROC.

1 INTRODUCTION

Virtual teams are considered the answer to many organizational problems today [5]. Advances in information technology, along with competitive pressures, have led to the increasing use of virtual teams for activities as diverse as product development, customer service, systems design and programming, program implementation and strategic projects, among others [6]. Despite the fact that research on team performance is increasing in understanding virtual teams, there is still much to be learned to fully understand their potential. Performance evaluation is considered a challenging task by many business managersA avaliação de desempenho é considerada uma tarefa desafiadora por muitos gestores de empresas.

With virtual team members distributed globally and coming

from different cultures and backgrounds, it is important to ensure that the entire performance review process is perceived as fair and correct by all stakeholders.

The objective of this study was to build a framework to increase the performance of globally distributed teams, through a systematic literature review and the use of MCDM/A and PROMETHEEII-ROC.

2 METHODOLOGY

This work was carried out in two phases, the first was through a systematic review of the literature in the databases cientificas Scopus and Web of Science, where a bibliographic portfolio composed of 76 scientific articles was established that allowed articulation in meeting the questions and objective of the research.

que permitiram articulação em atender as questões e objetivo da pesquisa.

the keywords used in the searches they were "performance indicators" OR " performance measurement system" OR "performance" OR "indicators" OR "measurement system" AND TITLE-ABS-KEY "Distributed Processing" OR "Distributed Teams" OR "Team work" OR "Assignment of tasks" OR "Distributed teams" OR ("Remote teams" OR "Geographically dispersed teams" OR "virtual teams". The “Methodi Ordinatio [5]” was used to choose and order the articles.

The second phase was using MCDM/A, particularly the use of PROMETHEEII-ROC, which was divided into five phases:

-First phase: characterized the decision maker(s) and other authors; identified objectives; established criteria; established space for actions and problems and identified uncontrolled factors. “These elements can definitively influence the final model that will be built to analyze the problem [1].

- Second phase: Structured factors that may have greater influence on the choice of which multicriteria decision method seem to meet the requirements for solving the problem, with three stages: carried out the modeling of preferences; performed the intra-criteria and inter-criteria evaluations. At the end of this face the decision method was chosen and the decision model built.

o método de decisão foi escolhido e o modelo de decisão construído.

- Third phase: with the model already developed, it was possible to verify the resolution of the problem and implement recommended actions. This phase was divided into four stages: evaluation of alternatives; sensitivity analysis; analysis of results, preparation of recommendations and implementation of decisions.

3 ANALYSIS AND DEVELOPMENT

3.1 Analysis of the systematic review of the literature

The 76 scientific articles from the systematic review of the literature were explored in order to know the “aspects that hinder and facilitate the development of globally distributed teams”, where some aspects that contribute to organizations assessing the performance of globally distributed teams were identified.

The following aspects were found: culture, leadership, language/language, motivation, information technology, specific skills, empathy, perceived justice, trust, perceived closeness, shared identity, emotional authenticity, social exchange, degree of centrality, feedback, peer evaluation and shared understanding.

3.2 Application of the PROMETHEEII-ROC method

Aspects found in the systematic review of the literature were associated with some criteria. The decision makers in this case can be the leaders, managers, members of the virtual team of each area in which this framework can be applied. These criteria are classified by the decision maker (the) managers of the teams distributed in degree of importance, because each manager has scenarios of different aspects and performance levels. An example of the aspect, information technology with some criteria is shown in Table 1.

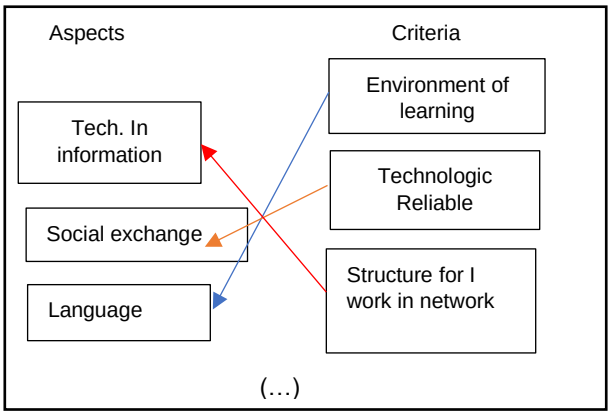
Tab. 1 – Example aspect x criteria x objectives

Aspect	Criterion	Degree of importance
Technology from the information	- environment of learning - reliable Technology - structure for network work - (...)	1,2,3,4,5

After the established criteria, the space of actions and problematic is established. The space of actions in this study corresponds to a discrete set in the format A = {a1; a2;a3;....an} [7]. The set of A in this study is evolutionary, as A can change throughout the process of The criteria received a degree of importance to be met, so they are quantitative decision, due to the dynamics of the environment in the decision-making process [1].

Finally, the set of aspects is classified as fragmented, as this decision procedure involves the combination of several elements of A [1], thus one element does not exclude the other [3]. This step was divided into three parts: the presentation of aspects, the association of aspects with the criteria and the consequence matrix. An example consequence matrix is shown in Table 2.

Table 2: Example of association of Aspects x Criteria



The criteria will be ordered according to the preference of the decision maker. After ordering the criteria by importance, the software that implements PROMETHEEII-ROC will find the substitute weights, based on the decision maker's choices. Table 3 illustrates an example of the surrogate weights, based on the decision maker's choices, of the software that implements PROMETHEEII-ROC.

Table 3: Example of substituted weights.

Criteria´s name	Environment of learning	Technologic Reliable	Structure for I work in network
Criteria´s code	C1	C2	C3
Preference Direction	1	1	1
ROC weight	0.4083	0.2417	0.1583

Table 4: Example of a Consequence Matrix

Criteria´s name	Environment of learning	Technologic Reliable	Structure for I work in network
Criteria´s code	CONSEQUENCE MATRIX		
Tech. in information	1	1	4
Social exchange	1	4	1
Language	4	1	1

The consequence matrix will finally be submitted to the SAD Decision Support System (http://www.cdsid.org.br/promethee/); After applying the PROMETHEEII-ROC multicriteria method, the first recommendation is offered for the problem in question, based on the theory of overclassification relations, the recommendations assume a flow value that will show the order of priority between them. Table 4 illustrates an example of priority ranking for the performance of globally distributed teams.

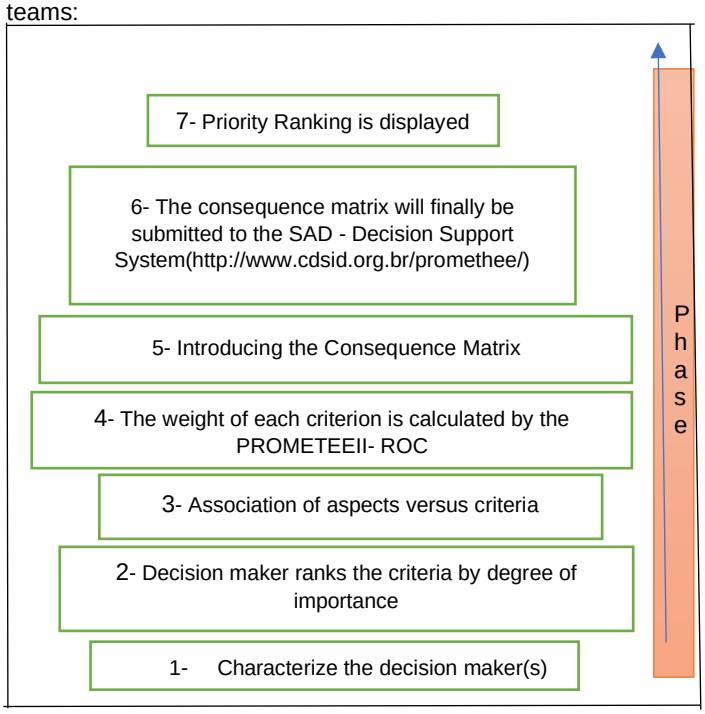
Table 4: Priority Ranking

Ranking	Aspect	Φ+	Φ-	Φº
1	Tech. in Informação	0.7267	0.1122	0.6146
2	Social exchange	0.7339	0.1562	0.5776
3	Language	0.5998	0.1446	0.4552
4	(…)	(…)	(…)	(…)

With the Ranking it is possible to visualize the necessary recommendations so that the performance of the distributed

teams can be increased. Table 5 presents a framework to increase the performance of virtual teams

Table 6. Framework to increase the performance of virtual teams:



4 CONCLUSIONS

With this study, it was possible to build and apply an ordering framework for actions to be taken to increase the performance of globally distributed virtual teams, producing results for the model and for the method (learning of use and application) and several criteria (which you can insert or delete) if you wish (according to the configuration of your virtual team) the criteria are based on a systematic review of the literature with studies in the area of performance of virtual teams, that is, it brings many global aspects and analyzed in several countries and different scenarios. He can still use it from time to time after using possible solutions to meet the aspects that are at the top of the Ranking and verify if they felt effects on his team. also a relative contribution to the literature on distributed teams in the very process of structuring the problem. Another contribution of this study is that the decision maker will have a broad view, with this model he receives

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