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## Modeling Publications in Academic Conferences

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### Abstract

The growing trend towards research constitutes a strong springboard for organizing more and more scientific conferences. The global scientific community, now, recognizes the contribution of conferences to the promotion of research and knowledge. Due to the increasing participation of individuals in organizing events, the environment has become very complex. The organizing committee of the conference is now required to identify and respond to a wide range of determinants, in order to balance the needs and objectives of the conference.

The main topic of this research is to study and model the publications of academic conferences. In this paper, we studied and recorded the procedures that are applied to the publications of scientific conferences, which affect the pattern and the success or failure of the conference. Our study deals with conferences of scientific nature, as the participants are highly qualified and recognized academics.

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### 1. Factors that increase the participation in scientific conferences

Joining a scientific conference is a process that can raise the prestige and reward, in a professional way, the participants. It also allows scientists to analyze and solve various issues of their research field, as well as to exchange knowledge and opinions relevant to their interests.

The factors that play a crucial role in participating in a conference can be analyzed in the following categories:

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- **Publications:** While research holds a key role in recent years, the need of researchers for publications is constantly growing (Daniela Rosenstreich, Ben Wooliscroft, 2006). The publishers have taken in mind this need and have fueled their interest in the development of online publications, with the aid of technology. The ever-increasing trend to produce scientific research is a key tool for academic careers (Elke Greifeneder, 2008). This publication trend has been exploited, by the traditional scientific journals, as well as by a new category, the so-called "open access" journals, which constitute free sources of information for the academic community (James C. Ryan, Syed Awais Tipu, 2009).
- **Development and promotion of new knowledge:** The main reason for the organization of scientific conferences consists in the promotion of research and learning (Jeremy Howells, Ronnie Ramlogan, Shu-Li Cheng, 2012). New knowledge is generated, enriched and updated, powered by the scientific conferences, research institutes and universities. The presentation of new knowledge arises from the consideration of new theories or the checking of research results.
- **Networking circle:** The opportunities of exchanging opinions and networking with small groups of researchers, is one of the main reasons of participation in a scientific conference. The recognition of the scientist, which can be derived from his own networking circle, is universally recognized by the Scientific Community.
- **Professional development:** The evaluation and ranking of scientific journals, based on net rates of citations, as well as on factors such as impact factor, has become a necessity in recent years. The prestige and recognition of an academic is directly related to the number of publications that this person has (Judi Marshall, Peter Reason, 2007). From the above, it is clearly shown, the importance of research publications in the professional development of scientists.
- **Topic of a Conference:** One of the main factors of participation in a conference constitutes the theme of the conference. The purpose of organizing the conference gives motivation to the stakeholders who are active in the field, to participate, for further development of knowledge and research in their field.

These factors for participating in a scientific conference are interrelated and act in combination during the process of making the decision to participate or not in a conference. As a consequence, the presence of scientists is regarded indispensable. All the factors that we mentioned, lead to the recognition of the role of conferences, keeping those firmly established in the academic world.

## **2. Variables of scientific dimension**

The main variables related to the publications of scientific conferences consist of specific characteristics, which are analyzed in the present research.

### *2.1 Supporting institutes*

Research is an integral part for the development and efficiency of research institutes and universities. The role that a scientific institute holds in organizing a scientific conference is very important, as it offers the possibility of analysis, implementation and evolution of the researches' results, which have arisen by the conference.

Thanks to the presentation of the research in scientific conferences, the supporting institutes promote, improve and certify the results of their own researches. The participation of several scientists in working groups, in order to promote joint research, leads to rich interaction and creative thinking. During the conduct of scientific conferences, there is a great number of this kind of working groups that is set up, allowing the creation of appropriate partnerships with supporting institutes, aiming at a scientific or business benefit.

Significant collaborations with institutions, organizations or companies can bring additional qualitative value in a scientific conference. Such institutions, as universities, institutes and scientific journals of related research object, may play a supporting role in a conference (Julie M. Neway, 1982). A possible collaboration of an institution with the conference can bring about some extra resources that the conference requires aiming to the excellent organization of the event. Additionally, in that way, it can be given the opportunity to the scientists to create a networking circle and to proceed to a further evaluation of their research data.

It is now well established that the existence of supporting institutes, does not act catalytically in the organization of the conference, but their absence may result in a negative impact on it. This means that the contribution of a supporting institute is not considered one-dimensional in the organization of a conference, but can play a very important role in the preference of the academic world. A supporting institute is able, therefore, to confer added value and additional resources at the conference.

## 2.2 Scientific journals

Scientific journals are a key factor for the academics in order to decide to participate in scientific conferences, presenting the need of the participants for publishing opportunities. These publications constitute the official way of presentation and development of research. It is also documented that they constitute an evaluation criterion in the professional development and recognition in the wider academic community.

Nowadays, the rapid developments result in a growing trend for research, leading to the need for enshrining itself through conferences and articles of recognized scientific journals. This trend highlights the need for new partnerships between scientific conferences and scientific journals. These collaborations may be aiming not only to the publication of the proceedings of the conference, but also to the possibility of submitting integrated publications. At the same time, the benefit becomes even greater, since partnerships with academic journals or publishing houses, for placing scientific journals, increase the chances of attracting more researchers in an academic conference.

Current trends, in terms of evaluation criteria for the academics, encourage the submission of publications in internationally recognized sources, which constitute references for the recognition of the scientific work. As a result, the participation in scientific journals is officially documented, making the presence of the scientific journal, necessary in the organization of the conference.

Special reference is made by scientists, concerning the reliability and severity of journals, with the aid of the rate of impact (impact factor) (Michael Seadle, 2011). With this rate, the validity and significance of a scientific journal is determined. The scientific community as an evaluation criterion uses the specific rate for a scientist. Also, this rate is able to determine the professional development of the scientist, so it is reasonably listed as the evaluation criterion of scientific journals, as the index shows their quality.

Scientists consider the participation in renowned lists as an important factor. However, they give even greater attention to the impact factor that these lists have, since the role of high impact factor is universally recognized in the process of leading to the decision to participate in a scientific conference.

- Journals' Scientific Committee. The variable of the scientific committee of the conference is considered to be much more significant than that of the journals, which belong to internationally recognized lists. The particular point of view is justified by the fact that the prestigious journals, which belong to such lists, have gained high reliability. The scientific standing of the committees of scientific journals is evidenced by the participation of those journals in famous lists (Nana Turk, 2008).

The scientists that participate in the conference aim to future collaborations with members of the scientific committee. Networking with the scientific committee of the conference increases the possibility of future collaboration at all levels of development of the conference, from the part of the attendance of scientists to the creation of the scientific committee. The idea of a contact with scientific journals, with the perspective of a future cooperation, for the benefit of the conference, is what matters for each scientist.

- Periodicity & timelessness of a scientific journal. A key criterion for evaluating a journal is the fact of periodicity of the publications achieved by a scientific journal. When a magazine is included in renowned lists, its frequent periodicity is obvious and expected. For those journals that do not belong to the most famous lists, the criterion of periodicity rises to the preferences of scientists as an indicator capable to increase the number of attendees. This proves that the lack of periodicity can be a negative factor for the participants, as fears of abolition of publication of the journal are arising, while the intervals of publishing are growing.

Greater significance for the attendance of scientists holds the timelessness of the journal, which refers to the years of publication. Through the element of timelessness is arisen the range of research and yet is appointed the trend of establishment in the perception of scientists. A magazine, which is being published for many years, naturally, contains a wide range of research approaches, according to the orientation and field that it acts in.

- **Renowned publishing house.** One of the major criteria for the enhancement of scientific journals is their hosting by famous publishers. It is quite obvious that if the magazine has entered a famous publishing house, this will undoubtedly be a major attraction for scientists. Thus, the scientific journals, which are out of this list, are ranked second in preference.

This finding opens new avenues even for journals that do not belong to internationally recognized lists (Rosalind Hurworth, 2007). The publishers have focused on joining famous sources, such as the ISI. The fact that internationally recognized publishers are publishing some journals, left out of famous lists, gives those journals a new impetus to participate actively in the race for acquiring publications.

- **Open Access Journals.** The open access scientific journals are not of high appraisal in the academic world (S. Nazim Ali, Harold C. Young, Nasser M. Ali, 1996). This is also confirmed by the diversity of the views within the academic world, in relation to the open access journals. Most scientists have their reservations. A large percentage of them think that these journals are a potential tool for the increase of the number of citations, something that plays a very important role in their evolution. According to this view, the open access journals are a major attempt to dissolve the monopolies set by the modern scientific journals. From the perspective of open access journals, it seems that these fail to establish themselves within the scientific world and claim the piece that belongs to the field of publications.

Another part of academics argues that because of the status of open access, which makes these journals open to the general public, the publication is, now, addressed to more people, resulting in an increase of citations. But there is also an opposite and negative view on this topic, which characterizes the publications in open access journals, posts of lower importance, which are considered by some to have been rejected by the renowned scientific journals.

- **Special issue.** The special issue of journals gathers the research work presented at scientific conferences. Scientists have agreed that scientific projects may be published on special editions, on condition that the companion journal belongs to lists. The reason why special editions are a key competitive advantage for the conference is that these editions are able for promoting faster publications (Scott Walter, 2004) This fact gives special advantage to the scientific conference, constituting special issue a powerful competitive tool in the hands of the organizing committee.

### 3. Dynamic simulation system analysis

To understand the function of the dynamic simulation model iThink, we must analyze the parts of which is composed. The dynamic model is composed of: stocks, flows, converters and connectors:

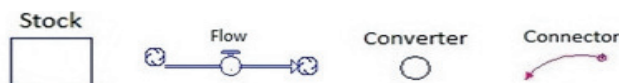


Fig. 1. Dynamic simulation model parameters

#### **4. Identification and explanation of the dynamic simulation model**

There was an attempt to put into practice the variables identified by the theoretical framework and research that influence the publications of academic conferences, by using the Dynamic Simulation Model, with main purpose to test their success in real environmental conditions (Triveni Kuchi, 2004). The dynamic model aims at performing properly the role played by the scientific variables, which we analyzed during our research work, at the start, setting up and perfecting the process of a scientific conference.

The thinking behind the model follows the contemporary business operations. The tank “Company Resources” supplies the tank “Conference Resources” with resources for the organization of a scientific conference. These resources can be of any kind, such as financial resources, technological resources or human resources, i.e. man-hours that people (for example, the organizing committee) have allocated in order to carry out this project. All these resources are available in a scientific conference in order to satisfy leverage and execute the related activities.



should note that we have set an upper limit to the diversion of resources to the variables tanks, since these resources are not inexhaustible.

When all the resources that we have decided to allocate to the particular tank do not reach the upper limit, the condition set is never satisfied. This indicates that the tank is not full and needs more resources. Failure to meet the pre-defined goal, that means the satisfaction rate, is marked with a red bulb. This shows us that some of the conditions that we have set were unable to achieve their goal and need to be tested again, putting more effort and resources on variables that are not fulfilled.

On the other hand, as soon as the total resources provided in a tank exceeds the upper limit, i.e. the tank is full, it is then that the total of variables is fully satisfied (green lights). However, in case the tank reaches its upper limit and resources continue to be imported, then the tank overflows. This means that there are spent more resources than needed to satisfy this factor. When the tank overflows, some of the system's resources are lost and therefore, the management of resources allocated to that variable is incorrect.

The modeling procedure that we have followed may not achieve the goal in absolute, from the very first attempt of execution. It may be needed to change the percentages in our variables or even to grow the operational periods of the model. At this point, we should note that a small part of the resources allocated for a specific variable will not end up in the tank and will be lost through the circuit «waste». In case we have unexploited resources, the subsystems of each variable, ensure the return of those resources to the central tank (subsystem Counterpoise), through the mechanism of resources' return flow.

Very important factors in the analysis of this model are the factors “Regulator” that we have set. These factors are functions of the type “if - then – else” and have been introduced, in order to see whether the variables defined can be fulfilled or not. This circuit is created with the aim to approximate to real conditions and to extract as much real results, as possible.

From the above, we conclude that a very significant advantage of the dynamic simulation model is the circularity that characterizes it. This means that unused resources are transferred to the main tank, so that a new operation cycle of the model is launched. A second, yet, equally important feature of the model is the dynamic nature by which is characterized. This indicates that it has the ability to be readjusted with new data, according to the desired way of the manager, even during the operation time.

#### 4.1 Subsystem of supporting institutes

The satisfaction of the variable of supporting institutes is one of the primary objectives to be achieved, in order to fulfill the purpose of the scientific conferences. This can be demonstrated by the high percentage of scientists who choose to present their research at conferences that satisfy this factor. This fact makes the contribution of supporting institutes essential to the successful conduct of the scientific conference.

The operation of the subsystem starts from the promotion of resources by the tank “Conference Resources”, through the flowchart CR2SI, to the tank “Supporting Institutes”. Due to the amount of resources we have allocated to satisfy the specific variable and through the subsystem we've been studying, the evaluation criteria are satisfied, resulting in the success of the strategy pursued. The resources, which remained unexploited even after the fulfillment of the supporting institutes' variable, are transferred to the tank of returning resources, through the flowchart SI2CSI.

The organizing committee manages the resources transferred from the central to secondary tanks. As a result, the committee is called to break them down, so that the variable with the greatest gravity shall be provided with more system resources. The amount of resources that the organizing committee will provide for the variable of supporting institutes is depicted through the mechanism «PercentCR2SI». The choice of the supporting institute by the organizing committee will be based on the prestige and the value that the achievement of a possible cooperation will lend to the conference. Of course, the organizing committee shall examine the cost borne by such cooperation.

The resources that remain unexploited by the variable “Supporting Institute”, are transferred to the tank “Counter poise SI”, with the aid of flowcharts SI2CSI. The role of the tank of returning resources is the transfer of resources that were left unexploited in the central tank “Conference Resources” (Flowchart CSI2CR). The purpose of this chart is the return and redistribution of resources to the other variables.

Using the control button of the rate “PercentBNsi2CoR”, we control the amount of resources of the trade name of the supporting institute. Once the variable “Supporting Institutes” reaches the percentage that we have determined, then the tank “Brand Name SI” is activated. With the operation of this circuit, resources of trade name are sent to the tank “Company Resources”. In that way, we achieve an increase on the trade name of the particular scientific conference.

#### *4.2 Subsystem of scientific journals*

A second factor of publications in academic conferences is the cooperation of the conference with scientific journals. This collaboration can notably promote the trade name of the conference; in a way that it may become a strong motive for scientists to participate in the conference. Scientific journals constitute a major incentive for participation in scientific conferences, because of the publishing opportunities that those journals provide.

The operation of the subsystem of scientific journals begins with the Organizing Committee negotiating a possible cooperation with this magazine, having available the scientists’ research and publications. The tank “Conference Resources” constitutes the sum of resources that the organizing committee has at its disposal for the conference. Journals have significant benefit themselves, from their cooperation with scientific conferences, such as the promotion of the scientific journal through the website of the conference. Resources that the organizing committee of the conference has decided to dispose are transferred to the tank “Supporting Journal”, with the help of flowcharts CR2SJ and given the rate “PercentCR2SJ”, which is specified

A portion of the resources offered shall be lost through the flowchart SJ2W. The tank “Supporting Journal” will take advantage of the major part of the resources gathered. The unexploited resources will be transferred through the flowchart SJ2CSJ to the tank “Counter poise SJ”. This tank acts as the return of non-used resources of the circuit “Supporting Journal” to the central tank “Conference Resources”.

The more famous and prestigious the scientific journal is, the more are the resources gained by the brand name. The tank “Brand Name SJ” is analogous to the level of satisfaction of the tank “Supporting Journal”. The dynamic model is made in such way, so that the more prestigious is the scientific journal, the most plenty are the resources transferred to the tank “Supporting Journal” through the circuit.

### **5. Implementation of the dynamic simulation model**

To create the models, the modeling software tool iThink, from iSee Systems, was used. iThink creates stock and flow diagrams to model and simulate processes. It presents you the results of specific, defined by the user inputs and connects the interrelationships between procedures and functions. Outputs can be displayed in the form of graphs and tables. In this case, dynamic simulation model techniques were used in the creation of this model. The implementation of creating the dynamic model was an iterative process. It began with a very simple model and then controlled to ensure that the functions defined were correct.

The results of the Dynamic simulation model are shown in table and the graph (Fig. 5 and Fig. 6) that we provide below.



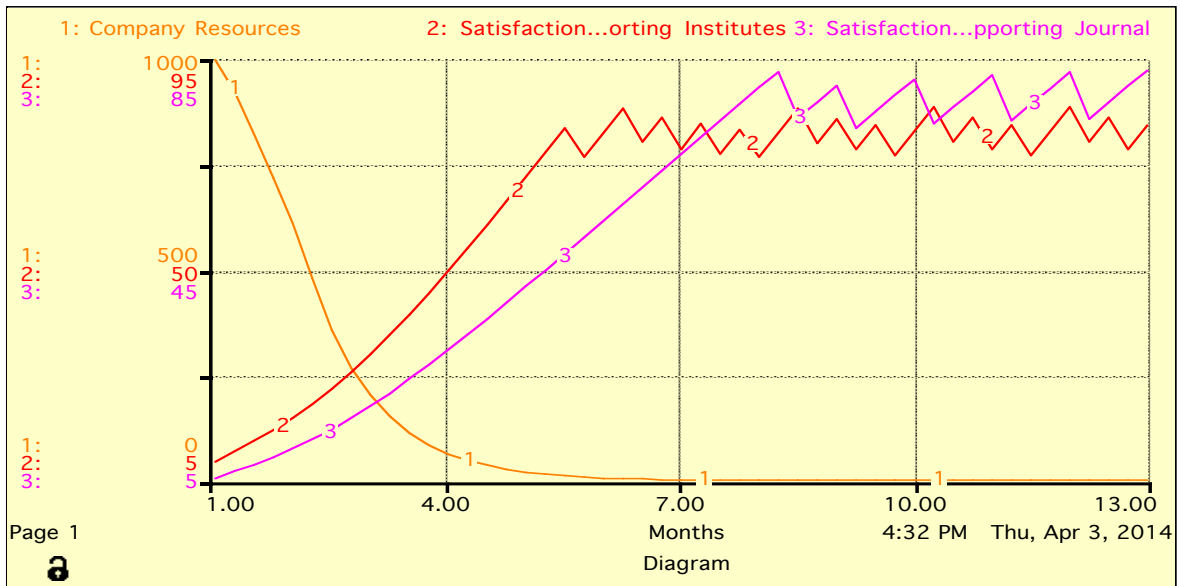


Fig. 3. Satisfaction

4:32 PM 4/3/14		Table 1 (Satisfaction)			
Months	Supporting Institutes	Supporting Journal	Satisfaction Supporting Institutes	Satisfaction Supporting Journal	
Initial	10.00	6.00	9.00	5.40	
1	12.95	7.77	18.51	11.11	
2	18.33	11.00	32.06	19.23	
3	21.64	12.98	49.84	29.90	
4	23.02	13.81	69.88	41.93	
5	23.38	14.03	79.49	54.46	
6	23.35	14.01	76.00	67.09	
7	23.22	13.93	74.16	79.67	
8	23.07	13.84	82.48	80.18	
9	22.97	13.78	79.83	81.36	
10	22.91	13.75	75.88	82.17	
11	22.86	13.72	84.99	82.72	
12	22.81	13.69	80.96	83.08	

Fig. 4. Company Resources in conjunction with the Satisfaction Supporting Institutes and the Satisfaction of Supporting Journal

### 6. Support for decision makers

There is a need to create the interface of the dynamic simulation model, to enable the user to change the values that the factors can get, studied in the research we've done. Figure 5 shows the main user interface of the simulation model. There are two main sections on this user interface: "Supporting Institutes" and "Supporting Journal".



Fig. 5. Simulation Interface

The “Supporting Institutes” section allows the decision maker to determine the amount of satisfaction of Supporting Institutes and Academics. The “Supporting Journal” section allows the user to define the level of the conference prestige. To begin the simulation, the user chooses all the values of the inputs that are desired, and then clicks the run button. The simulation runs for a period defined by the user and pauses to allow the user to review the effects of the decisions made.

The prototype provides the decision maker with various forms of support that guide them through the decision making process. These guides range from the use of status alarms and notifications to the use of visual aids to enhance learning and understanding of various relationships in the context of International Conferences. To aid the organizing committee in making strategic decisions, the user interface of the sustainability model alerts the user with various notifications during the course of the simulation.

For example, if “Supporting Institutes” and “Supporting Journals” are low, a message pops up to notify the users that their System Development is unsustainable. This prototype caters not only for novice users, who may only navigate through three or four main pages, but for the expert users too, who may take advantage of the advanced functionality available in the prototype. The interface was kept simple and designed with ample “help” or “?” buttons that provide the decision makers with a description of various concepts or explanations to improve user autonomy. Color templates as well as repeated and common items were kept consistent so as not to confuse the user and improve usability.

## 7. Conclusions

The purpose of this research is to record the key variables that play a role in the process of publication of international conferences (Wenxia You, Xianjia Wang, 2009). The development of dynamic simulation models as a communication strategy aims to provide an optimal solution for the development of a global conference, in order to bring about the best results of it. In this research, a detailed and in-depth exploration of key variables is being conducted for the publications of scientific conferences, as well as a complete record of the variables that are directly related to the main variables.

Through the theoretical framework and the comparison of various operations of the model we were able to identify and test, with success, the communicative objectives of the scientific variables that take part in the process of publishing when organizing international scientific conferences. The ultimate aim is the successful organization of a scientific conference. The present study is a comprehensive attempt to record and develop the scientific variables of publications in international conferences, which leads to the creation of a strategic model for successful organization of international scientific meetings.

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