Cost division models in BIBSAM and FinELib consortia

Licensing electronic resources in a consortium setting involves significant amounts of money as well as interesting aspects of group dynamics. The perfect pricing model for consortia is one that is considered reasonable for all parties involved. The standard models offered by publishers today do not meet this criterion. In an effort to find better alternatives, the Swedish consortium BIBSAM (The Royal Library's Department for National Co-ordination and Development) and the Finnish consortium FinELib have developed models for division of costs between consortium members. Population parameters and usage statistics are used as ingredients. Both BIBSAM and FinELib strive for models that are based on facts, that are transparent, and that are perceived as 'fair' by the consortium members. Searching for relevant parameters on which to build the models is a key issue. This article describes the approach chosen by BIBSAM and FinELib, and the models implemented so far.

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Introduction

The Swedish consortium BIBSAM and the Finnish consortium FinELib have developed side by side since their first licences were signed in 1996 and 1997 respectively. Although there are differences between the two consortia in terms of organisational structure, funding, membership, etc. there are several areas where BIBSAM and FinELib work in similar ways towards similar goals. One such area is the development of models for division of cost among consortium members. The need to address the problems associated with cost division emerged after a few years of experience with licensing electronic resources in a consortium setting. This article describes how BIBSAM and FinELib have approached the challenge of finding cost division models that are acceptable for all parties involved, including individual consortium members as well as information providers.

BIBSAM and FinELib

Some facts about the BIBSAM and FinELib consortia are listed in Table 1.

BIBSAM is the Royal Library's department for national co-ordination and development. The Royal Library is the national library of Sweden. The overall objective of BIBSAM is to improve the provision of information for higher education and research. Managing a licensing consortium is one of several activities designed to promote the use and development of the resources of Swedish research libraries. The consortium has, since the first licence was signed in 1996, grown to be a major factor in the provision of electronic resources in Swedish academic and research institutions. In co-operation with BIBSAM, a network of Swedish National Resource Libraries is negotiating and managing subject specific resources on behalf of the BIBSAM consortium.[1]

FinELib is one of the activities of the National

	BIBSAM consortium	FinELib consortium
Legal body	National library	National library
Operational level	National	National
Organisations in consortium	Universities Polytechnics Research institutes Museums	Universities Polytechnics Research institutes Public libraries
Funding	Central funding for BIBSAM staff. As of 2003, all costs for the licensed resources are paid by the participants	Central funding for FinELib staff. Around EUR 3.5 mill. in subsidies are available for some of the licensed resources.
Resources licensed	E-journals A&I databases Dictionaries Reference books	E-journals A&I databases Dictionaries Reference books Portal software
Staff	2.5 (licensing)	4.5 (licensing) 2 (portal)
Turnover 2002	EUR 10 mill.	EUR 9.3 mill.
Agreements 2003	25	35
URL	http://www.kb.se/BIBSAM/	http://www.lib.helsinki.fi/finelib

Table 1. Facts about BIBSAM and FinELib consortia.

Electronic Library Services department at the national library of Finland. The main objective of the department is similar to that of BIBSAM. The aim of FinELib is to support higher education, research and learning in Finland. FinELib was launched by the Ministry of Education in 1997 as a project, but was formally established as part of the national library in 2000. Licensing is the core activity of FinELib. However, several additional services related to acquiring and improving access to electronic resources are provided to the consortium as well as to other stakeholders. In the future more emphasis will be placed on developing access methods and related value added services.

Why do we need alternative models for division of costs within consortia?

During the first few years of operation, cost division within the BIBSAM and FinELib consortia was primarily based on the models offered by the information providers. Standard pricing models for bibliographic databases and encyclopaedias often take the size of the participating institutions into account. Full-time equivalent students, FTE, is a parameter commonly used when allocating each member of a consortium to an appropriate pricing category. FTE statistics of good quality are available in both Sweden and Finland, and FTE-based models have been relatively uncomplicated to work with for BIBSAM and FinELib.

Pricing models for electronic journals, however, have proved to be much more complex and controversial. In most cases, the price of print subscriptions from the publisher in question in a certain year has been used as the basis for the cost for each individual member. The span in cost within the group of consortium members, from old universities with large journal collections to small research institutes or young polytechnics with no or few subscriptions from the publisher in question, is significant. Both BIBSAM and FinELib have e-only license agreements with publishers where all consortium members get access to the full portfolio of the publisher's electronic journals. When all members have access to the same material but some pay significantly more than others tension is created within a consortium. BIBSAM and FinELib have been working together with consortium members to find alternative cost division models that are perceived as being 'fair'.

The BIBSAM approach

The work of developing alternative cost division models for BIBSAM was initiated during the spring of 2000 as a result of discussions within the consortium advisory board. A small working group consisting of library directors and BIBSAM

staff was formed. The main tasks given to this group were to analyse the pricing models in the existing BIBSAM consortium agreements and to suggest alternative models for cost distribution. The results from the project confirmed that many of the existing models distributed costs in a way that was perceived as unfair and not sustainable for the BIBSAM consortium[1].

In search of useful parameters on which to build alternative models, population figures available from the Swedish National Agency of Higher Education were identified. This data includes the total number of students or researchers, or students and researchers, within specific subject areas.

Usage statistics available from the information providers was considered useful as a tool for evaluating the existing models and for identifying relevant population parameters to be used in future models. However, usage was not recommended as a parameter to be used in the model design per se. One reason was that usage statistics available from the information providers at the time were of questionable quality. More importantly, basing the costs on usage could possibly lead to restrictions in accessing and using electronic resources, which would be considered counter-productive.

The working group concluded that it was unlikely that they could find one single model that would be applicable for all the different resources licensed by the consortium. Instead, they suggested designing several alternative models, tailored to take the size of potential user groups for each specific resource into account. The group acknowledged that the development and evaluation of pricing models must be an ongoing process. They recommended that a small working group continue to work closely with BIBSAM staff to further explore these issues.

The results from the above-mentioned study have served as guidelines for BIBSAM staff when developing new pricing models. A milestone was the implementation of a population-based model when signing a new three-year licence with Kluwer Academic Publishers in 2002. Since then, BIBSAM has applied tailor-made distribution models to agreements with Elsevier Science, Emerald, Oxford University Press, and Springer-Verlag. BIBSAM has worked together with the publishers when implementing the new cost division models, and the price of the resource for each consortium member according to the new model is included in the licences.

The FinELib approach

The initiative to create a new model for the sharing of costs among FinELib members came from the consortium, indicating a clear need. During Spring 2002, a new model was created by a working group representing the higher education institutions. The model was approved by the consortium in September 2002 and implemented in 2003. FinELib is currently applying the new model to the division of costs for agreements with American Chemical Society, EBSCOHost, Emerald and Kluwer Academic Publishers.

When creating the FinELib model, the first step the working group took was to establish the principles behind cost division. Next they discussed how to deal with the change of costs as a result of the new model. This two-step approach

General principles	Practical guidelines
Fairness Cost division has to be as fair as possible for all consortium members. The costs are defined by criteria, which have been clearly determined, are based on facts and are transparent.	**New cost division is applied when renewing contracts, 2-4 cases annually** The new cost division is applied when renewing contracts, not during a licence term. The resources that the new cost divisions will be applied to are agreed upon by consortium members.
Based on facts The model must be based on facts, which are easy to verify. FinELib collects and maintains the facts on its web pages.	**New cost division is applied in new contracts** With new agreements the model can be applied from the outset.
Simplicity and transparency The model has to be simple and easy to understand and explain.	**Minimum and maximum prices** A minimum price is defined for each resource. The parameters of the model are used when calculating the minimum price. The price cannot be lower than the price given by the publisher. A maximum price may not exceed the price the organisation would pay alone, outside the consortium.

Table 2. Principles of cost division in the FinELib consortium.

Consortium	Agreement		Ratios and parameters
FinELib	Same model is used for all agreements where alternative cost division is implemented: American Chemical Society, EBSCOhost, Emerald, Kluwer Academic Publishers.	0.10	FTE students
		0.30	FTE teachers and researchers
		0.60	Number of downloaded articles, alternatively old cost if usage statistics are not available.
BIBSAM	Academic Press	0.25	Old cost
		0.25	FTE researchers within medicine and natural sciences
		0.25	FTE researchers within STM (all fields, including medicine and natural sciences)
		0.25	FTE students
	Elsevier Science	0.20	Old cost
		0.20	FTE students within STM
		0.60	FTE researchers within STM
	Emerald	0.50	Old cost
		0.50	FTE students
	Kluwer Academic Publishers	0.33	Old cost
		0.33	FTE students
		0.33	FTE researchers
	Oxford University Press	0.50	Old cost
		0.50	FTE students
	Springer-Verlag	0.20	FTE researchers within medicine
		0.40	FTE researchers within STM (all fields, including medicine)
		0.40	FTE students

Table 3. Parameters and ratios used in cost division models. Note that the models shown for the Academic Press and Elsevier Science agreements for BIBSAM were designed to take BIBSAM into a new combined licence for ScienceDirect from 2003. The two models shown were designed based on the portfolios, usage, and costs for the separate Academic Press and Elsevier Science agreements prior to the merger.

worked well. Because the consortium members had first agreed on the principles, it was easier for them to understand and agree on the new costs.

The principles were divided into two categories, general principles and practical guidelines (see Table 2). Practical guidelines were needed to ensure that no unexpected or unreasonable changes would occur in pricing. As implementation of the new model will result in a shift in costs, the consortium members will need time to plan ahead and balance their budgets accordingly

Selecting and weighing parameters for the models

The parameters selected, and the weight put on each parameter in the different models used by BIBSAM and FinELib, are shown in Table 3.

At the moment, FinELib works with the same set of parameters for all agreements where the new cost division principles are applied. The parameter usage statistics, or alternatively old cost if statistics are not available, will be specific for each resource. The two parameters – students, and teachers and researchers – will be similar for all agreements. The model is a result of lengthy discussions and careful evaluations done by the FinELib working group. The number of students is selected to represent the size of the organisations, while the number of teachers and researchers is selected to represent the interest and need for the resources. The usage is selected as an indicator of the value of the resource in question to each organisation.

BIBSAM works with different models, each tailored to the specific resources by BIBSAM staff in co-operation with a working group. Based on analysis of usage statistics, appropriate population parameters are selected. The models are designed to mirror potential usage while at the same time easing the transition from old to new cost for individual members. For resources with a subject-specific profile, population parameters are selected to reflect potential users within that field. For example, experience shows that medical faculty members are a particularly active group as users of electronic journals. This population is therefore included as a

parameter in the SpringerLINK model, as the Springer portfolio is of particular interest to consortium members with medical programs.

Creating the calculation formula

The cost division models described here require a defined group of consortium members and a total cost to work with. These two parameters are closely linked, as the negotiated cost for access to a specific resource is likely to be based on a defined group of participating institutions.

Using the FinELib model shown in Table 3 as an example, the calculation formula will look as follows:

0.1 x FTE-Smember / FTE-Stot
\+ 0.3 x FTE-TRmember / FTE-TRtot
\+ 0.6 x Dmember / Dtot
= Rmember

Rmember x Ttot = Tmember

FTE-Smember: number of students in member organisation
FTE-Stot: total number of students in the whole group
FTE-TRmember: number of teachers and researchers in member organisation
FTE-TRtot: total number of teachers and researchers in the whole group
Dmember: number of articles downloaded by member organisation
Dtot: total number of articles downloaded by the whole group
Rmember: ratio of cost for each member organisation
Ttot: total cost for the whole group
Tmember: cost for each member organisation

Adjustments

Ideally, careful selection and weighing of parameters should result in a cost distribution model where no further adjustments are needed. However, both BIBSAM and FinElib have seen the need to introduce limiters, including setting maximum and minimum levels. The maximum cost must not exceed what the organisations would pay alone, outside a consortium setting. A principle for setting the minimum level has proved to be more difficult to define. If available, the lowest cost for small organisations as set by the publisher can provide some guidance. If usage statistics are available when creating the model, evaluation of the expected cost per downloaded article for a small organisation with little usage may be useful.

The new cost, as predicted by the model for each individual member, is likely to differ from their current cost. This is a desired consequence, given that the main motivating factor for introducing new distribution models is dissatisfaction with the old models. However, the shift to the new model can be problematic for those faced with significant increases. Needless to say, those who get savings seldom complain. One strategy to avoid the negative effects of steep and sudden price increases is to implement the new model over time. This approach is used in the FinELib model, where the maximum price increase from one licence period to the next is set to 90 per cent and the maximum decrease 25 per cent. Another strategy is to include the current cost as a conservative parameter in the model. This has proved to be useful, especially in situations where usage statistics are not available as a tool for selecting and weighing other relevant parameters (BIBSAM), or as a parameter to replace usage in the model calculations (FinELib).

Adjustments introduce subjectivity, which is in conflict with the principles of building totally transparent models that are based on facts alone. However, there is agreement that the adjustments described above improve the resulting models.

Example Emerald

Both BIBSAM and FinELib implemented new cost division models when renewing their licence agreement with Emerald for the year 2003. The effect on the level of cost for the individual consortium members is illustrated in Figures 1 and 2. Both cases present membership and division of costs as they appear in the actual licence agreements. However, the scale of the costs has been manipulated to mask the exact price paid by each consortium member as this might be considered sensitive information. The consortium

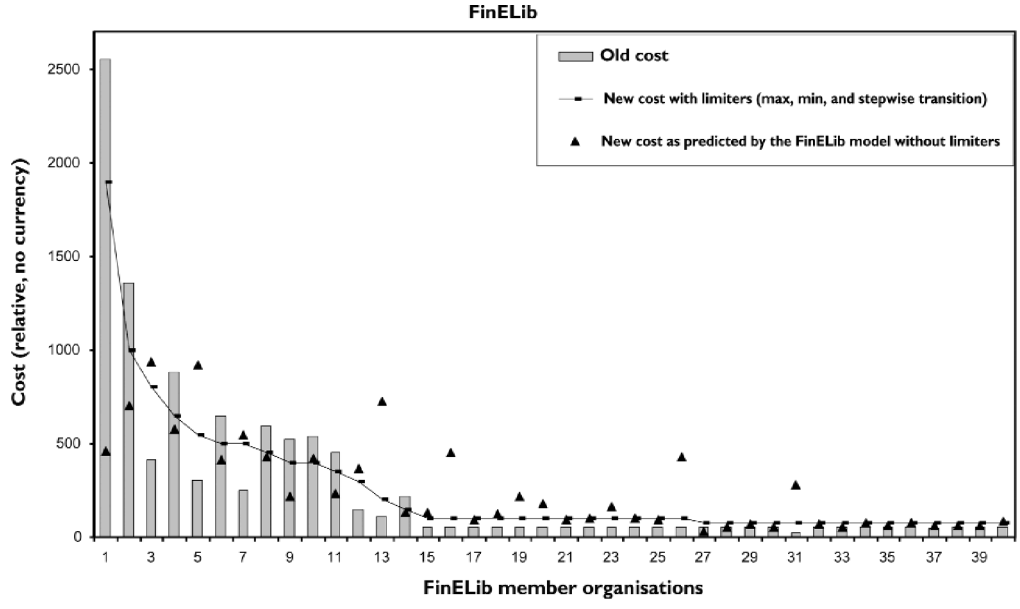

Figure 1. Example Emerald: Old and new costs for FinELib consortium members.
The diagram illustrates changes in cost distribution as a result of implementing the FinELib model on the Emerald agreement. The sum of the three distribution alternatives shown adds up to the same total. The drawn line illustrates what the members will pay in the first year of the transition process. The filled triangles illustrate the cost distribution when the new model is fully implemented.

members are represented by numbers rather than the institution names.

Figure 1 illustrates the effects of implementing the new distribution model on the Emerald agreement for the FinELib consortium. The model includes Emerald usage statistics as a parameter specific to this database. In addition, the general population parameters 'FTE students' and 'FTE teachers and researchers' are included. The new cost, as predicted by the new model without limiters, is for many members substantially different from the old cost. By introducing the new model gradually over several licence terms, the individual members are given time to accommodate.

Figure 2 illustrates the effects of implementing a new distribution model on the Emerald agreement for the BIBSAM consortium. The model was tailored to this specific agreement by BIBSAM staff. Usage statistics from the previous licence period were used as a tool to find relevant population parameters on which to base the model. The distribution of costs if the model was to be based on usage alone, i.e. cost in proportion to usage, is shown as one of the four scenarios in Figure 2. Journals in the Emerald portfolio cover many different subject areas, and no subject-specific population parameters that would mirror the use of this resource could be identified. A formula with equal weight put on two parameters, the old cost and the total number of students, was chosen. Maximum and minimum levels were defined.

The Emerald example illustrates that historical spending is not a good indicator of potential usage. Many journal publishers still use historical spending as a basis for their pricing. When lacking better alternatives, historical spending is still considered to be a useful parameter when negotiating the overall cost for BIBSAM and FinELib consortia. However, it does not work well in this case as the single parameter for division of costs between consortium members. Evidently, new pricing models for consortia are needed.

Experiences so far

Both BIBSAM and FinELib are open, 'opt-in, opt-out' consortia, meaning that each member may choose which of the agreements negotiated by BIBSAM and FinELib staff it wants to participate in. The new models were implemented with practically no loss of members, although major changes in costs were involved. This indicates that the justifications behind the models are satisfactory to the consortium members. According to initial feedback, the new

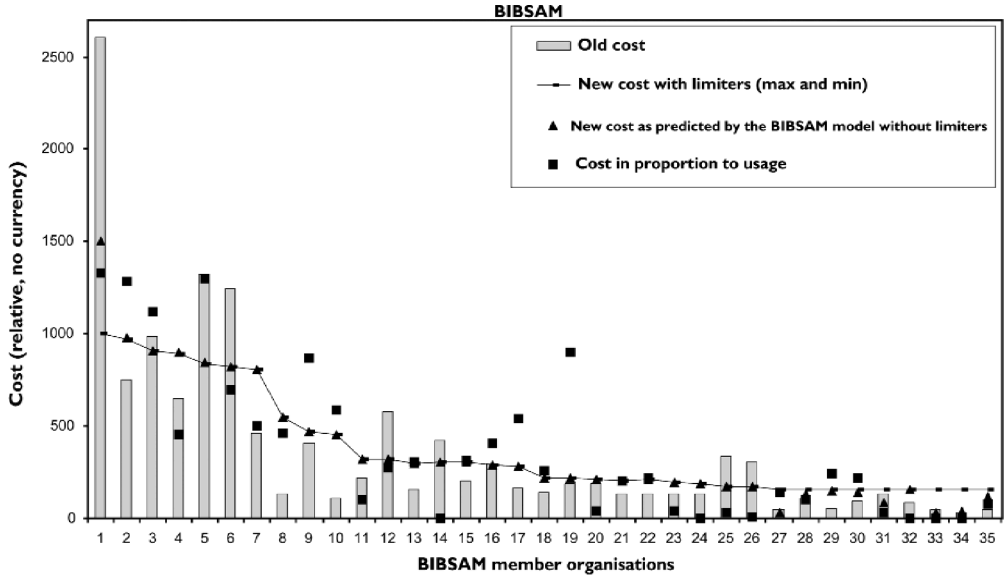

Figure 2. Example Emerald: Old and new costs for BIBSAM consortium members.
The diagram illustrates changes in cost distribution for BIBSAM members as a result of implementing a new model on the Emerald agreement. The sum of each of the four distribution alternatives shown adds up to the same total. The model was tailor-made for this agreement, putting half of the weight on old cost and the other half on FTE students. The new cost, represented by the drawn line, was implemented directly without a transition period. The filled triangles represent the distribution according to the model prior to introducing maximum and minimum levels. These values overlap with the new cost except for member 1, who will pay less than what is predicted by the model (maximum level), and members 27-35, who will pay more than what is predicted by the model (minimum level).

cost division models are considered to increase transparency and fairness. The importance of these factors when introducing new models in a consortium cannot be underestimated.

Implementation of the new models tends to shift costs between large and small members. Overall, the large universities that pay the most today will end up paying less and the polytechnics that pay low fees today will get increases. However, by tailoring the models to each specific agreement, as is done by both BIBSAM and FinELib, these positive or negative effects will not be additive. One member may end up paying a lot more than before for continued participation in a certain consortium agreement, while the price drops significantly for another agreement. This has made it easier for the consortium members to accept the new models.

The availability of central funding to help pay for the licensed resources is a factor affecting how consortia operate, including the issue of cost division. Central funding was available to the BIBSAM consortium during the first few years of operation. However, beginning with 2003, the members cover all costs for the licensed resources, and there is at the moment no need to address the issue of different funding sources when designing the models. The implementation of the new models has helped the BIBSAM consortium through this challenging phase, moving away from subsidies. In Finland, central funding is available for some of the licensed resources, including three out of the four agreements on which the new model for cost division has been applied. It is possible that central funding helped ease the introduction of the new model in Finland. However, the issue of subsidies was not taken into account when the FinELib model was developed.

Challenges for model designers

A dilemma when working with the cost models is that all parameters are needed for all members in the group. Both BIBSAM and FinELib have different categories of members, including non-academic institutions for which FTE statistics on students and researchers are unavailable. When applicable, the total number of staff has been used instead of official FTE statistics. Licensing for

public libraries is relatively new in Finland and is not yet stabilised. Therefore, the public libraries are not included in the FinELib cost division model. A new model will probably be needed for this purpose.

Issues that need careful consideration include how to merge new members into the model and how to design models for multi-year agreements that allow for members to 'opt out' without affecting the cost to be paid by the others. The models need to be flexible, but should also provide the members with some sense of stability and predictability. A member that has made a commitment to a multi-year agreement should not be faced with increased costs because another member leaves. It is good practice to write into the licences how these situations are to be resolved.

The starting point for the distribution of costs as described in this article is a fixed total sum. Any reduction given to one member will need to be picked up as an increase in cost for another member, or several members. Based on the experiences from the BIBSAM consortium, it has proved to be easier to design models for large groups rather than for small groups. The effect of redistribution is less dramatic when spread out over a large number of participants. It has proved to be more challenging to design models for very expensive resources, and also for resources where there is a very large gap in existing costs among members. In such cases, the actual sums to redistribute represent substantial parts of library budgets.

Future models for consortia

New pricing models for consortia are needed. BIBSAM and FinELib have benefited from stimulating co-operation within a network of Nordic consortia during the period of developing and implementing new models in Sweden and Finland. The models described here are tailored to these specific consortia and may not readily be adapted as 'off-the-shelf' options to be offered by the publishers. Hopefully, the experiences and ideas described here will contribute to finding new and better alternatives for consortia.

Reference

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