Library Statistics with Confidence: Facts from Figures with no Fear

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Abstract. Libraries collect a lot of statistical and other data about their operations but often a greater part of the information collected is not utilized as effectively as it would be feasible. However, the use of simple basic statistics is often all that is needed to show the value and impact of the library. The methods of reporting and measuring the library services offered to the libraries may be given "top down" instead of balancing the methods with above-mentioned and "bottom up" idea that serves the local needs of the libraries. The libraries need support in the use of statistics and therefore it is necessary to organize training sessions of the use of collected data for them. The aim of this paper is to provoke discussion on the field of library statistics and to encourage the librarians to use the data collected. Further, the aim of this paper is to give an idea of training the libraries to combine data from different sources to refine it in order to take the lid off phenomena possibly not recognized earlier in the library and to use the data in an illustrative way to advocate for the library by showing the evidence of impact.

Keywords. Statistics, Performance measures, Impact, Libraries, Library management, Cost effectiveness

1. Introduction

The mission of libraries is to provide fresh, topical and relevant information for the needs of education and study. So, library and information services are usually perceived as a basic service of the municipality, school, university or another mother organization and though we all know and recognize the value of the library, it is not enough that the library is doing its tasks well, but the matters it is promoting has also to be seen in the society and it must be possible to show it, too.

Fairly sophisticated methods have been used in the evaluation of library performance. Kim et al. (2009) adapted the use of h-index introduced by Hirsch (2005) as a method for collection evaluation.

Library statistics can be considered an essential tool in evidence-based librarianship (EBL): Eldredge (2000) introduced the seven-part conceptual framework of EBL, applying the idea of best-available evidence, whether based upon either quantitative or qualitative research methods.

Sumsion (1997) and Davies (2002) introduced the necessity of the use of statistics. There is no lack of the encouragement to the use of statistics either: both Sumsion (2001) and Davies (2002) introduced the nature and scope of library statistics and the role of evidence gained from library statistics. Both of the above-mentioned emphasize easy and simple statistics. Later, many other authors, too, have paid attention to the issue.

The international standard "Library performance indicators" (ISO 11620) introduces a number of performance indicators that can be counted basing library statistics as well as it contains a list of terms and definitions that apply for the purposes of performance measurement of all types of libraries. For the moment, the standard is being revised by the International Organization for Standardization (ISO) and the draft of the standard (ISO/DIS 11620) is being circulated for comments in the member countries of ISO.

The new standard for Methods and procedures for assessing the impact of libraries (ISO 16439) being prepared by the ISO will bring more lighting to the terminology in relation to assessing the impact of libraries as well as it will introduce ideas for assessing the impact of libraries. In the draft of the standard (ISO/DIS 16439) that was sent for comments to the member countries of ISO, following definitions for some terms are suggested.

- ❖ **Input**: Contribution of resources in support of a library (e.g. funding, staff, collections, space, equipment).
- ❖ **Output**: Products of library processes (e.g. titles catalogued, loans, downloads from the electronic collection, reference questions answered, attendances at events).
- ❖ **Outcome**: Direct, pre-defined effect of the output related to the goals and objectives of the library's planning (e.g. number of users, user satisfaction levels). This includes outcomes that concern the library's institution or community.
- ❖ **Impact**: Difference or change in an individual or group resulting from the contact with library services. The change can be tangible or intangible.
- ❖ **Process**: Set of interrelated or interacting activities which transform inputs into outputs (e.g. cataloguing, lending, reference service).
- ❖ **Value**: The importance that stakeholders (funding institutions, politicians, the public) attach to libraries and which is related to the perception of actual or potential benefit. Monetary value may be included

The first four terms of the list above forms the "impact chain" of library introduced by Seppänen & Laitinen (2012) (fig. 1).

As seen, there is plenty of guidance, encouragement and theory, and a lot of work is done for the collection of statistics, but the utilization of data collected may be slight.

Crumley et al. (2002) remarked some questions to be considered as possible obstacles of the implementation of EBL: the librarians may have bad readiness to conduct research because they may not have a solid background in methodology, research may not be encouraged in their workplace, and their daily tasks may burden them so that there is no time enough.

Høivik (2012) on the other hand, paid attention to the need to develop the measuring with so called "bottom-up" approach to promote the commitment of the librarians.
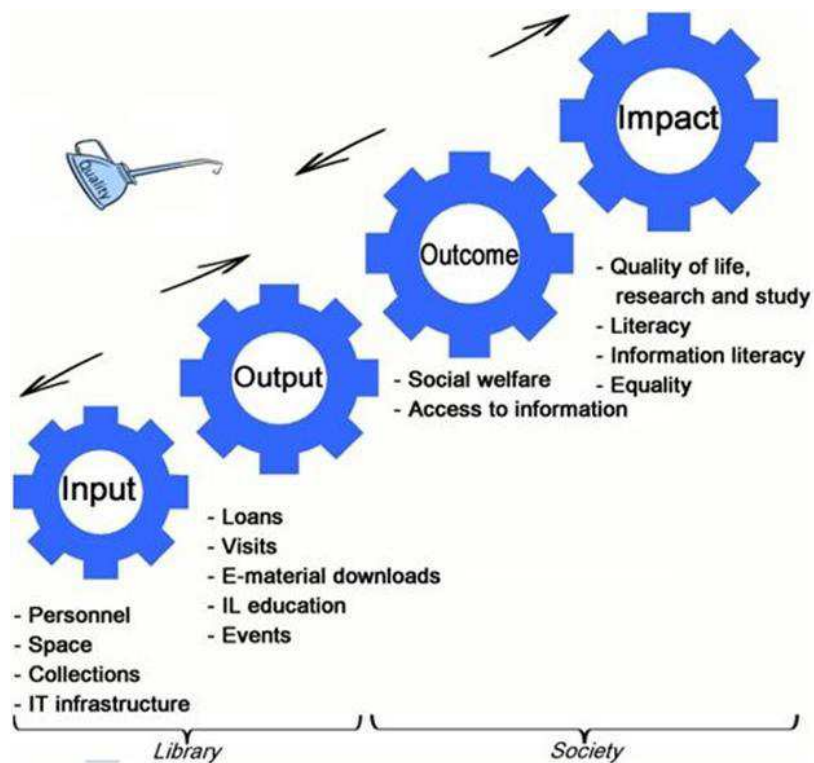
Fig. 1. Connections between input, output, outcome and impact. Turning of any of the cogs affects all the others. To get the desired impact, one must define the number and quality of the needed outcomes. Inputs must be adapted to produce the needed outcomes. The oil can above the cogs represents quality: it is the "oil" that makes the cogs turn more effectively. (Seppänen & Laitinen 2012.)

A lot of statistical information about library operations forms naturally in the operational process of the library (fig. 2).

Collecting objective data from the library statistics next to subjective data obtained from user surveys, gives possibilities to get more exact information about the quality of the services and about the effects of resource allocation on the customers and services and this way, information for assessing the outcomes and impact of the library is gained.

Information about outcomes also affects the policy set by the decision-makers. The information received from impact assessment, benchmarking and comparisons and the policy followed give guidelines to strategic planning being realized as well in the library as in its mother organization, and this has its effect on the input to the library.
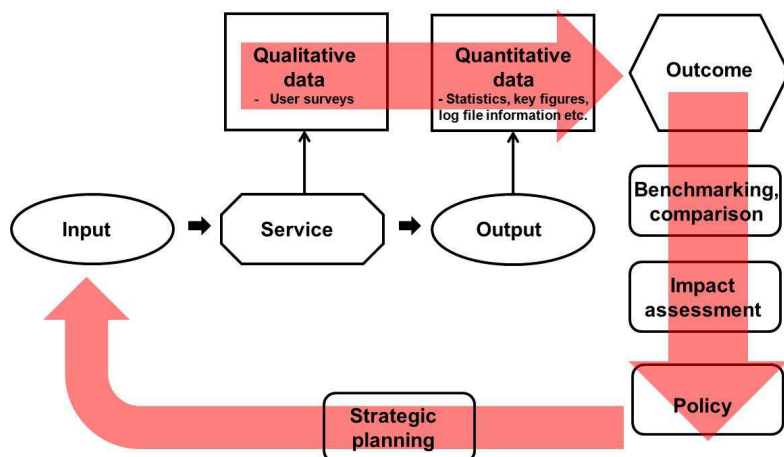

Fig. 2. Input to the library produces services, which are evaluated with the help of statistics (quantitative data) and data from the user surveys (qualitative data). The result of the evaluation (impact assessment, benchmarking etc.) affects the library policy to be practiced and that way to the strategic planning and input to the library.

2. Why Library Statistics?

There is hardly any quarter that would bring the value of the library into question but in hardening economic climate, there is still more pressure to show the value, impact and efficiency of the library operations. In this situation, concretizing is needed.

The information forming naturally about library operations is manifold (lending, collections maintenance, library visits, the use of money, person years etc.), but it can be described with simple basic statistics compiled from the normal course of the library's everyday life. The use of statistics in the library may be applied, but not limited to:

❖ Follow-up and reporting of library performance

❖ Development plans, planning of the operation, the evaluation of resource requirements, prioritization and strengthening of the critical fields of know-how

❖ Quality / impact: performance evaluation

❖ Indicators calculated on the basis of statistics are needed for the operation of the library analysis and benchmarking

Hence, the goal of the statistics is to give the sufficient and correct picture about the library and its situation to the management or another decision-maker to be used in planning and development.

So, the library statistics are an important and useful strategic tool to the management of the library. The purpose of the statistics is to give the management of the library or another decision-maker a satisfactory and correct picture about the situation of the library as a support to them - the statistics are the mirror of the library!

3. Simple is Beautiful - Revealed by Statistics

A widely used and simple way of using the statistics is a histogram. The advantage of the graphic presentation is that on one glance one can see what the question is about. From a picture that has been well done, the message opens faster than e.g. from a table or from a long verbal report – graphics is the shorthand of the statistics (fig. 3).
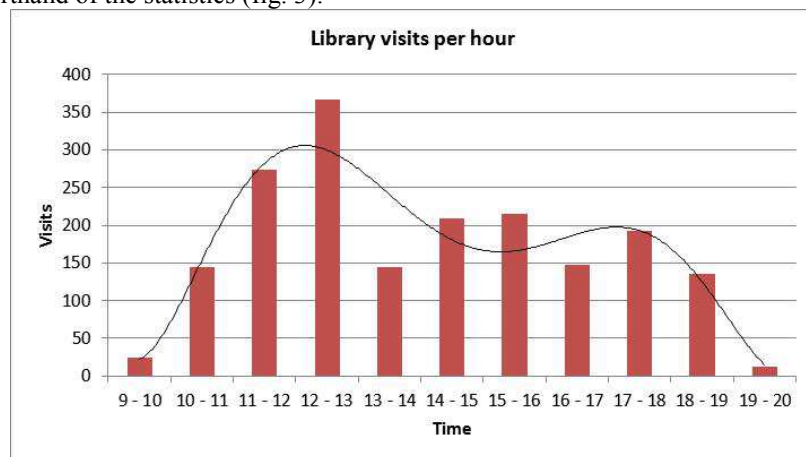

Fig. 3. One picture is worth a thousand words: a simple graphics is enough to tell the most essential e.g. about the number of library visits and rush-hour peaks during the day.

A poorly known and perhaps undervalued method for the follow-up of the change is the index (fixed base index). It simply is a ratio that shows the change in per cent of the chosen basic value which is set as one hundred (fig. 4, 5).

The index time series on the fig. 4 comes from the real statistics and it shows that the input into the book materials has increased by nearly 30% during the follow-up period, but the number of the book material loans has decreased slightly. So in this case, the simple statistics graphics was enough to uncover that financial input alone was not enough for the increase in the use of book materials - were the right type of materials chosen because in spite of the amount of acquisitions the number of loans was treading water?

What makes the index extremely useful, is that the change of totally different variables can be comparably set side by side - here is the power of the index (fig. 5).
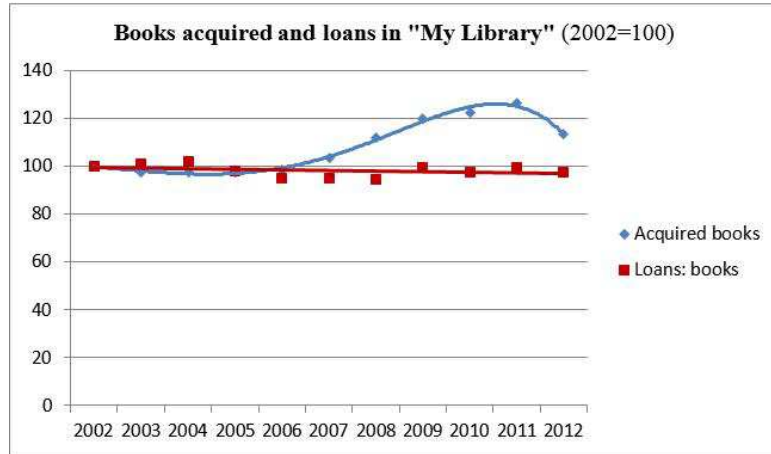
Fig. 4. A simple use of index. In this example, the library started "the book bees" and acquisitions of books were increased as a result, but the trend of loans was slightly decreasing in spite of increasing the allocation of economic resources to the purchases of books. (Finnish Public Libraries Statistics Database.)

The example shown in the fig. 5 comes from the annual statistics of a single Finnish university and it seems parallel to observation made by Laitinen (2010) using a more extensive material concerning Finnish polytechnic schools. For sure, the number of downloads and the cost-efficiency perceived, do not tell anything about the quality of service and answering this question belongs to the field of the user survey.
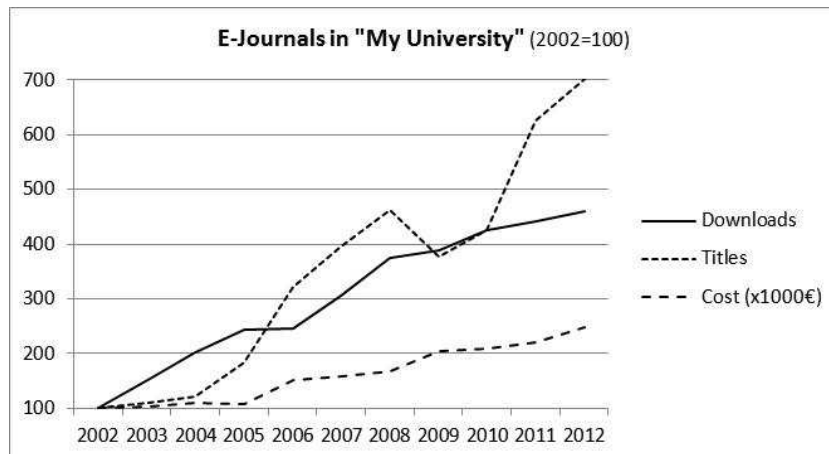

Fig. 5. The power of index: Variables with a totally different measure can be set side by side and shown as a time series. Almost a five-fold increase of full-text downloads of e-journal articles is detected in comparison with a 2.5-fold increase in the money used. The number of titles available changes annually depending of the licence agreements each year. The trends of both use and material purchased in comparison with the money used shows cost-efficiency. (Finnish Research Library Statistics Database.)

4. Discussion

To win the obstacles possibly hampering the utilization of statistics, it is important to support and inspire the librarians to take the use of the statistics, because the expertise of the library management is needed to give the decision-makers relevant information about their libraries.

No doubt a tool for increasing the readiness of librarians to use the statistics are the training sessions and workshops addressing the questions related to the collecting of statistics and to the reporting of the library performance and combined use of data collected from different sources to refine it in order to find new ways of measuring the library performance and to show the impact and the value of library.

In the training, it would be important to emphasize that a simple statistics is sufficient in everyday management and decision-making in the library and the librarians do not have to master complicated scientific methods.

Further, though plenty of guidance and collection of statistics already exist, it seems that "top-down" approach is more pronounced than "bottom-up" approach. As a matter of fact, both of the above-mentioned are needed.

The vision and strategy of the library, as well as funding and the terms of reference are set by the management of the libraries and their mother organizations.

The expertise, creative ideas and proposals for the methods applicable to measuring the library performance and the impact assessment on the other hand, come from the grass roots level. The balance between these two approaches is found with discussions, and the mutual understanding will be the starting point for the evaluation and assessing the impact of library. (Fig. 6.)
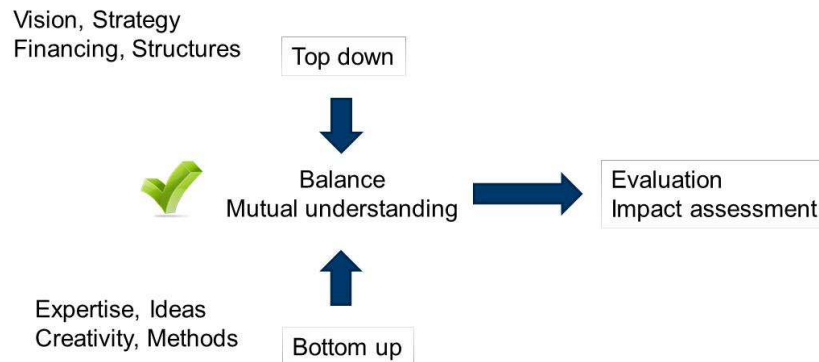

Fig. 6. Methods of measuring must be balanced between "Top-down" and "Bottom-up".

So, it is important for the management of the library to "take the gauntlet" to win the institutional practices in order to look for an inspiration how the manager of the library as the best expert of his organization forms the view on

what information about the library is necessary to give the decision-makers and other interest groups of the library.

It is as important to be able to develop reporting flexibly when necessary, retaining the time series of the historical information of the organization at the same time; acquaintance of the history and present state connected to the view on the development of the library field are the basis from which the library exerts per future.

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