

Measuring Digital Library Performance

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Input



Process



Output



Outcome

- materials
- money
- manpower

work flow
guidelines
procedures
methods

customer
products
services
COLLECTION

Results
Benefits
Impact
Change
Quality
Accomplishments



Efficiency



Effectiveness

EVALUATION

MODELS

Goal-Attainment
System Resources
Internal Process
Constituency Satisfaction

METHODS of Data Collection

OBTRUSIVE

Perceptive Data

Interview

Questionnaire

UNOBTRUSIVE

Evidence-Based

Documented data

Observed Behaviors

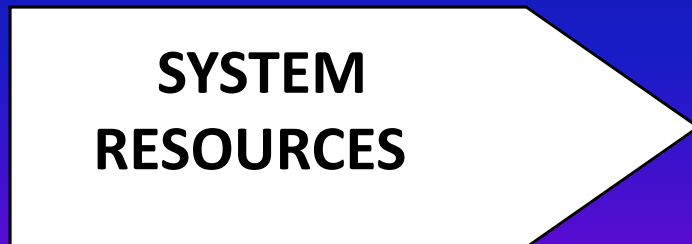
Models of Performance Measurement

MODEL



MEASUREMENT

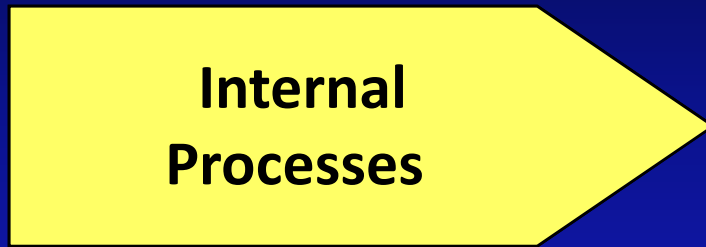
- **Goals & objectives**
- **Outcomes & results**
- **Customers' satisfaction**



- **Inputs**
- **Benchmarks**
- **Standards**

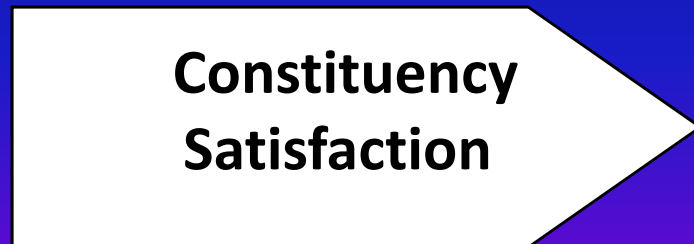
Models of Performance Measurement

MODEL

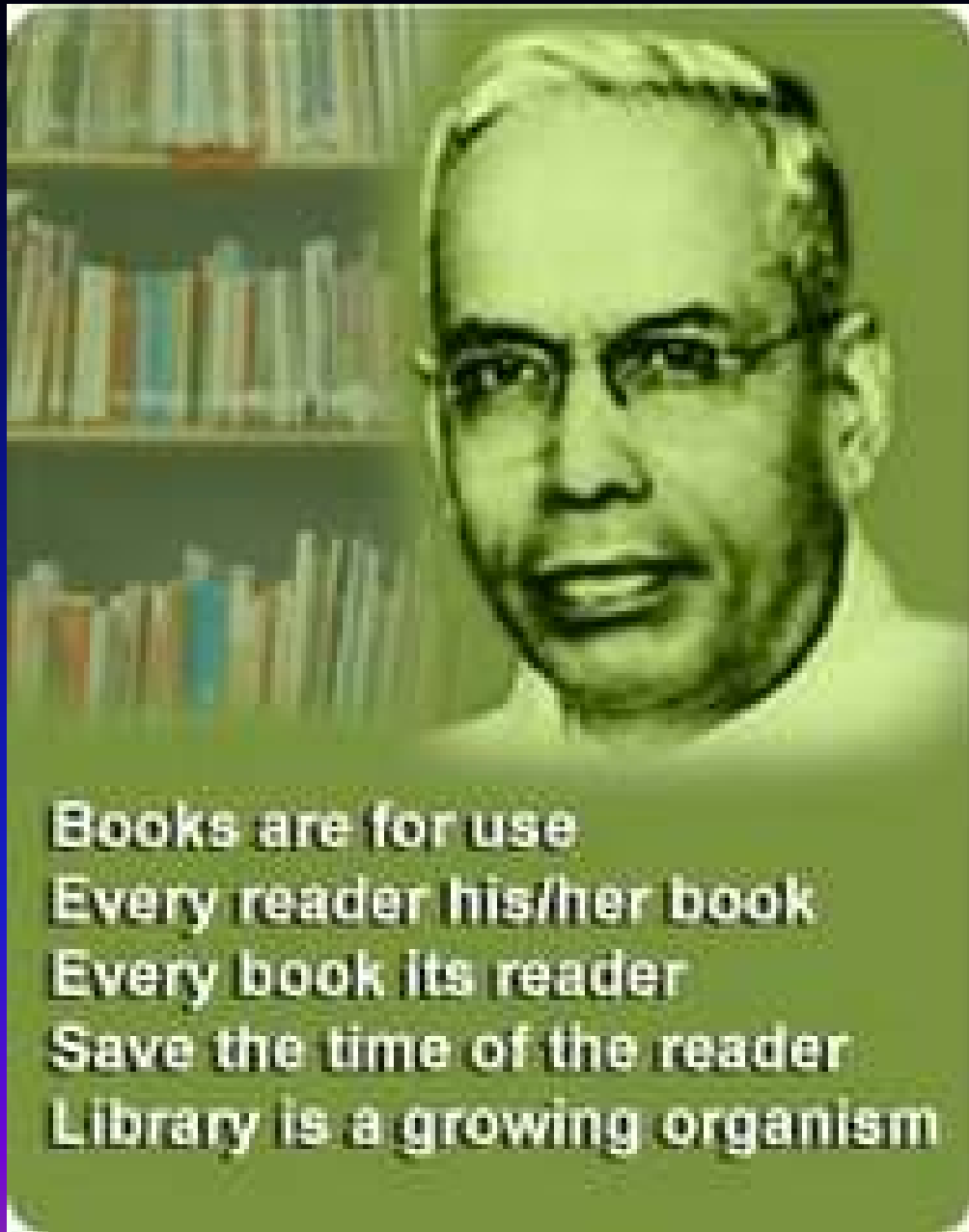


MEASUREMENT

- **How things are done**
- **Procedures / standards**
- **TQM / BSC / ISO / CRM**



- **Impacts, benefits**
- **Users satisfaction**



Books are for use
Every reader his/her book
Every book its reader
Save the time of the reader
Library is a growing organism

**Ranganathan's
Five Laws of
Library Science
(1931)
focus on users
and
services**

Purposes of Digital Libraries



What do we want our library to be?

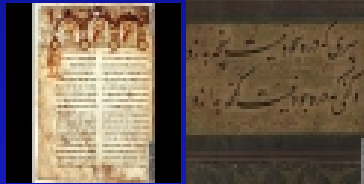
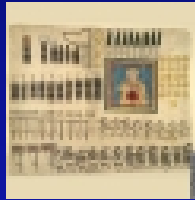
Purposes of Malaysia's Digital Libraries?

- to expedite the systematic development of: the means to collect, store, and organize information and knowledge in digital form; and of digital library collections in Malaysia;
- to promote the economical and efficient delivery of information to all sectors of Malaysian society;
- to encourage cooperative efforts which leverage the considerable investment in Malaysia's research resources, computing and communications network;
- to strengthen communication and collaboration between and among the research, business, government, and educational communities;
- to take an international leadership role in the generation and dissemination of knowledge in areas of strategic importance to Malaysia; and
- to contribute to the lifelong learning opportunities of all Malaysians.

(<http://www.arl.org/resources/pubs/mmproceedings/126mmappen2>) 11 nov 2012

The World Digital Library offers free online access to cultural materials from libraries and archives worldwide.

Our goal is to narrow the digital divide between countries



The World Digital Library (WDL), launched April 21, 2010 -free online access to rare and important cultural materials from libraries and archives around the world.

- a project of the U.S. Library of Congress, the United Nations Educational, Scientific and Cultural Organization, and more than 30 partner institutions.

- **Every country in the world is invited to participate.**

- the WDL aims to become a unique educational resource that will help improve international understanding and reduce the digital divide between countries. New content is being added regularly.

(http://www.america.gov/digital_library.html?gclid=CKiS6YLqjaMCFUpB6wod8w9GUQ)

(<http://www.wdl.org/en/about/partners.html>)

The WDL site is available to everyone and for free --
<http://www.wdl.org>.

1. What are the benefits when your library joins the wdl?
2. What are the implications of joining?
3. Who pays for the cost?
4. What technology is used in the project?
5. How do we deal with copyright aspects?

Entrepreneurs = Turn Problems into Opportunities

> READING HABIT

Library should stay open every day

I HAVE just discovered that the state public library operates on weekends and is closed on one weekday. Why is this so?

The state library has to keep up with the times. Neighbouring countries have libraries in

every township and provide easy access. Their libraries are open seven days a week from 10am till 8 or 9pm. Books are available for booking and can be renewed online.

Our library offers only basic

facilities. The management should open the library every day of the week and arrange for staff to work on a rotation basis.

L.M. TAN
Seremban

NST, 9 August 2007

How can we take advantage of this public complaint?

Books are for use.

Each reader his book.

MISSION / VISION

Each book its reader.

Save the time of the reader.

The library is a growing Organism.

GOALS

OBJECTIVES

STRATEGIES

PROGRAMS

ACTIVITIES

EVALUATE/MEASURE



Evaluating Digital Library Performance

Intellectual aspect

- Quality content
- Coverage
- users' study

Administrative aspect

- Budget
- Financial procedures
- Legal aspect
- Consortium
- Usage

Technical aspect

- Electronic contents
- System design
- Maintenance & Updates

Evidence-based Evaluation

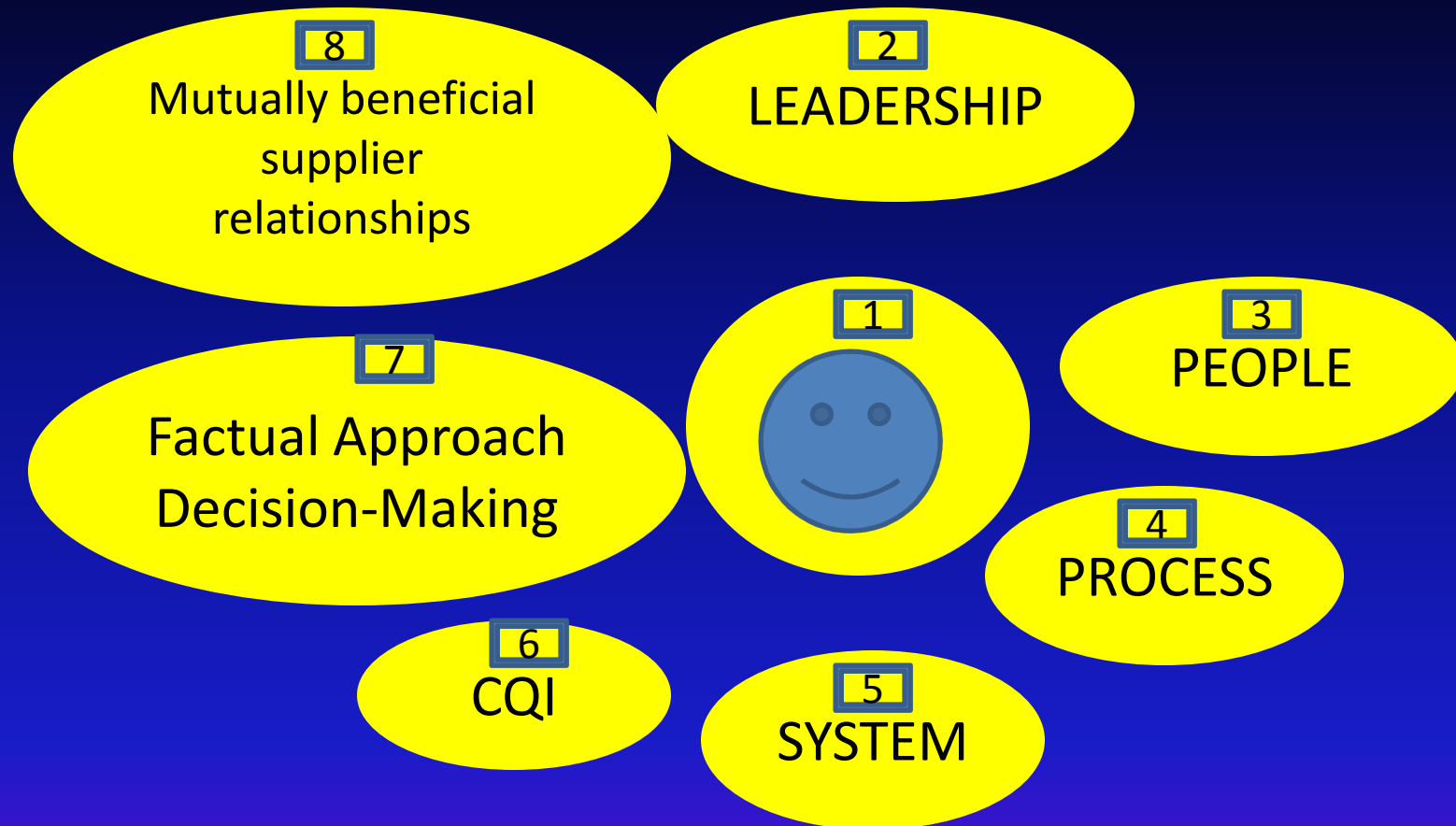
Good decision-making needs reliable data.

Competent managers use factual data in decision-making to avoid biases / unfairness and to maintain integrity.

EVIDENCES



Quality Management Principles



(ISO 9000:2000 & ISO 9000:2004)
<http://www.iso.org/iso/en/iso9000-1400>

Unobtrusive Method - Participants Unaware / Unaffected

Observation

Observe how children play in a small group.

Observe how the dept. head conducts meetings.

Observe how students search for information.

Data Tracking

Info. system used to track activities & behaviors.

Principle: **Action cannot lie.** Words can lie.



Collect data from observable behavior / actual incidents / recorded evidences = objective, factual data

Perception vs. Fact

Are female students more hardworking than male students?

Strongly agree Agree Neutral Disagree Strongly Disagree

What are the empirical data?

Collect facts from BEHAVIOR and ACTION

What time did the students get up in the morning?

What did they do the first thing after they get up?

What did they have for breakfast? How long did they eat BF?

What time did they start working? What time did they break for tea?

What time did they pack up to go home? Go somewhere else?

How good are the library's services?

Performance	No of response	%
Excellent	3	6.12
Very good	19	38.77
Satisfactory	27	55.00
Unsatisfactory	0	0.00
Total	49	100.00

July
2007

Performance	No of response	%
Excellent	2	18.18
Very good	2	18.18
Satisfactory	6	54.54
Unsatisfactory	1	09.09
Total	11	100.00

July
2008

Turn Perceptive Survey into Evidence-based

- The library has adequate collection.

strongly agree agree neutral disagree strongly disagree

- The library has up-to-date collection.

strongly agree agree neutral disagree strongly disagree

What instruments should be used to replace perception with evidence-based data?

Measuring Quality of Services

Performance	No of response	%
Excellent	3	6.12
Very good	19	38.77
Satisfactory	27	55.00
Unsatisfactory	0	0.00
Total	49	100.00

A

Time taken to download materials from the Library web site	No of response	%
5-10 minutes	3	05.08
11-20 minutes	19	32.20
21-30 minutes	27	45.76
> 30 minutes	10	16.95
Total	59	100.00

B

PERCEPTION-BASED vs. EVIDENCE

1. My ability to search electronic databases is:

- advanced
- moderate
- beginner

2. I can do the followings:

- turn on the computer and use the mouse.
- use Microsoft Word to write academic papers.
- use Microsoft Word & Powerpoint to do academic works.
- use Microsoft Office to do academic works and data analysis.
- use Microsoft Office and Directors to do academic works, data analysis, and multimedia presentation.

How good is the library collection?


Quality

- 1.
- 2.
- 3.

Quantity

- 1.
- 2.
- 3.

***Save the
time of the
reader.***



Web page design

- **Simple**
- **Easy to use**
- **Attractive**
- **Informative**
- **Not crowded**
- **Fast retrieval**

“Excellent page design can make useless material look attractive, but it still remains useless material. Conversely, poor design can mean that potential readers never see excellent material, as they may become bored intolerant and confused, and eventually abort their attempts at viewing the information.”

Aesthetic and minimalist design

The amount of information should be minimal to make the page look relevant, but not crowded.

- **Accuracy and relevance of information on the Web site**

Do we all want accurate and reliable information for us to make decision for action?

Have we verified that sources of information are accurate & reliable before we deliver them to users?

- **Information Security** How can we be sure that whatever data we submit online will be safe, i.e. giving away personal information: IC no., metric / bank card no?



Useful Links

- Links to other useful resources relevant to users' need, other library collections that have similar resources, e.g. Advertisement of job vacancies for students
- Are all links in working condition?
-
- **Download speed**
Conduct a study of download time of different materials from different locations

User Consultation

Relevance of Web site content
Users' need → **system design**

- User involvement --- content selection and interface design.
- In the beginning & throughout the project



Elements of a user-friendly Web site

- working links any time you use them

Interaction between the library and the user

- **Feedback to users**
- **Users can send questions / suggestions to librarians;**
- Users can store info they have searched and continue at a later time
- HELP desk 24 x 7
- Forum / group discussion available

- **Help users recognize, diagnose and recover from errors**
- Users must be helped to recognize, diagnose and recover from errors.
- This involves the system expressing error messages in an understandable user language (i.e. not in code) to indicate a problem and constructively suggest solutions to the problem.

Flexibility and efficiency of use

Flexibility of use refers to the ability of a system to accommodate both the expert and novice user. A design feature invisible to the user, called accelerators, speeds up the interaction between the user and the system, and contributes to efficiency of use.

- **User control and freedom**
- User control and freedom involves allowing the user the option of exiting an unwanted state of the system without having to go through an extended dialogue.
- a button on the Web site that allows the user to return to the library home page while exploring any link

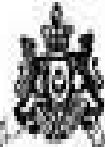
Error prevention

- **Error prevention**
- the ability of the system to prevent the user from making errors. This could take the form of good error messages or a careful design that prevents the problem from occurring.
- the Web site should have methods of error prevention in place, such as the option of checking the details of the transaction before submission, **a question mark, a warning sign to ascertain users' decision.**

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S. Secy. A.

No. 1120/53/6



STATE SECRETARY'S OFFICE,
JOHORE,

21st Sept. 53

JOHORE BAHRU,

Tel. Nos. 2222 or 2223 No. 22
C.A. Nos. 2222 or 2223 No. 24
A.S. Nos. 22, 23

Sir,

RECEIVED

I have the honour to refer to your letter No. C80.11692/52 dated 12th June 1953, addressed to the British Adviser, Johore, on the question of the status of Pedra Branca Rock some 40 miles from Singapore and to inform you that the Johore Government does not claim ownership of Pedra Branca.

I have the honour to be,
Sir,
Your obedient servant,

(M. SETH BIN SAAID)
AG: STATE SECRETARY
JOHORE.

To:
The Hon'ble
The Colonial Secretary,
Singapore.



Enriching the Future.



Valuing the Present,



Preserving the Past,

***Librarians and
Information Professionals***

REFERENCES

- Agosti, M., Nunzio, G. M. D., & Ferro, N. (2004). Evaluation of a digital library system. *Workshop on the evaluation of digital libraries, DELOS WP7* (pp. 73–76). Padova, Italy.
- Association of Research Libraries (1995). Definition and purposes of a digital library. Retrieved July 17, 2002, from: <http://www.arl.org/sunsite/definition.html>
- Bertot, J. C., Snead, J. T., Jaeger, P. T., & McClure, C. R. (2006). **Functionality, usability and accessibility: Iterative usercentered assessment strategies for digital libraries.** *Performance Measurement and Metrics, 7(1), 1728.*
- Bollen, J. & Luce, R. (2002). Evaluation of digital library impact and user communities by analysis of usage patterns. *Dlib Magazine, 8(5)*. Retrieved March 15, 2005 from <http://www.dlib.org/dlib/june02/bollen/06bollen.html>
- Bollen, J. Luce, R., Vemulapalli, S. S. & Xu, W. (2003). Usage analysis for the identification of Research trends in digital libraries. *Dlib Magazine, 9(5)*. Retrieved March 15, 2005 from <http://www.dlib.org/dlib/may03/bollen/05bollen.html>.
- Borgman, C. L. (1999). What are digital libraries? Competing visions. *Information Processing and Management, 35, 227243.*
- Borgamn, C. L., Larsen, R.(2003). ECDL 2003 Workshop Report: Digital Library Evaluation Metrics, Testbeds and Processes. *DLib Magazine, 9(9)*. Retrieved May 8, 2007 from <http://www.dlib.org/dlib/september03/09inbrief.html#BORGMAN%20>
- Borgman, C. L., Leazer, G. H., GillilandSwetland, A. J., & Gazan, R. (2000). Evaluating digital libraries for teaching and learning in undergraduate education: A case study of the Alexandria Digital Earth Prototype (ADEPT). *Library Trends, 49, 228250.*
- Carter, D. S. & Janes, J. (2000). Unobtrusive data analysis of digital reference questions and service at the Internet Public Library: an exploratory study. *Library Trends, 49, 251265*
- Choudhury, G.S., Hobbs, B., Lorie, M. & Flores, N.E. (2002). A Framework for Evaluating Digital Library Services. *Dlib Magazine, 8 (7/8)*. Retrieved March 8, 2007 <http://www.dlib.org/dlib/july02/choudhury/07choudhury.html>
- Jeng, J. (2005a). Usability assessment of academic digital libraries: Effectiveness, efficiency, satisfaction, and learnability. *LIBRI, 55(23), 96121.*

- Jeng, J. (2005b). What is usability in the context of the digital library and how can it be measured? *Information Technology and Libraries*, 24(2), 4756
- Marcos André Gonçalves, Bárbara L. Moreira, Edward A. Fox, Layne T. Watson (2007) "What is a good digital library?" – A quality model for digital libraries. *Information Processing and Management*. 43 (2007) 1416–1437
- Marchionini, G. (2000). Evaluation digital libraries: A longitudinal and multifaceted view. *Library Trends*, 49, 304333
- Meyyappan, N., Foo, S., & Chowdhury, G. G. (2004). Design and evaluation of a taskbased digital library for the academic community. *Journal of Documentation*, 60(4), 449475.
- Xie, H. (2006). Evaluation of Digital Libraries: Criteria and problems from users' perspectives, *Library and information Science Research*, 28, 433-452.
- Yang, S. C. (2001). An interpretive and situated approach to an evaluation of Perseus digital libraries. *Journal of the American Society for Information Science and Technology*, 52, 1210-1223.
- Thong, J. Y. L., Hong, W. Y., & Tam, K. Y. (2002). Understanding user acceptance of digital libraries: What are the roles of interface characteristics, organizational context, and individual differences? *International Journal of Human Computer Studies*, 57, 215-242
- Saracevic, T. (2004). Evaluation of Digital Libraries: An Overview. Presented at the DELOS Workshop on the Evaluation of Digital Libraries. Retrieved April 12, 2007 from http://www.scils.rutgers.edu/~tefko/DL_evaluation_Delos.pdf
- Saracevic, T. (2000). Digital library evaluation: toward evolution of concepts. *Library Trends*, 49(2), 350–369
- Saracevic, T. & Covi, L. (2000). Challenges for digital library evaluation. *Proceedings of the American Society for Information Science*, 37, 341350.
- Singh, I. K. (2003) Criteria for the development of effective university Web sites. *South African Journal of Information Management*. Vol.5(3) September 2003
- Xie, H. (2006). Evaluation of Digital Libraries: Criteria and problems from users' perspectives, *Library and information Science Research*, 28, 433452.



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*Thank you for your attention
& Response*