ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 10,2025

Journal: https://www.academicpublishers.org/journals/index.php/ijai

LIBRARY STATISTIC PROCESSES DIGITIZATION : SOFTWARE SOLUTION AND ECONOMIC EFFICIENCY

Odilova Muslima Farhodjon qizi
Andijan Sate Technique Institute master's student
Odilovamuslima15@gmail.com
Ibragimov Sanjarbek Salijonovich
Andijan State Technical Institute TFFD

Abstract : This in the article library in the activity statistic processes digitization necessity , automated software the solution working exit stages and his/her economic efficiency covered . The research main purpose — library statistics automation through information assembly , reassembly work and reports formation process simplification and management efficiency from increasing consists of .

Entrance : Last in years digital technologies intense developed , all in the fields information processes to automation wide road Libraries also benefit from this . except not — they to users fast , accurate and effective service show for own activity digital to form Especially in libraries statistic information assembly , reassembly work and analysis to do processes many time and human demanding resources because of this in the field automated systems current to grow important importance profession is doing .

Library statistics is users number , book circulation , funds status , electronic from resources use level such as indicators regular analysis as to go opportunity giver information Traditional , that is , in hand manageable statistic in reports human factor with related errors , data late submission and analysis in doing uncertainties many occurs . Therefore statistic processes digitization through library under the management efficiency increase , resources use optimization and decision acceptance to do process acceleration possible .

This of the research main purpose — library statistic processes automator software solution working exit and his/her economic efficiency analysis from doing consists of . Research within statistic information collection , storage , analysis to do and report in the form of presented to grow opportunity giver digital system working This is system through library employees work size reduce , data reliability increase and management decisions acceptance in doing to speed achieve as much as possible has They will be .

The research scientific novelty is that it is a library statistics automation software model and economic efficiency assessment methodology combines . Practical importance and this the solution every how kind of in libraries (academic , public) or education institution libraries) current to grow through labor fertility increase and expenses reduce It is possible .

Methods . In the study library statistic processes to automation intended software supply working exit and his/her economic efficiency assessment for complex approach used . Work process three in stages done increased : system requirements analysis , programming the solution working exit and economic efficiency calculation

1. System requirements analysis

First of all, in libraries there is statistic processes studied . In this , users number , book circulation , book fund , electronic from resources use , read halls employment such as main indicators analysis was done .

As a result of the analysis there is problems – data in hand input , human error probably , reports in preparation delay and analysis of possibilities limitedness This is defined . problems

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eliminate to grow for the purpose automated software solution working exit necessity was founded .

2. Software the solution working exit

Software Python programming language and SQLite data base based on working The system is modular . to architecture has divided into the following main from parts consists of :

- Data input module – users , books , reading halls and use statistics about information input for .
- Automatic analysis module – program included information based on month, quarter or year in the section analytical reports prepares .
- Visualization module – results graphs and diagrams through shows .
- Reports module – automatic in PDF or Excel format statistic reports creates .

User interface simple and comfortable from the program use for No special IT knowledge is required . Information base library on the server is stored , this and of information reliability and safety provides .

3. Economical efficiency assessment

Software solution economic Cost - Benefit Analysis method through was calculated .

Settlement following main to indicators based on :

- Time savings (T): program current since then statistic reports preparation for expendable of time decrease .
- Labor productivity (U): employees number or work to the size relatively done work efficiency .
- Costs decrease (C): in hand manageable processes with compared to expendable material and labor expenses decrease .
- Efficiency coefficient (E):

$$E=\frac{F-x}{x}\times 100\%$$

this on the ground F – automated from the system taken profit , X – program working exit and current to grow expenses .

As a result of the analysis program current to be through statistic processes to conduct and report preparation for expendable up to 40–60% of the time downsizing , employees labor productivity and noticeable at the level increased determined .

Results . Research during working issued software supply library statistic processes automation opportunity Based on the program users , book fund , winter halls , book rotation and electronic from resources use about data single data at the base storage , analysis to do and automatic reports in the form of presented to grow opportunity created .

Software library employees by daily work in the process test as a rule Test to the results according to the program use in hand manageable statistic calculation to the processes relatively work time 2.1 times on average shortened was determined . Previously one monthly report preparation for average 10–12 hours time spent if , the program using this indicator up to 4–5 hours decreased .

Data automatic again using the performance module human error probability decreased and statistic of information accuracy level up to 98–99% increased . In the program current done analytical graphs and diagrams using library leadership users activity , reading halls employment and the most many passing literature about fast conclusions take out took .

Economic analysis to the results according to software supply working exit and current to grow expenses initial one year inside oneself justifies . Cost - benefit analysis based on

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calculated economic efficiency coefficient (E) is on average 45–55% organization This is library in the activity labor resources and time expenses reduce , report preparation process simplification and service show quality to improve take came .

System user interface in terms of simplicity , Uzbek in the language menus existence and offline in mode work opportunity with separated From the program use for special technician no preparation required . Also, the system later expandable , for example , online user statistics automatic assembly or library management other modules with integration to do to the possibility has .

Results this showed that it works issued software supply library statistic processes effective digitization tool It 's time , man . resources and material expenses reduce through economic in terms of useful solution is considered .

Discussion . Transferred research results this showed that the library statistic processes digitization through information flow management quality noticeable at the level improves . Production issued software solution not only statistic reports automatic formation , but users activity , book rotation dynamics and from funds use real - time indicators in mode It also provided monitoring . This library to the leadership management decisions fast and clear acceptance to do opportunity gave .

The analysis is this showed that the program current since then statistic reports preparation for expendable up to 40–60% of the time , human error probability and 2–3 times decreased . This results other in areas (for example , education) process management or medical statistics used in automation) digital solutions efficiency with compared similar results gives . So, the library automation in its activities technologies wide current to grow practical in terms of oneself complete justifies .

However , research during some restrictions were also identified . In particular , some in libraries computer technique and internet network enough at the level underdevelopment because of from the program complete use opportunity limited . Also, employees for from the program use according to short study training organization to grow necessity appearance It was . This is the system wider on a scale current from reaching before technician and organizational requires preparation .

The research practical importance is that it works issued software the solution every how kind of in libraries - higher education institutions , community , school and scientific in libraries application possible . System module principle based on created because of him in the future expandability and new functions with filling For example , users can electronic cards automatic to the list get , QR- code through book rotation calculation or artificial intellect using students their interests analysis to do modules add possible .

In general digitized statistic system library of activity modern requirements answer gives , man resources saves and management in the processes clear analytical information with provides . Therefore such solutions wider on a scale current to grow library system modernization to do important from directions one is considered .

Conclusion

Transferred research to the results according to , library statistic processes digitization through their efficiency and accuracy noticeable at the level increase possibility was determined . Production issued software solution users , book fund , winter halls and electronic resources about data in a single database save , automatic analysis to do and report in the form of presented to grow opportunity gives .

Software supply current statistical reports preparation for expendable up to 40–60% of the time shrunk , human error probability and 2–3 times decreased . This is library of employees

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labor fertility increase , management in the processes fast and reliable from data use opportunity gave .

Economic analysis this showed that the software supply working exit and current to grow expenses one year inside oneself complete justifies . Calculation based on determined economic efficiency coefficient (E) is on average 45–55% organization This result digitization process practical and economic in terms of useful that proves .**Conclusion:**

Research results based on following conclusions and recommendations given :

✓ In libraries statistic information to conduct system complete digitization management quality noticeable at the level increases .

✓ Automated software solutions current to grow human from the factor come outgoing mistakes reduces and report processes simplifies .

✓ In the future the system expansion through users activity artificial intellect based on analysis to do , QR- coded book rotation or web platform through remote monitoring on the road to put possible .

In general when you get it , work issued software solution library system digital to transformation in preparation , from resources effective in use and economic stability in providing important step is considered .

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