MAPPING RESEARCH OUTPUT OF GURU GHASIDAS VISHWAVIDYALAYA CHHATTISGARH

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ABSTRACT

This paper presents a scientometric analysis of research publications in Guru Ghasidas Vishwavidyalaya (GGV). The publications published in 1994 to 2014 and also indexed in Web of Science (WoS) were considered for the analysis. Different scientometric indicators have been calculated to give better insight of the research performance measured in terms of quality as well as quantity. Moreover, collaboration at different levels such as author, institution is measured along with the status of collaboration at international level. The major research areas have been also explored. This study provides a very brief but informative summary of research publications at GGV.

KEYWORDS: Scientometrics, Research Performance, Publications

Guru Ghasidas Vishwavidyalaya is a Central University of India, located in Bilaspur C.G. State, established under Central Universities Act 2009, No. 25 of 2009. Formerly called Guru Ghasidas University (GGU), established by an Act of the State Legislative Assembly, was formally inaugurated on June 16, 1983. Scientometric analysis has emerged in the last few years, basically deals with the study of measuring and analyzing science, technology and innovation. The objective of the study is to attain an analytical view of overall research status of GGV using standard scientometric techniques. Few other similar studies (Bormann et al., 2015; Kundra & Srinivasan, 2004; Bhattacharyya et al., 2005) performed a similar analysis of some institutions.

DATA COLLECTION

For collecting the publication metadata, the renown Web of Science (WoS) was used which covers a selected group of journals and conferences. The data was collected for the period 1994-2014. The 21 years data is a quite large period for details analytical purpose. The query used for the collection of data was: [OG = "GURU GHASIDAS VISHWAVIDYALAYA" Timespan=1994-2014, Indexes=SCI-EXPANDED, SSCI, A & HCI]. The data was obtained in April 2015. There are different types of record such as article, proceedings paper, book review, note, review, meeting abstract, letter, editorial material etc. Each record in WoS consists of 61 fields including meta-data about the records, such as paper title, author address, citation references etc.

METHODOLOGY

The standard Scientometric methodology was followed to compute various parameters like Average Citation Per Paper (ACPP), Cited Percentage (CP), proportion of Highly Cited Papers (HiCP) and Internationally Collaborated Papers (ICP), and different quality indexes (h-index, g-index, hg-index, P-index). The authorship pattern has been identified along with top collaborative authors. The top productive authors were identified and their performances were accessed based on their publications' impact. The most collaborating institutions and countries have been recognized using extraction of information from affiliation text. Finally the major research areas were explored using WoS category information and mapping them to a predefined 14 major areas of research. The parameters have been obtained by a programmatic analysis of the collected data using R.

RESULTS

Research Output and Growth Trend

Total 327 publications were found for the period 1994-2014. Fig. 1 shows the year-wise growth of total papers (TP). An increasing trend was observed in the last 21 years except some sloth growth in 2008 to 2013.

1 http://www.ggu.ac.in/ggu_at_glance.html
3 https://webofknowledge.com

*Corresponding author
Figure 1: Year-wise research growth in terms of TP

Authorship and Collaboration Pattern

The authorship pattern, shown in figure 2, depicts that the number of papers with more than three authors has been increasing over the years. It is a clear indication of increasing collaborative research among the researchers. Total 96.64% (317) papers were co-authored whereas 22.63% (74) papers were internationally co-authored.

Figure 2: The co-authorship pattern observed in 1994-2014

The percentage of internationally collaborated papers (ICP) reduced drastically after 2004 but again it obtained a momentum after 2009. The irregular pattern of ICP is shown in figure 3.

Table 1: Top participating countries in collaboration with GGV

<table>
<thead>
<tr>
<th>Country</th>
<th>Papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>325</td>
</tr>
<tr>
<td>United States</td>
<td>16</td>
</tr>
<tr>
<td>South Korea</td>
<td>15</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>12</td>
</tr>
<tr>
<td>Japan</td>
<td>7</td>
</tr>
</tbody>
</table>

In table 1 and table 2, the most participating countries and institutions in collaboration with GGV are listed. It can be seen that Malaysia and IITs top in these list, respectively.

Table 2: Top participating institutions in collaboration with GGV

<table>
<thead>
<tr>
<th>Institution</th>
<th>Papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Institute Technology (IITs)</td>
<td>21</td>
</tr>
<tr>
<td>Banaras Hindu University</td>
<td>20</td>
</tr>
<tr>
<td>Devi Ahilya University</td>
<td>17</td>
</tr>
<tr>
<td>AimaSt University</td>
<td>16</td>
</tr>
<tr>
<td>Kurukshetra University</td>
<td>11</td>
</tr>
</tbody>
</table>

Research Impact

The research impact can be measured as the number of citation received by the publications. Moreover, the number of highly cited papers (HiCP) is also a good indicator of quality publications. The top 5% mostly cited papers count in ICP. Both the average citation received by per paper (ACPP) and
HiCP are presented in figure 4. It shows that the ACPP is highest for the year 1999 of the period whereas the HiCP values are prominent in 2012 and 2013 in the period.

![Figure 4: The ACPP and HiCP percentages over the period 1994-2014](image)

Besides measuring the citation impact the percentage of cited papers is also calculated (shown in figure 5) and it is observed that the measure remains around 60% over the years except the two recent years. This is due to the fact that publications need a minimum time span to be spread and cited.

![Figure 5: The percentage of cited papers in 1994 to 2014](image)

The popular performance indexes such as h-index, g-index, hg-index and P-index are also calculated to see the overall performance of the institution (shown in figure 6). All the indexes follow same trends. It is also seen that the publications of 2006 to 2013 over performed in the period.

![Figure 6: Different performance indicators over the years](image)

**Top Authors and Major Research Areas**

The top performing authors in terms of total publications (TP) are found and their corresponding performances are also measured. The top 5 authors are listed in table 3.

**Table 3: Top authors (in terms of TP) and their indicators**

<table>
<thead>
<tr>
<th>Author</th>
<th>TP</th>
<th>TC</th>
<th>h-index</th>
<th>g-index</th>
<th>h10-index</th>
<th>Max Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Singh, RK</td>
<td>35</td>
<td>102</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>2 Rajak, H</td>
<td>34</td>
<td>159</td>
<td>8</td>
<td>11</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>3 Varshney, D</td>
<td>22</td>
<td>32</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4 Jain, SK</td>
<td>19</td>
<td>131</td>
<td>6</td>
<td>11</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>5 Bajpai, PK</td>
<td>18</td>
<td>84</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td>15</td>
</tr>
</tbody>
</table>

The major research areas are explored using the WoS categories which are grouped to 14 predefined major research areas such as Physics (PHY), Mathematics (MAT) etc. Physics and Chemistry (CHE) are the most researched areas followed by Medical Science (MED) in GGV.
CONCLUSION

The study is the result of detailed scientometric analysis of GGV’s research publications during the period 1994-2014. The publications indexed in WoS have been analyzed and different scientometric indicators were obtained. This result may be useful for prospective students, researchers and research policy makers in the institution.

REFERENCES

