

# Data Analytics on Opportunities for Women in the Field of Technology

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**Abstract**—Women's opportunities are in the uptrend in recent days with recent laws, obligations, rules, regulations, and government promulgations in favor of women's participation in the global space. With emerging technologies and rising market competition, these opportunities are critical to women's societal development. Adding to this, various technology and IT companies are encouraging their female employees to take part in women-led events and seminars actively. After a score of deliberate perusals by the authors into the matter, it is found that a large proportion of women are least knowledgeable about these opportunities resulting in the persistence of poor outcomes. This paper takes these issues into consideration, where the authors performed data analysis on the existing women's opportunities, tabled them, and designed an analytical solution for the same. With the existence of powerful technologies like Power BI, this paper explores using power bi for visualizing the trends of opportunities in numbers and their impact on female societies. The research involves the basic requirements and salient features of Women related events, scholarships, and contributions as a result of the same. In this paper, we discuss the relevance and impact of such opportunities for women and the development of appropriate technical solutions for the same. The result of this research work contributes to the systematic aversion to the situations mentioned above and provides a valid solution by data-driven applications throughout the procedure of development. The solutions enable the users to have a clear idea about the statistics of women's opportunities in recent years and provide a clear visualization of the current scenarios involving the impact and statistical influence of these opportunities on the female society scaled to the global level.

**Index Terms**—Scholarships, Events, Data Analytics, Visualiza-

tions, Actionable Insights

## I. INTRODUCTION

Women's participation started in the modern age after an epoch of revolutions and reforms framed to protest against the unruly behavior of men against women in past societies. Gender discrimination has been a great issue for decades in the context of male dominance arguments. Domestic violence and sexual abuse have been the matters of concern in those days. Additional arguments include the restrictions levied on women to prevent them from living freely in society. Women are found to be physically and psychologically weak, which instills the feeling of providing sufficient opportunities for women to come out freely, thereby enabling their all-around development in all possible fields.

Technology is revolutionizing the world both economically and in the quality of life in the global realm. Besides making people's lives comfortable, technologies are also facilitating the creation of a common global space for effective and active participation. While the ecosystem is evolving and the companies are sprouting up rapidly, there arises a need to inculcate a competitive spirit and active participation around the globe. This involves a partisan-free boundary among the prospective participants and insertion into the existing list of participants. The companies are, therefore, actively recruiting staff and employees to meet their requirements. In this context,

various scholarships, events, competitions, and contributions are being initiated particularly in the field of technology. This paper is interested in coming up with a solution and data analytical response to create awareness among female societies.

Despite having multiple scholarships, it is found that only a small proportion of the female population is knowledgeable of their existence and availabilities. Similar are the cases with women-oriented competitions, events, and conferences. The majority of the reasons stated can be attributed to the poor awareness of such activities among women. Initiatives to create solutions in the direction of the same can be framed here. The technologies should be created vis-a-vis the validity and advantages of such opportunities for women. This paper proposes data analytics, which will provide actionable insights into such opportunities. Data analytics solutions represented in the Power BI platform after this research can be used for making statistical calculations to assign metrics to the statistics of women's opportunities and their impact on society. Visualizations collected post-research were particularly useful in gaining sufficient intuition about the research purpose.

## II. DATA COLLECTED ON EXISTING OPPORTUNITIES

In order to assess and evaluate the current technical opportunities of women, the authors performed an extensive data collection process to collect some important details. In this process, the research could take around hundreds of opportunities but due to certain constraints and limitations, the data collected is subsidized in the process of preparation of this paper. But, the power BI visualizations of the statistics related to events and scholarships in this context covered all of the collected information.

### A. Scholarships

1) **Anita Borg Memorial Scholarship:** This is a scholarship offered by Google to the CSE undergraduate or graduate women for a duration of one year which includes funding of 10000 dollars with an invitation to *The annual Grace Hopper Celebration of Women in Computing conference*

2) **Adobe Research Women-in-Technology Scholarship:** With the technology inclining towards the research side of the study, this research-related scholarship is offered by Adobe to Undergraduates of the CSE and related courses at accredited colleges where the funding of 10000 is provided along with the Research internship at Adobe to the selected female students

3) **Google Women Techmakers Scholars Program:** An opportunity is provided for female students of the CSE or allied branches of Accredited institutions where the selected students are offered funding of 10000 dollars for one year with an invitation to *the Google Scholars' Retreat* at the end of the event.

4) **society of Women Engineers Scholarship Program:** : The Society of Women Engineers provides a stipend in between 1000 dollars and 15000 dollars to the participant

women from an ABET-accredited institution or some engineering course with a specialization in Computer Science and Engineering for one academic year.

5) **Hopper-Dean Foundation Scholarship:** This scholarship is offered to the girl students of Computer Science and related domains by the Anitha B Organization with The scholarship amount of 10000 dollars given for one academic year along with an invitation to the annual Grace Hopper Celebration of Women in Computing conference.

6) **Palantir Women in Technology Scholarship:** This scholarship is offered in the amount of 10000 along with an internship opportunity to the CSE Female Undergraduates from accredited institutions for one academic year.

7) **Women Who Tech Scholarship:** Women Who Tech is an organization that offers scholarships of around 2500 dollars to the girl students of Computer Science and the associated domains for one academic session.

8) **Intel Foundation Ph.D. Fellowship Program:** Intel has a scholarship program to encourage the Ph.D. girl students majoring in the domains of Computer Science and Engineering with a reward of financial prizes and an internship at Intel to the selected students at the end of the event for one year.

9) **Jane M. Klausman Women in Business Scholarship :** Business female students can benefit from this scholarship opportunity offered by the Zonta International where the amount varies from 1000 to 7000. The tenure is for one academic year. Additional benefits like mentoring and networking are also being provided as a part of this event.

10) **Women Techmakers International Program:** Google provides a region-based opportunity to the girl students enrolled in organizations offering courses or curricula in science, technology, engineering, or math (STEM) fields by providing stipend(based on region), Networking, and mentoring opportunities for one academic year.

11) **Microsoft Ada Lovelace Fellowship:** The Research Department of Microsoft is offering this scholarship program to the girl students engaged in Ph.D. with a specialization in Computer Science and Engineering and the related domains/fields. A fund of 42000 dollars along with regular fee aid is provided to the selected candidates for three years on an annual basis.

12) **IBM Ph.D. Fellowship Awards:** IBM, A service-based Information Technology Company provides Ph.D. Fellowship Awards to Female Students holding Ph.D. in Computer Science domain and related fields. The stipend varies based on Location and tenure. It is applicable for one academic year.

13) **Women in STEM Scholarship:** This scholarship is offered to the girl students pursuing a degree in a STEM(Science, Technology, Engineering, Mathematics) field. The stipend is 3000 offered for one academic year. Study Soup organizes this program.

14) **Women in Technology Scholarship:** This scholarship is offered by Elevate Women in Technology Scholarship Fund. A fund of 10000 is provided to eligible girl students pursuing education in the technology field for one academic year.

15) **Women in Aviation Scholarship:** Women in Aviation International offers this scholarship in the form of a salary to aviation-related women for one academic year.

16) **Black Women in Technology Scholarship:** Black women can avail of this opportunity where the recipients get around 2500 dollars for one academic year and the ultimate aim of this event is to help traditionally underrepresented group of women to cope up with shortage of resources, free from restrictions.

17) **Women in Technology Scholarship (WITS):** Women in Technology Scholarship fund provides a scholarship of 2500 dollars to the girl students of computer science-related courses and fields for one academic year.

18) **Generation Google Scholarship:** Google offers a scholarship amount of 10000 to the girl students majoring in computer science and related fields. This scholarship is offered for one academic year, This scholarship is even applicable to the degree pursuing female candidates.

19) **AISES Google Scholarship:** Native American, Alaska Native, or Native Hawaiian girl students studying in institutions offering courses in Computer science and related domains can opt for this program. A stipend of 10000 dollars is provided to the selected students by Google and the American Indian Science and Engineering Society (AISES).

20) **National Center for Women Information Technology (NCWIT) Collegiate Award:** This collegiate award from National Center for Women Information Technology (NCWIT) comes with a scholarship amount worth 10000 dollars and is awarded to female students from Computer Science and Information Technology domain offering institutions.

21) **Women Tech Council SheTech Explorer Day Scholarship:** This opportunity is provided to STEM aspirants where the scholarship amount which varies is disbursed for one academic year by Women Tech Council.

22) **Women Tech Founders Scholarship:** Women Tech Founders provides these opportunities to women interested in the domains of technology and entrepreneurship. A stipend of 2500 is provided to the recipients for one academic year.

23) **Women in Cybersecurity Scholarship:** Women students pursuing a degree in Cybersecurity or the related field can avail of this scholarship opportunity. A stipend of over 6000 dollars is provided to the recipients for one academic year by the International Consortium of Minority Cybersecurity Professionals (ICMCP).

24) **P.E.O. International Peace Scholarship (IPS):** Foreign students of the US and Canada pursuing fields related to STEM fields, Information Security, and the related fields can use this opportunity wherein they get a chance to receive a stipend for one academic year.

25) **Women in Technology Scholarship Program:** Around 5000 is provided as a scholarship to the women pursuing education in technology and related fields for a single academic year. This opportunity is provided by Insight.

## B. Events

1) **ServiceNow Women Code to Win:** Women aspirants aimed to change world having themselves adept in technology

are provided with real life examples with an expectation of technical leadership, showcasing and piquing interests from them by exploiting all the possible learning opportunities from this event with the winners receiving up to Rs.450000.

2) **Flipkart Runaway::** Second and third year Female candidates having fundamentals in JAVA, C, C++, Python, etc. get early bird opportunities to network, mentor, and development from this event. The ultimate aim is to create enough industrial experience for young female students.

3) **Women Engineers:** This is a 24-month-long event immersive learning event conducted by Talentsprint. This is a training program for first-year talented female candidates and is supported by Google. A scholarship of 25 percent will be provided to the selected candidates and 100 percent can also be given based on their performance.

4) **Ignite Spark:** It is an event based on the growth mindset conducted by the HYSEA and TASK. Resilience, Perseverance, and Success are the main objectives of this program. Students in the 3rd and 4th years are eligible to participate in this event.

5) **Engineering Equity Hackathon:** A global initiative by Virtusa, this event is for 2-4 year female graduates, with gpas above 6 where they are exposed to basic coding sessions and gender equality is ensured in generating world-class technical solutions.

6) **Grace Hopper Celebration India (GHCI):** This is a get-together event for women technologists, researchers, experts, and engineers. There are panel discussions, keynote addresses, tech discussions, and networking events conducted as a part of this event.

7) **TechGig Geek Goddess:** Techgig is organizing coding events for girls creating a competitive ecosystem where the talented get respected for their talent and recognition in test players' coding ability, problem-solving abilities, and knowledge of various programming languages and technologies, culminating in winner declared as *Geek Goddess* and enticing prizes for the runner ups.

8) **Women Techmakers India:** This is an initiative by Google to create a supportive environment for the girl students by conducting tech events, panel discussions, networking sessions, workshops, orientations etc. It is conducted throughout India and in IT domain.

9) **PyCon India - Women in Python (WiP):** This community event ensues gender diversity and inclusion in the Python community. It creates a variety of events for women in Python coding, networking and community building, and Career development. Anyone identified as a woman can participate in this event and build their communities accordingly.

10) **She Loves Tech India:** This is to encourage new startups from female entrepreneurs and tech enthusiasts. Tech leadership and entrepreneurship are the key things tested here. The eligibility category varies based on the event.

11) **Women in Data Science (WiDS) India Conference:** The event is to improve the women getting skilled in these fields through technical seminars, conferences, and workshops. There is a discussion of various issues related to data science

issues, such as machine learning, big data, data visualization, and data ethics.

**12) Women Who Code (WWCode) India Summit:** Women who tech organizes this event where women are allowed to engage in coding, training, job development, leadership, etc. which is enabled by Seminars, workshops, and conferences. Data science, software development, and UI/UX management are the related domains.

**13) Women in AI India:** A community-driven event by Women in AI that promotes support to women in AI with an ultimate goal to create diversity and inclusivity. Through meetings, workshops, webinars, and mentoring programs, this event is a common place for women to assemble at a place, share expertise, and derive inputs or learnings from others.

**14) The Grace Hopper Celebration (GHC) India Career Fair:** This is an event by Grace Hopper Celebration, the largest women's gathering and meeting of Women Engineers from academia, industry, and governments. Here, the participants are allowed to contact firms, request interviews and make networking. The goal is to create gender diversity and inclusivity in technology.

**15) Women in Cloud (WiC) India Summit:** Cloud computing oriented sessions, workshops, and conferences along with networking and mentoring are conducted by the Women in Cloud for the women interested in cloud computing.

**16) Girls in Tech Coding Bootcamp:** With Teaching coding to girls through rigorous bootcamp-like sessions in topics like Web development, Programming languages, and related technologies, this event enhances the confidence of women, irrespective of their background in pursuing technology jobs.

**17) Women in Cybersecurity (WiCyS) India Workshops:** Series of technical workshops for women interested in Cybersecurity are conducted as part of this events to impart practical and theoretical knowledge of the topic.

**18) Lesbians Who Tech + Allies Summit:** A global conference to connect the following people: LGBTQ+ women, non-binary people, and allies working in technology where Seminars and technical sessions like panel discussions are conducted.

**19) The Latinas in Tech Summit:** This is a global conference for Latinas, tech women, entrepreneurs, experts, and students on technology.

**20) Women in Quantum Summit:** This event is aimed at including gender diversity and inclusivity in Quantum science and Quantum Computing with the events like keynote speakers, panel discussions, seminars, and networking opportunities related to the domain for the interested women.

**21) Women in Engineering (WIE) International Leadership Conference:** This aims to develop women and allow them to progress in the engineering sector. Engineers, researchers, professionals, and activists identified as women can participate in this event. They should be mainly interested in promoting gender diversity and inclusivity in the field of engineering.

**22) SheTech Explorer Day:** One day event is conducted for class 9-12 females pursuing education and courses in STEM

(Science, Technology, Engineering, and Math). Seminars, workshops, conferences, technical and industrial showcases, mentoring opportunities, and Interactive sessions are organized as part of this event.

**23) Women of Silicon Roundabout:** This is a conference and networking event that promotes networking and gender diversity along with inclusion in the technology sector. Keynote addresses, panel discussions, networking sessions, and seminars are the key ideas of this event.

**24) WomenTech Global Conference:** A virtual meeting to include gender diversity and inclusivity by inviting attendees from various places and diverse backgrounds is conducted with aims to empower women is organized. Keynote speakers, panel discussions, workshops, seminars, networking sessions, mentoring opportunities are the key characteristics of this event.

**25) Microsoft Codess:** In-person and virtual events, and seminars are conducted as a part of this event by Microsoft to provide networking, mentorship, and professional development opportunities to women to promote inclusivity and diversity.

**26) Adobe SheCodes:** Adobe SheCodes is a program that allows women to improve their coding abilities and receive exposure to the digital sector. The program consists of a series of courses, mentorship, and networking opportunities designed to assist women to gain confidence, acquiring technical skills, and preparing for a future in technology. Adobe SheCodes is available to any woman interested in pursuing a career in technology, regardless of expertise or background.

### C. Research Opportunities

**1) DST women scientist scheme:** Middle woman aged 30-50, having done PhD in basic or applied Sciences, MTech, or Medical studies can re-enter into research stream as benchmark scientists. They need to perform research on societal problems and thereafter pursue ST-based internship.

**2) SERB (Science and Engineering Research Board):** Regular faculty and researcher in an academic/research organization can apply for this research and they should be below 35 years of age. They can independently perform research in the frontier areas of Science and Technology.

**3) Department of Scientific and Industrial Research (DSIR):** Department of Scientific and Industrial Research, under the flagship of Ministry of Science and Technology conducts research programmes in view of the current industrial needs, which is also an additional opportunity for women.

**4) Indian Space Research Organisation (ISRO) - Department of Space:** This organization provides funding for women in academic or research institutions. The concerned participants can perform research on Space Science related fields. The ultimate goal is to contribute to Indian Space Programme.

**5) INSPIRE Faculty Scheme (DST):** It offers an Assured Opportunity for Research Career (AORC) for researchers aged between 27-32. The expectation is to create high quality scientific manpower to scientific and academic institutions.

### III. DATA ANALYTICS AND VISUALIZATIONS

The primary aim of this paper is to perform data analytics on the Opportunities for women in the field of technology. The researchers followed detailed data collection process followed by subsequent trials of Excel analytics and Data visualizations. This paper consists of visuals generated by MS PowerBI software. PowerBI is a visualization software service provided by Microsoft Corporation. Data Visualizations are considered the ultimate steps in a data analytical solution. Owing to time and data constraints, the authors preferred visualizing the collected data over other data analytics tools. The collected data is not too huge to not apply Big data tools like Hadoop, Spark, etc. while Tableau is preferred for huge data pipelines or complex data integration techniques. Here, the data is a simple text obtained as a result of some web scrapping or web crawling tools but it is not too complex to apply simple data analytic tools. The major idea is that notwithstanding many opportunities in technology for women, women are least knowledgeable about the existence of such opportunities. The academia or tech world is bereaved of such opportunities which significantly limits the exploration mindset of female communities. Majority of the events mentioned in this paper focus on improving gender diversity or inclusivity which is considerably lacking in current scenario. Therefore, this paper made the use of Power BI software to generate useful visualization required for generating meaningful and actionable insights into the statistical perspectives of these opportunities. PowerBI is mainly used for Business Intelligence but a very less percentage of population use it for normal use cases. In this context, the authors proved and exploited the other use of PowerBI software for general use cases.

#### A. PowerBI report on Scholarships

Over 30 suitable scholarships are collected for this purpose with main focus on the impact of respective programmes from the date of their establishment. Great care has been taken to generate the data in a format suitable for creating Power BI reports. Not all formats are suitable for this and there is a need for tabular data only. The above visualizations are

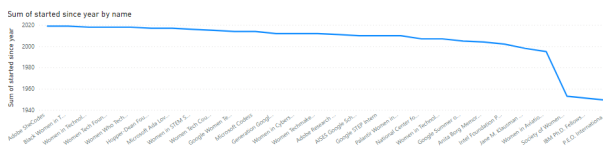


Fig. 1.

the ones displayed on the PowerBI dashboard. Various plots are additionally computed to derive complete insights. It is to be noted that both refer to the same statistics. Yearly analysis of the people getting benefitted from the respective scholarships is being represented here. It is worth to be noted that the number of people benefitted from this opportunity is considerably increasing and by 2020, it is the maximum and this increase started from the scholarships programmes

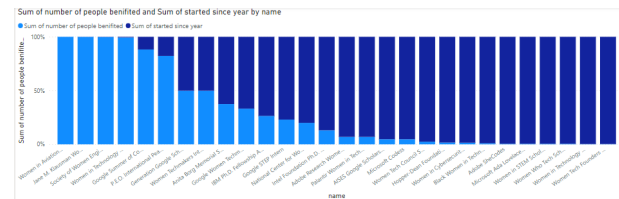


Fig. 2.

started in 1900-2000s. Anything in this plot should not be ascertained in an exact manner but the situation is quite opposite. This indicated delayed awareness about the events in female communities and this issue needs to be addressed immediately since if this continues, lots of women lose these opportunities owing to lack of knowledge.

#### B. PowerBI report on Events

It is noted that the scholarship programmes often collocate with the women-oriented events. Both differ significantly but there is a subtle connection which should be observed. Chronological considerations were taken while collecting data. Intuitions suggested that they will be numerous and consists of only physical gatherings and networking and panels sessions. This is inclusive of virtual cases. Considering some constraints, internships and jobs were also included among events in this paper. In order to make it suitable for generating PowerBI reports, there was some stress on the starting years and the months of conduction of these events. [Fig .3.] is a

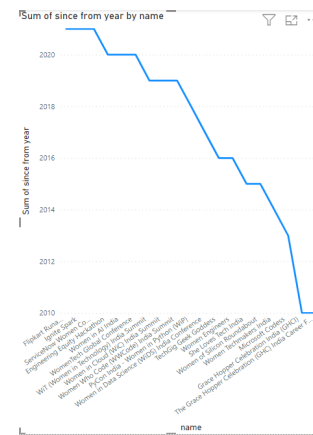


Fig. 3.

line chart and [Fig. 4.] is a waterfall visual for the fed data. Based on the observations from the above visualizations, we can conclude that the number of events initiated is increasing annually and there is no marked decrease in any of the mentioned or surveyed years. In this context, it is worth to be mentioned that all the events surveyed here promote gender diversity and inclusivity in technology. Large amounts of organizations are women-oriented organizations whereas the remaining parts are the tech giants from the IT industry. Most of the events even allow other genders only with an intenton to promote interesets on the original aims.

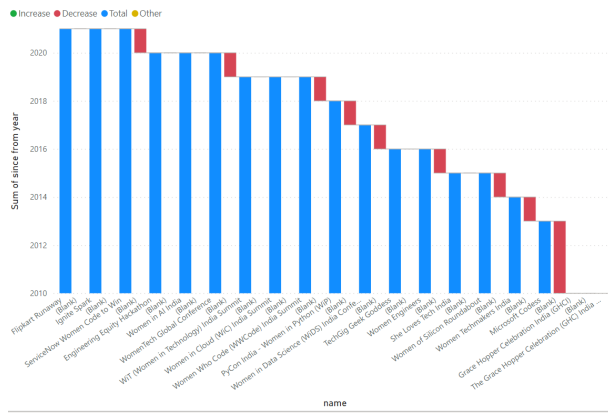


Fig. 4.

### C. Inferences and Summative assessment of the PowerBI reports

Overall analysis concludes with an observation that the number and frequency of events dominates over that of scholarships. It is observed that by the end-quarter of 2020, the statistics have reached their maxima where there is a large increase in past 5 years. It is worth to be mentioned that the overall intuition of the obtained PowerBI reports is that the past 5 years have been productive in terms of events and scholarships but there is a limitation in the case of contributions. Contrastively, women contributions are on the peak in 20th century and decreased sharply thereafter. This requires some measures to be taken to invert the situations and thereby enabling the increase in statistics by creating appropriate ecosystems.

There is a huge increase in the number of events for women in the period 2010-2015 and the considerable increase took place from 2019-2020. Remaining periods oversaw stable statistics, though there is a constant increase in number. Coming to scholarships, the number is variant and no suitable pattern can be found. In this context, it is to be noted that the number of people benefitted is significantly variant irrespective of their starting years. In some cases, old events are having high number of beneficiaries with similar statistics found in the newer ones. Unlike events, the number of scholarships starting per year is also inconsistent with our predictions. In events, there is a constant increase as the years progressed. Ultimate inferences include that the overall increase in opportunities are to be compensated equally with active participation.

### IV. CONCLUSION

The research, as mentioned before progressed on three main criteria, in the context of women opportunities-Events, Scholarships, and Contributions. There is a systematic data collection process with chronological ordering of the collected data upon which the PowerBI reports are generated to derive actionable insights. The insights revealed detailed statistics on the opportunities and their impact on the female communities. Findings suggested that the opportunities are increasing on a

regular basis but the number of users regarding the same is diminishing which are unexpected consequences.

Power BI visuals showed a rapid decrease in Scholarships and a sharp decrease in events when going back in time. This is indicative of positive results of the same, thus underscoring any opposite arguments on the same. Before 2000s, there has hardly been any event or scholarship in relation to women-specific engagements but has considerably increased after the year 2005. The number of events per year is roughly 5 and that of scholarships is 6. This is suggesting us to emphasize on creating newer opportunities and to delve into more similar opportunities to gain complete intuition of the topic. There is a need to do more analysis and accrue more benefits from the same. In other words, there is no limit to such opportunities in the future and they are persisting to grow on a regular basis. The findings mentioned here serve as proponent figures for generating valid predictions about the future statistics.

### V. FUTURE WORK

Observing the trends and issues with regard to the opportunities provided to and available for the women in the fields of technology from the Power BI reports generated, it has been planned to place a propound discussion about framing a website detailing these opportunities in a candid manner. The site should include compounded data of these opportunities which are available or the prospective participant women are entitled to in the period ranging right from birth to Post-doctoral studies of female candidates. Such websites or platforms help female candidates to perform meaningful queries on the same and get an idea about the right opportunity available for them at their respective stages. Owing to busy lives, lots of people prefer to access solutions that ensure faster information delivery and dynamic services. Therefore, as per our opinion, this website which we are planning to develop aids and assists women in finding right opportunities and utilize all of them in an appropriate manner thereby producing efficient results.

### REFERENCES

- [1] ServiceNow 2021 Women Code to Win ServiceNow accessed 28 April 2023 <https://www.servicenow.com/company/diversity-inclusion/women-code-to-win.html>
- [2] Flipkart 2021 Runaway Flipkart accessed 28 April 2023 <https://dare2compete.com/o/flipkart-runaway-flipkart-153607>
- [3] Women Engineers 2016 Women Engineers Women Engineers accessed 28 April 2023 <https://womenengineers.in/>
- [4] Grace Hopper Celebration India (GHCI) 2010 Grace Hopper Celebration India (GHCI) AnitaB.org accessed 28 April 2023 <https://ghcindia.anitab.org/>
- [5] Women in Cloud (WiC) India Summit 2019 Women in Cloud (WiC) India Summit Women in Cloud accessed 28 April 2023 <https://www.womenincloud.com/event/wic-india-summit/>
- [6] Women of Silicon Roundabout 2015 Women of Silicon Roundabout Inspiring Fifty accessed 28 April 2023 <https://inspiringfifty.com/heroines/women-of-silicon-roundabout/>
- [7] Women Techmakers India 2014 Women Techmakers India Google Developers accessed 28 April 2023 <https://developers.google.com/community/gdg/wtm>
- [8] PyCon India - Women in Python (WiP) 2018 PyCon India - Women in Python (WiP) PyCon India accessed 28 April 2023 <https://in.pycon.org/wip/2018/>