A Survey of Strategies and Tools for Promoting and Measuring Research Visibility in Central Banks and Monetary Authorities

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ABSTRACT

This paper examines the C used by central banks and monetary authorities (CBMAs) to enhance and measure the visibility of institutional research with a view to drawing from the experiences of other central banks and applying appropriate strategies, and tools to the Central bank of Nigeria. The study was conducted using a Qualitative analysis (QDA) of the contents on the Electronic Bank for International Systems (eBIS)[1] platform for Central Bank and International Institutions Librarians (CBIFI) Group which is hosted by the Bank for International Settlement (BIS), Central Banks and Monetary Websites and the Internet. CBMA Website Survey included 130 CBMAs across all the 6 continents excluding Antarctica. The findings indicate that: Goals of enhancing visibility and measurement of institutional research in CBMAs, includes, showing through metrics, the value of institutional research, enabling the efficient allocation of research funding based sectoral distribution of the research output; Strategies used to enhance the visibility of CBMAs institutional research include, Boosting institutional publications reputation and Impact for search engine discovery; Use of open access tools, Use of unique identifies, Search Engine Optimization, the use of academic social networks (Academia, ResearchGate, Slideshare, Mendeley) and general social media (Facebook, Twitter). Tools used to enhance the visibility of CBMAs institutional research include deployment of library systems, use of research identifiers, citation databases and online reference, and citation managers. Strategies, and tools used to measure the visibility of CBMAs institutional research include web analytics, citation analysis and analysis of repository. Others are, monitoring hit counts to individual files, periodicals, and collections on the publication management systems of the institution. Findings on extent of use of the strategies and tools for research visibility indicate that: CBMAs enhance research visibility by listing publications on their website, using OPAC, Institutional Repositories archives and other platforms. They also use Email, Facebook, Twitter and YouTube to enhance visibility. For the CBMA presence in citation databases which are used to enhance and assess visibility of institutions research, the RePEC accounted for most appearance accounting for 36 representing 37 per given that it is an economic research database. Other citation databases used with lesser frequencies include, Web of Science (WoS), Scopus, Google Scholar (GSc) and RePEc. Key recommendation include the need for the Central Bank of Nigeria (CBN), through the Library and Publication and Editorial Unit (PEU) Divisions of the Research Department to develop a strategic plan to promote as well as, accurately measure its institutional research visibility and impact.

INTRODUCTION

Central banks and Monetary Authorities (CBMAs) play a vital role in maintaining monetary and price in addition enhancing economic growth in their jurisdictions. As part of efforts to fulfil these mandate they conduct extensive research that informs policy decision aimed at enhancing economic development. These research are communicated to relevant users (policy makers, journalists, other researchers in form of journal publications). These research according to Cecchetti (2002) enables policymakers understand current theories and their application to policy practice in additional to improving the credibility of the policies they produce

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[1] eBIS is an internet-based information exchange system offered by the Bank for International Settlements (BIS), allowing experts in working parties and individual users to exchange information and access information not publicly available or easily accessible.

based on the quality research capacity. High-quality research, according to Goodfriend, Konig, & Repullo (2004), enables central banks make better monetary policy because the findings ensure that they are well equipped to cope with the challenges associated with ensuring monetary stability, low inflation and economic growth in their countries.

Research findings and policies that emanated from these findings are communicated to stakeholders (financial markets, monetary authorities) and the public in form of publications, speeches, press releases through channels like the media and mostly the Bank's websites (Ehrmann, Fratzscher, De Haan, & Jansen, 2008).

The success of CBMAs research in achieving their objectives is dependent on their visibility, because their mere existence does not guarantee their utilisation by key stakeholders. Visibility of research outputs, which is the extent to which they are discoverable, accessible to policy makers, market participants, the public and researchers, is critical to their utilisation by stakeholders to support policy formulation, implementation and evaluation towards the economic development of any nation. These policies that are expected to support the realisation of Central Banks and Monetary Authority (CBMA) mandates which include, maintaining price, exchange, rate stability and economic development. To this end research output would support policy formulation, guide policy implementation, and enable the evaluation of the impact of these policies.

CBN, like other CBMAs invest significant financial resources in research which could be wasted if outputs remain hidden and not utilisation. The insights gained from studying strategies and tools used by other CBMAs to promote the visibility of their research output, would be valuable to the CBN in its efforts to enhance the visibility of its research output.

Statement of Problem

Access is to research output depends largely on the visibility to all stakeholders and the general public.

To ensure that research output is visibly accessible and effectively utilised, strategies, tools are required to enhance and evaluate the visibility and subsequent utilisation/impact. The strategies used to enhance visibility include: publishing in high impact journals or in journals with high citation counts; using abstracting and indexing services; use of identifier and profiles for research output and research contributors; the use of mainstream social networks and academic social networks; implementation of systems/platforms that seek to promote or enhance the visibility of institutional research (Marashi, 2013; Penfield, 2013; Ale-Ebrahim, 2017; and Bong & Ale-Ebrahim, 2017). This is mostly true for academic and most research institutions. However, there is little, or no information based on available literature (Scopus, Web of Science and Google Scholar Social Science Research Network (SSRN), RePEc) regarding the level of the implementation or use of such strategies, and tools to enhance and measure the visibility of institutional research.

Objective of the study

It is in this regard that this study was conducted to determine the purpose, strategies, tools/platforms/services used in enhancing and measuring the visibility of CBMAs researches, and to recommend ideal ways to promote and evaluate institutional research in CBMAs based on the findings.

Research Questions

1. What are the strategies, and tools which CBMAs use to promote the visibility of institution research output?
2. What are the strategies, and tools do CBMAs use to evaluate the visibility of institution research output?
3. To what extent are these strategies, tools and services used to promote and evaluate institutional research output?

LITERATURE REVIEW

Publications are the stock in trade of central banks which is achieved through writing quality research papers. In achieving its mandate of monetary policy, financial stability and banking supervision the central banks engages in credible economic research.

Why Central Bank conduct research

Penfield (2014 et al) indicated that one of the major reasons why excellent research is conducted is to generate and transform knowledge that will benefit the society as a whole. Malliaropulos (2016), further elaborates that central Bank's ability to effectively fulfil their mandates that include price, monetary and economic stability, banking supervision and economic policies, cutting edge research is required to enable policymakers (central bankers and government officials) and other relevant individuals perform more efficiently their functions.

In order to have a credible research in Central Banks, Malliaropulos (2016) stated that there must be support from the Central Bank governor; there must be a highly trained research staff and a system of measuring quantity and quality of research. output and conducive atmosphere is suitable for a good research publication. author listed three important components

He also listed the main goal of economic research at the Bank that has to do with conceptual and empirical basis for policy making which are:

- To increase our knowledge of the Greek and the global economy and the functioning of the financial system.
- To develop high-quality models, econometric tools and economic analyses that are relevant for the conduct of monetary policy and financial stability, thus informing decisions on monetary policy.
- To participate in research networks of the Eurosystem, such as the wage dynamics network, the household survey network, the macro-prudential research network and others. In this way, the bank profits from other central banks' research within the Eurosystem and the interaction of our researchers with those from other central banks.
- To provide credible advice to policymakers and communicate our views to market participants, foreign investors and the public at large.

For this purpose to be realised, central banks research must be visible and accessible. Only then, can they be effectively used. Also, a good research publication that is visible promotes the intellectual output of an author and the institutions through citation and impact analysis. In this regard, Bong and Ale-Ebrahim (2017) proposed that the visibility of research output can be enhanced through post-publication promotion like sharing on institutional blogs, social media accounts, and archiving on institutional repositories.. According to Espadas, Calero, and Piattini (2008), less visible contents are increasingly difficult to or even almost impossible to find. Thus, Web users are forced to accept alternative services or contents only because they are visible and offered to users. Also, Penfield et al (2014) remarked that the conventional methods of evaluation of academic research is mostly based on measuring academic impact and quality through a process of peer review. Malliaropulos (2016) suggested that publishing an article in a reputable journal is not the end itself but the means to the end until it is more visible to varieties of audiences and disseminated in different tools such as Google Scholar and ResearchID, Twitter, Facebook, LinkedIn and Academia.edu which will subsequently promote the research work. Ale-Ebrahim et al (2013) pointed out about 33 strategies employed for increasing the citation possibilities. Some of which include publishing in journal with high impact factor; depositing paper in Open Access repository; making research easy to find, especially for online searchers and using standardized institutional affiliation and address. All these are some of the strategies to enhance global visibility of research work. Harzing & van der Wal (2008) suggested that using Google Scholar might be more beneficial for the categories either business, administration, finance & economics. Malliaropulos (2016) suggested that there should be credibility in the quality of research publications emanating from the Central Bank with a link between policy recommendations and research findings; research must be proactive in addressing the economic and political situation of the country.

The significant ones are Bong et al (2017); Malliaropulos (2016). Central Banks and research scholars publishing in an academic journal must ensure a wider visibility in terms of metrics and impact factors. According to Marashi et al (2013) citations to an article might strongly depend on the visibility, rather than the merit of the article. Kuruvilla et al (2006) identified four broad areas of impact- research related impacts; policy impacts; service impacts; health and intersectoral; and societal impacts. However, the latter is the most relevant to research publications in which every researcher and institution are always looking for in any publications. There is paucity of academic literature on global visibility of Central Bank research.

METHODOLOGY

The study was conducted using a Mixed Methods Study comprising of qualitative analysis (QDA) of the contents on the eBIS platform for Central Bank and International Institutions Librarians (CBIFI) Group which is hosted by the Bank for International Settlement (BIS); and quantitative Web Survey (QCWS) of Central Banks and Monetary Website and the Internet. A Mixed methods Study involves combining qualitative and quantitative approaches to collect, analyse, and disseminate the data with the aim of providing broad understanding and corroboration (Creswell, 2023). The study adopted the QDA due to the dearth of evidence on scholarly search engines, citation databases (Web of Science, Scopus and Google Scholar, RePEc, SSRN) before conducting the QCWS which was aimed at corroborating and validating the QDA. The choice of eBIS platform for the QDA was inevitable given that the platform is consisted of the largest collections of documents pertaining to library services and support for institutional research in CBMAs. These comprise survey reports, workshop presentations, workshop reports, bulletins and discussions among others. The web survey was then used to corroborate and validate the QDA of documents on the eBIS platform. The eBIS platform which contains workshop presentations, reports of surveys, bulletin by the Central Bank and International Financial Institutions Librarians group (CBIFILG), is hosted by the Bank for International Settlement (BIS) used by Central Banks to promote and enhance the visibility of institution research output Bowen (2009).

The qualitative data analysis (QDA) involved document analysis which is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic (Bowen, 2009).

Analysing documents incorporates coding content into themes similar to how focus group or interview transcripts are analysed documents (O'Leary, 2014). In specific terms, the QDA involves iteratively skimming (superficial examination), reading (thorough examination), and interpretation (Bowen, 2009).Viswambhara and Priya, (2016) conducted an analysis of a documentary produced by Rakesh Sharma titled Final Solution, based on post-Godhra riots in 2002 in India. The two-phased analysis involved constructionist grounded theory procedures with an initial focus on the documentary. Also, Owen (2014), utilised QDA to examine the history and experiences of Georgia Institute of Technology's adoption of background check policy

Over 260 documents were perused with less than 10 documents (presentations and Workshop summary reports and survey reports) were focused on enhancing and measuring visibility of institutional research in CBMAs. Other documents provided indirect reference tools, services tools and services that can enhance or measure research visibility but focused on other aspects of like research process, library or publication services.

Table 1.1 Overview of methodology

	Method	Data source
1	**Document Analysis**	**eBIS CBIFILG Platform** https://www.ebis.org
2	**Quantitative CBMA Web Survey (QCWS)**	**CBIFILG Presentations on eBIS Portal CBMA websites, Search Engines and Web navigation**

Data sources for qualitative document Analysis

For the qualitative data analysis, data was also extracted from presentations (PowerPoint and full text) made at the CBIFI Librarians Workshop/Conference from 2009 (1st CBIFIL Workshop held in Bank for International Settlement (BIS), Switzerland) to 2023 (8th CIBIFIL Conference to the 8th CIBIFIL Conference, 2023, Bankok, Indonesia, Bali) that are hosted on the eBIS platform while the list of CBMA website was downloaded from the Bank for International Settlement platform. All evidence of the existence of OPAC, Institutional Repository, Content Management System/Archival; system

Quantitative CBMA Web Survey (QCWS)

In order to validate and verify the results of the Qualitative Data Analysis (QDA), a Quantitative CBMA Web Survey (QCWS) was carried out on the websites of the CBMAs as well as internet searches (search engines, citation databases and multidisciplinary open access repositories). The purpose of the QCWS was to evaluate the present level of research visibility practices among CBMAs, both in terms of their online presence and the techniques they use to disseminate information; and to validate and confirm the QDA of the CIBIFI presentations on eBIS platform.

Data source for the web QCWS

Data for the web was obtained from CBMA websites, direct web search and third-party platforms

CBMA websites

The Central Bank and Monetary website list were downloaded from the Bank of International Settlements (BIS) and data for evidence of CBMA promotion of research output were keyed into excel sheet. Each website was thoroughly browsed to identify the existence of platforms/services that seek to promote institutional research output. Where such does not exist on the website, the open web was searched via Google Search engine to determine the discoverability of instances of such platforms/services. The use of Google Translator was used to translate non-English websites.

Search engines

General search engines (Google, Bing, Yahoo) as well as academic search engines like Google Scholar, Microsoft Academic Search, and the Bielefeld Academic Search Engine (BASE) were used to explore the presence of CBMA activities relating to promoting institutional research visibility. Searches were conducted for the existence of CBMA institutional repository, online catalogue as a separate platform. These included search engines, social media, academic social networks/citation manager, citation databases.

RESULTS

The result of the QDA is first presented to indicate evidence of CBMA activities, use of tools and services aimed at enhancing and measuring the visibility of their research.

Qualitative Document Analysis Results

The qualitative analysed which was conducted through the constructivist lens involved using open and axial coding relevant documents on the eBIS Platform for CBIFI Librarians. We used the Dedoose data analysis software as a tool to help organise and code the data as it related to the five major themes or dimensions that emerged from the axial coding exercise. The codes were first identified then categorised according to the similarities, threading them into groups that logically and intuitively fit together. This was followed by analytic memo writing and searched for relevant information that led to a deeper understanding of the of documented practices of promoting research visibility as practiced in CBMAs, other orgnisations and institutions globally. Dedoose Qualitative Data Analysis Software (QDAS) was used as a supplementary tool for organising our data. It enabled the view and recall of data, notes, references in one place. This is in addition to utilising paper

and pencil coding. Coding is defined by Saldana (2015) a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data. The coding process involved open and axial coding which helped lead to the grouping of important categories within our data. Analytic memo writing was then used to search for patterns and themes as categorised by the axial codes in order to help gain a deeper understanding of the experiences. Thus, the memos served as bridges serves to provide more insights to the documents (workshop presentations which include full text and PowerPoint presentations, bulletins, reports and surveys) as they relate to the purpose of this study. According to Saldana (2015), analytic memo writing is aimed at reflecting on the selected codes and their categorisation in themes. They help to provide meanings to the codes and their codes categories/themes which were more of a transitional process between data collection.

We present the results of the QDA according with four themes that emerged after the axial coding. In addressing the results related to these themes major headings include: Goals of promoting institutional research; Goals and benefits of enhancing visibility and measurement of institutional research in CBMAs; Tools and Services used to enhance the visibility of CBMAs institutional research; Tools used to measure the visibility of CBMAs institutional research.

Goals and benefits of enhancing visibility and measurement of institutional research in CBMAs

The findings from the QDA reveal that the goals for enhancing and measuring research visibility in CBMAs include: showing through metrics, the value of institutional research in addition to the indication of the breadth and scope of such research as well as their usage. Benefits identified include enabling the efficient allocation of research funding based on the trends of the scope and sectoral distribution of the research output, citation impact over time. This is in addition to its ability to demonstrate the contribution they make to the knowledge economy,

Strategies used to enhance the visibility of CBMAs institutional research

The QDA results strategies used by CBMAs to promote visibility can be categorised into four:

- **Boosting institutional publications reputation and Impact:** This includes enhancing the reputation of publications emanating from the CBMAs and includes activities like: optimising the publications (journals and books) for search engine discovery, adhering to guidelines for inclusion in citation databases like Web of Science (WoS) and Scopus.

- **Use of Open Access Tools:** The results indicates that CBMAs use open access tools like open sources online journals systems (OJS) and the implementation of open source institutional repository systems like DSpace. This is in addition to depositing on multiple open access repositories like RePEc SSRN.

- **Use of unique identifies for research output and for researchers/authors:** This includes registering authors using Open Researcher and Contributor ID (ORCID); Google Scholar profile for Googles scholar; Researcher ID on the Web of Science; Scopus author ID on Scopus. The purpose for such identifiesr as indicated, by the QDA, is to ensure that name variants (used by authors) are unified under a single identity for consistency and easy retrieval of research works. In addition to this, assignment of CrossRef's Digital Object Identifiers (DOI) is also used by CBMAs to ensure that research outputs are preserved and retrieved easily across multiple platforms

- **Search Engine Optimization:** The result indicates that CBMAs that implement Institutional Repositories and online publishing systems for books and monograph undertake some form of search engine optimisation. This is to enable easy discovery by both general search engines (like Google, Microsoft's Bing) as well as specialise/academic search engines like Google Scholar, Microsoft's Academic Search, publication use keywords in the abstract and assign them to the manuscript. Use descriptive titles that utilize the obvious terms searchers would use to look for your topic, avoiding questions in the title. Select a journal that is indexed in the key library databases for your field.

- **Utilise of academic social networks and general social media:** CBMA according to the QDA results engage in the use of both general social media and what has emerged as academic social media to enhance the visibility of institutional research. One strategy involves individual researchers registering and uploading their works on academic platforms like Academia, ResearchGate, Slideshare, Mendeley[2]. The other involves Library and publication unit working with the public affairs/or corporate communications to promote institutional research through Social media like Facebook, Twitter, YoutTube, LinkedIn.

- **Development of Nationa Research Networks:** The Banco de la República de la Colombia/Central Bank of Columbia established the Economic Researchers Network (RIEC), a collaboration between the Banco de la República de la Colombia (Central Bank of Colombia) and various national universities, was founded in 2018. Its primary objectives are to enhance academic coordination in Colombia, foster economic research, and facilitate the dissemination of research findings within the country. The Bank enhances the prominence of researchers and their scholarly output by implementing a Current Research Information System (CRIS) on the open-source platform VIVO. The CRIS, which stands for Current Research Information System, is an information system designed to store and manage institutional research data. It combines several sources of information to extract the most relevant data.

- **Development and implementation of strategic plans within CEntral CBMA mission enhance research visibility:** Th The strategic plans of the Federal Reserve Bank of St. Louis and Dallas in the United States prioritise research visibility as part of their mission. This involves improving the quality, visibility, and reputation of the Bank's research and online economic information. The banks aim to enhance the visibility of their research division's work, increase the recognition of their research within the economics profession, and monitor their impact through metrics such as DOI, SSRN, and citation counts. Facilitate the prompt distribution of research findings and improve the influence of Dallas Fed's research. In order to do this, the two Libraries carry out targeted activities such as enrolling economists in ORCID, Researcher ID, and RePEc, as well as synchronising material across their profiles.

o   Assign unique identifiers (DOIs);
o   Submit materials to various digital repositories (Fed in Print>RePEc, SSRN);
o   Implement search engine optimisation for research output;
o   Enrol economists in research profile services (ORCID, RePEc);
o   Monitor citations and analyse metrics; and
o   Partner with public affairs for promotion via social media and to journalists.

These programs are designed to enhance the visibility, impact, and assessment of research, as well as promote cooperation for the overall benefit of the economies of different countries.

Tools used to enhance the visibility of CBMAs institutional research

QDA results for services is categorised into three groups namely, deployment of library systems, use of research identifiers, and citation databases/online reference/citation managers. Library Systems used to enhance research visibility directly or indirectly includes library management system, digital assets/ institutional repository systems, discovery systems, portal/Content Management system, research guides system, citation and refence mangers, online publishing system. Their examples and the license under which they are deployed are included in Table 1.2.

Table 1.2 Library Systems used to enhance Research metrics

Type Library System	Licence	Examples
Library Management System	Proprietary	Aleph, Sierra, Millennium, Open Skies,

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[2] This is both an academic social network as well as a reference and citation manager.

		Alma,
	OSS	Koha
Digital Assets/ Institutional Repository Systems	Proprietary	
	OSS	DSpace, Eprint
Discovery Systems	Proprietary	EBSCO Discovery Service
	OSS	
Portal/CMS	Proprietary	SharePoint
	OSS	Drupal
Research Guides System	Proprietary	Research Guide
	OSS	
Citation and Refence Mangers	Proprietary	Mendeley, Refworks
	OSS	Zotero
Online Publishing system	Proprietary	Digital Commons
	OSS	Online Journal/ Monograph System

The QDA on the eBis platform also indicates that unique identifier services/platforms are also being used to promote the visibility of research. These services include ORCID; Google Scholar profile for Googles scholar; Researcher ID on the Web of Science/Clarivate Analytics; Scopus author ID on Scopus. Citation databases h work in tandem with unique researcher and object identifiers. Online Citation Managers reference and Citation Managers such as RefWorks, Mendeley, Zotero, Endnote apart from supporting effective citation and compilation of references serve as collaborative research network that promotes the visibility of research among researchers in various disciplines. The use of online journal and book publishing systems were also identified as tools used to promote institutional research because the CBMA favour open access option and the use of value-added services like DOI assignments, search engine optimisation in adherence to the criteria for selection (for indexing and rating) by citation databases like Clarivate Analytics Web of Science and Elsevier's Scopus.

Strategies and tools for measure the visibility of CBMAs institutional research

Result for the QDA of the eBIS platform indicates that methods used to measure research visibility include web analytics, citation analysis and analysis of repository. This is in addition to monitoring hit counts to individual files, periodicals, and collections on the publication management systems of the institution. While citation databases were identified as services or platforms used to enhance research impacts, research identifier platforms are mentioned as tools identify and associate research works of individual researchers as well as measure visibility of their works. Tools like the Elsevier's Pure 5.1 SciVal and Clarivate Analytics' converis 5 and Incites as tools that can provide accurate measures of research impact in terms across the broad spectrum of research metrics.   Citation databases include; Google Scholar, Elsevier's Scopus, Clarivate Analytics' Web of Science. Identifier platforms include Open Researcher and Contributor ID (ORCID), Scopus ID, Clarivate Analytics Researcher ID for research outputs and CrossRefs Digital object Identifier (DOI) for research output.

QCWS Results

The web survey which focused on identifying the presence of CBMAs research output on the Internet, was conducted to provide some validation of the services, tools and methods mentioned in the QDA results. CBMAs website list was downloaded from the Bank of International Settlements (BIS). The websites were thoroughly searched to identify platforms for specific strategies and tools (citation databases and identifies, social media, search engines, library systems, institutional repositories) CBMAs use to promote institutional research output. Where no such tools were found, the open web was searched using Google Search. Google Translator was used to translate non-English websites. Search engines like Google, Bing, Yahoo, and academic search engines like Google Scholar, Microsoft Academic Search, and BASE were used to explore CBMA activities related to promoting institutional research visibility. Searches were conducted for the existence of CBMA institutional repository and online catalogue. Citation databases and research identifiers were extracted to enhance discovery and boost citation of institutional research. These databases include Google Scholar, Scopus, and Clarivate Analytics' Web of Science.

A web survey was conducted to validate the services, tools, and methods mentioned in the QDA results. The survey included 12 countries, representing Asia, Europe, North America, and South America. The results show tools used to enhance visibility on CBMA websites and the open Web and CBMA Social med databases. A continental breakdown of the results was provided to Indicating that Europe leads with 33 per cent followed by Asia, Africa, South America, and North America with 25, 15, 14, 11 per cents respectively, with Australia at the rear with 2%.

Figure 1.1 Breakdown of CBMA Survey by Continent
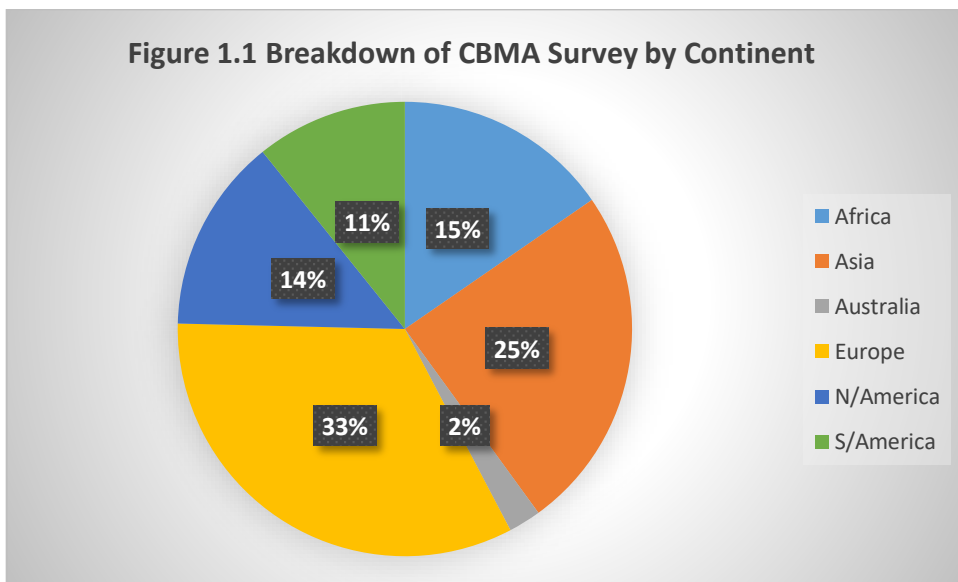
The web survey result is categorised based on the themes that includes: evidence of tools used to enhance visibility on CBMA websites and the open Web; CBMA Social media presence; and CBMA presence in citation databases. To provide addition insights, a continental breakdown of result is also presented. As shown in Fig. 1.1 above, among the continents of the world, Europe had the highest number of forty-three CBMA representing 33% of the population that has social media presence, followed by Asia with 32 CBMA representing 25% and Africa 20 CBMA representing 14.2% while Australia had the lowest number of 3 monetary authorities representing 2% of the whole population, while North America has 18 monetary authorities, representing 12% and South America had 14 CBMAs, representing 11% of the total population. This could be attributed to the level of technological advancements in Europe as well as in Asia.

Tools used by CBMA to enhance research visibility and impact

The result for the tools used to promote research visibility indicates that 49 per cent was publications, 25 per cent museum, and 12 per cent IR. Others include 10 per cent and 4 per cent. Publications, OPAC, Museums, Archives, and IR in that order.
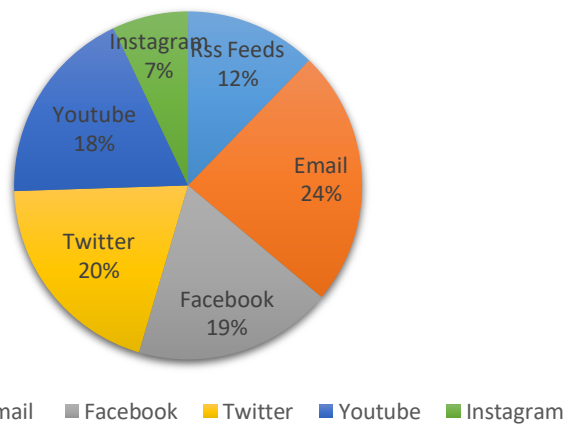
Figure 1.2 CBMA use of library and related systems
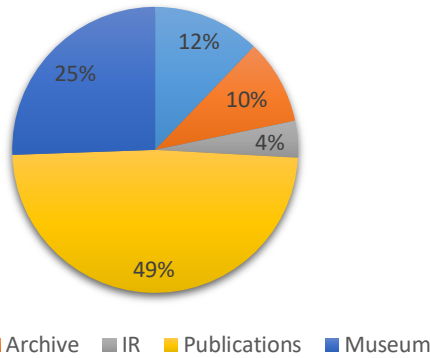
CBMA Social media presence

The result for the CBMA use of citation promote research visibility indicate that 59, 115, 89, 96, 89, and 34 CBMAs representing 12 per cent, 24 per cent, 19 per cent, 20 per cent, 18 per cent and 7 per cent respectively use RSS Feeds, Email, Facebook, Twitter, YouTube and Instagram in that order. However, it was shown in Fig 1.4 that most of the CDMAs uses email to communicate followed by other social media tools.
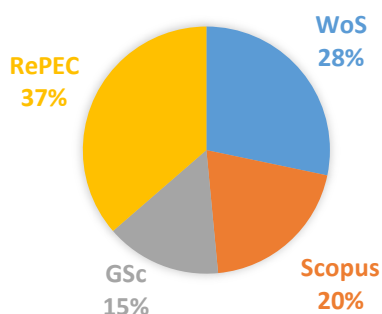

Figure 1.4 CBMA use of Social Media

CBMA presence in citation databases

The result for the CBMA use of citation promote and measure research visibility indicate that 28, 20, 15, and 36 CBMAs representing 28 per cent, 20 per cent, 15 per cent and 37 per cent respectively, use Web of science, Scopus, Google Scholar and RePEC.


FIGURE 1.5 CBMA USE OF CITATION DATABASES

Continental distribution of Tools used for promoting institutional research by Continent

The result was further represented on to show CBMA use of the tools on continental basis.
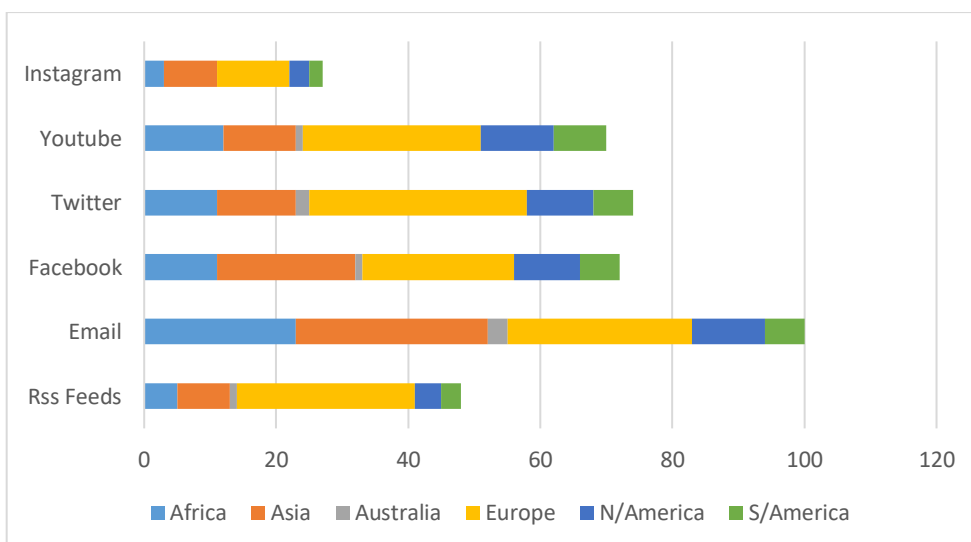
CDMA use of Library and Related Systems

The result for continental distribution for the use library and related systems to promote research visibility indicate that Europe accounted most CBMAs with 16, 12, 6, 43, and 21 using OPAC, Archive, IR Publications and others respectively. However, for the continental distribution of the least CBMA use of library and related systems to promote research visibility the results where, mixed while North America had the leas use of OPAC, South America recorded the least use of Archive. Africa and Asia tied in terms of the being the least in IR use.

FIGURE 1.6 CDMA USE OF LIBRARY AND RELATED SYSTEMS BY CONTINENT
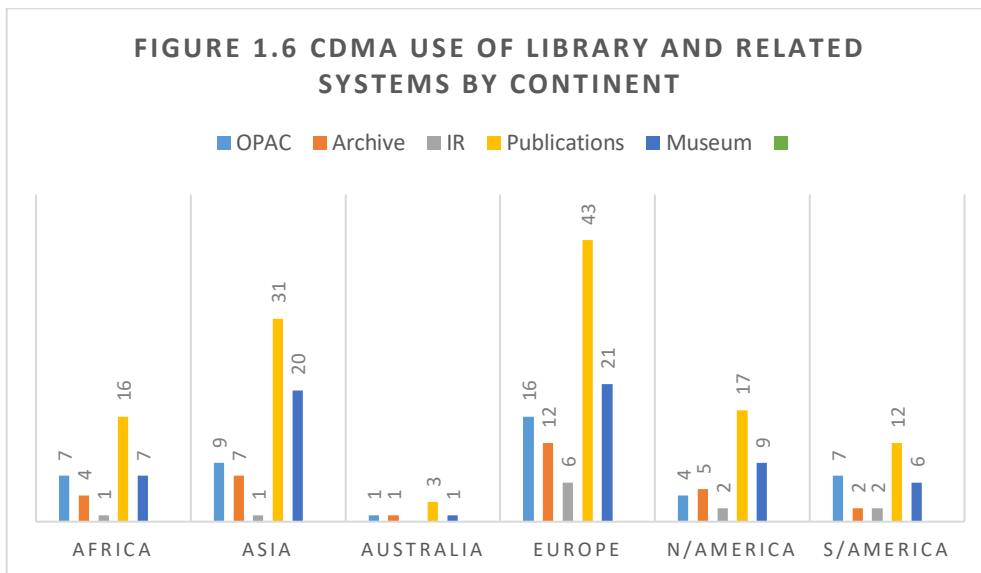
**CDMA use of social media by Continent**

The result for continental distribution for the use of social media to promote and measure research visibility indicate that Europe accounted for most CBMAs with 27, 28, 23, 33, 27 and 11 using RSS Feeds, Email, Facebook, Twitter, YouTube and Instagram respectively. However, for the continental distribution of the least CBMA use of social media indicates that except for Email which recorded 6 countries, South America recorded the least use of RSS Feeds, Facebook, Twitter, YouTube and Instagram with 3, 6, 6, 8, 2 respectively.

Figure 1.6 CDMA use of Social Media by Continent

CDMA use of Citation Databases by Continent

The result for continental distribution for the citation databases to promote and measure research visibility indicate that Europe accounted for most CBMAs with 5, 10, 6 and 21 using Web of Science (WoS), Scopus, Google Scholar and RePEc respectively. However, for the continental distribution of the least CBMAs use of the citation databases, the result indicates that apart from Australia, Africa recorded the least number of countries that use Web of Science (WoS), Scopus, Google Scholar and RePEc respectively.

Figure 1.7 CDMA use Citation Databases by Continent
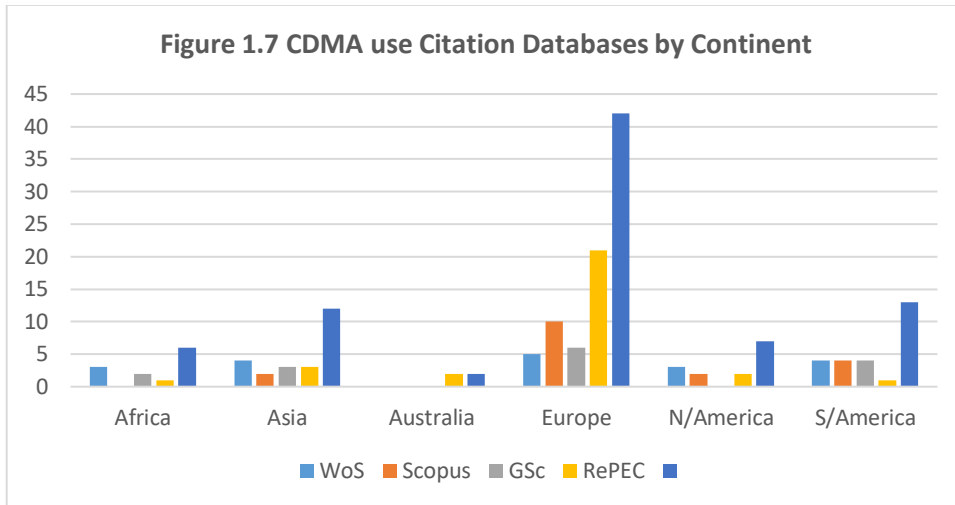
DISCUSSION OF THE RESULTS

This study examined the strategies, tools and services used by CBMAs to promote and measure the visibility of institutional research. According to UNESCO (2015), research impact is the extent to which research read, discussed and disseminated inside and outside research environment and used (to solve social and economic problems). Usage within this context include downloads and views; peer-review in form of expert opinion; citations of the research; al-metrics (links, bookmarks, mentions). Research output can only be used if visible and accessible through The various strategies and tools discussed in this study search engine can improve its citation rate (Ale-Ebrahim *et al* (2014). This section discusses the result of the QDA and CBMA web survey.

Discussion on the QDA results

The QDA result for the strategies, methods, and services used to promote and measure the visibility of institutional research in Central banks are discussed in this section. The goals and benefits of enhancing visibility and measurement of institutional research in CBMAs as indicated by the results include, showing value institutional research; indicate scope and breadth of such research; and guide efficient allocation of research based on existing output's coverage. On the strategies used to enhance the visibility of CBMAs institutional research, the result indicates that strategies include: the use of use of Open Access tools; use of unique identifies for research output and for researchers/authors; Search Engine Optimization (SEO); utilise of academic social networks and general social media. These finding are corroborated by UNESCO (2015) and Ale-Ebrahim (2013) who identified: publicising or hosting a journal with high impact to enhance, using indexing and abstracting; use of identifiers and profiles like ORCID, ResearchID, Scopus Author ID and DOI; tracking new citations and mentions (Altmetrics); dissemination of output through self-archiving Use of open access tools; and promotion through Blogs, SEO techniques and the use of social media.

The tools or technologies and services used by CBMAs to enhance the visibility of CBMAs instituional research as indicated by the result include the following: Library Management System (LMS) represented by the online catalogue were identified on the CBMA websites and through web search. This result is corroborated by CBIFILG, (2013); Molina (2013); Daly Swarz- de Kang (2015) who highlighted the use of this LMS to catalogue and disseminate institutional research. Other systems or platforms identified as being used by CBMAs to disseminate institutional research include: the institutional repository systems, discovery systems, portals/ CMS/ Website, research guides system, citation and refence, and the online publishing

system. This is corroborated by Palomino, Williams, and McKenzie-Burton (2011); Molina (2013); Kumarasinghe (2015); Nadali (2015); Sijm (2015); Stierholz (2015); Selgas, (2017); and Eze (2019).

Kumarasinghe (2015) and Eze (2019) for instance identified institutional repository systems as suitable for the long-term preservation and dissemination of institutional research globally. Similarly, Molina (2013) and Nadali (2015) highlights discovery systems and solutions as necessary for the improvement of search and retrieval of both subscribed content and institutional research output. Sijm (2015) and Stierholz (2015) describe portals/ CMS/ website as appropriate tools for the listing and dissemination of research publication for a CBMA. Palomino, Williams, and McKenzie-Burton (2011) and Molina (2013) as identified research Guides System as necessary to promote institutional research. Molina (2013) and Selgas, (2017) identified the changing roles of the CBMA library to include involvement in the publishing activity by provision of support in form of online publishing system, value addition like the DOI assignments to help boost discoverability of research articles.

Discussion on the Survey

The Survey included 130 CBMAs websites across all the 6 continents excluding Antarctica. The survey result indicate that Europe accounted for the most CBMAs followed by Asia. Apart from Australia, however, the continent with the least number of CBMAs is South America. For the methods, tools and services used to measure the visibility of CBMAs institutional research the results indicated that most of the CBMAs use their websites to list their publications. It also indicates that IR had the least presence on the website with 4 per cent. This could be because of awareness of having IR in most of the Central Banks monetary authorities. Ehrmann, Fratzcher, De Haan, & Jansen, (2008) posit that the utilisation of these research output by relevant stakeholders was dependent on their availability and accessibility through appropriate mediums. Furthermore, CBMA appear to use the official website to enhance research visibility (by listing publications). This was followed by the use of OPAC. Even though the QDA indicated the presence of Institutional Repositories by CBMAs, it was not possible through the survey to locate them on the CBMA websites. This could be attributed to the non-linking or listing of CBMA IRs on the official website or inadequate SEO which could lead to efficient search and retrieval.

In terms of CBMA Social presence, Email for the most while YouTube accounted for the least. For the CBMA presence in citation databases, the RePEC accounted for most appearance accounting for 36 representing 37 per cent as against Google Scholar which accounted for the least occurrence of CBMAs with 15 accounting for 15 per cent. This is understandable given that RePEc a central index of economics research (working papers, articles and software code) aimed at enhancing the dissemination of research in economics (Stierholz, 2017; and RePEC, 2020). The other database are general citation databases that cover other disciplines. The low presence of CBMAs institutional research on WoS and Scopus which according to Cabeza, Chafer, and Mata, (2020) remain the main sources for tool for citations analysis, explains the low presence of CBMA research output. In terms of CDMA use of library and related systems, social media and citation databases, to enhance the visibility of their research, the continent of Europe accounted for most usage. On the other hand, the results for the continent with the least usage of these tools and services was mixed in most cases. For instance, while the South America continent accounted for the least usage of RSS Feeds, Facebook, Twitter, YouTube and Instagram, the African continent recorded the least number of countries that use Web of Science (WoS), Scopus, Google Scholar (GSc) and RePEc. Though no evidence of the relevant tools where unearthed by the survey to corroborate the findings from the QDA, Maata (2015) notes that institutional repository services provide statistical tools for measuring impact like downloads, rankings, citations, author information. Furthermore, SciVal Elsevier's research management platform, includes an analytics engine which provides a comprehensive comparison of research impact against peers, entire subject areas and institutions. This is in addition to a range of research impact metrics, available on Web of Science which is also visible for Scopus articles included in Pure (Elsevier.com, 2020). Also, Clarivate Analytics InCites tool, provides customised citation data, global metrics and multidimensional institutional profiles, making it possible to measure productivity, benchmark against peers as well as providing access to comprehensive citation data and metrics, including the Journal Impact (Clarivate.com, 2020).

Validation and Expansion of QDA through QCWS Findings

The findings of your online poll using quantitative CBMA provide confirmation and support for many of the conclusions you derived from your qualitative document analysis (QDA) of the eBIS platform. Now, we will thoroughly analyse each of the specific examples:

- **Utilisation of Various Open Access Tools:** The documents on eBIS highlighted the importance of open access tools like journals and institutional repositories in enhancing the visibility of research. Based on the result, the QCWS validated and corroborated the QDA of the eBis platform in several key areas. The QDA revealed goals such as demonstrating the value of institutional research through metrics, efficient allocation of research funding, and showcasing contributions to the knowledge economy. The QCWS supported these findings by showing widespread use of tools aimed at promoting and measuring visibility.

- **Promotion on institutional website through provision of full-text of research:** QDA validation by the QCWS was confirmed by the fact that a substantial proportion of CBMAs (49%) provide full text of their publications on their websites, often making them accessible to the public. This aligns with the QDA's emphasis on open access as a main strategy to promote institutional research visibility.

- **The use of unique identifiers:** The QDA of eBIS platform highlighted the need of using distinct identifiers such as ORCID and DOIs. This action was undertaken with the purpose of enhancing the visibility and acknowledgement of research. While the QCWS did not directly assess the use of unique identifiers, on publications, the extensive adoption of citation systems like as RePEc, which rely on DOI's, suggests that CBMAs are knowledgeable about these tools and are likely using them.

- **Use of social media:** The QDA revealed that both public and academic social media channels are used to promote research. The QCWS results clearly indicated that CBMAs actively use various social media platforms, particularly Twitter (20%), Facebook (19), YouTube (18%), Instagram (8%), to interact with their audience and potentially disseminate research findings.

- **Use of Citation Databases:** QDA highlighted the use of citation databases like RePEc to assess the impact of research. This was confirmed by the QCWS which determined that RePEc (37%) is the most frequently used citation database by CBMAs followed by Web of Science (28%) and Scopus (20%). The conclusion is fully consistent with the results of the QDA.

- **The use of open access institutional repositories (IRs):** QDA indicated that the usage of information repositories (IRs) QCWS results indicated that a number of CBMA websites clearly linked to or prominently featured their IRs, further supporting this observation. The survey corroborated this by showing high percentages of CBMAs employing these strategies. For instance, 10% of CBMAs open access institutional repositories to promote the visibility of their research output

- **Use of search engine optimisation (SEO):** The QDA highlighted the use search engine optimisation techniques on their websites and institutional repositories to improve discoverability. The QCWS result suggests that CBMAs mostly use their websites to share research, thereby supporting the QDA's claim, even though this finding was not expressly measured. Search engine optimisation is crucial for effectively disseminating information via websites. The survey corroborated this by showing high percentages of CBMAs employing these strategies. Publications and SEO were used by 49% of CBMAs, while 10% used IRs and many employed SEO techniques.

CONCLUSION

This study which examined the strategies, tools and services used by CBMAs to promote and measure the visibility of institutional research was able to identify specific strategies, tools and services. These are relevant to the needs of the Central Bank of Nigeria (CBN) which is embarking on the eLibrary Phase III. This initiative aims at promoting the Bank's research through digitization and hosting of research outputs

(published and unpublished) from 1960 to date and creating an enabling virtual environment to support the broad spectrum of editorial and peer-review workflows in the Bank. Consequent upon the findings of the research, the study is making the following recommendations: pls take to the first sentence after the subheading of Recommendation.

RECOMMENDATIONS

- The Bank through the Research Department and specifically the Library and Publication and Editorial Division (PED) should develop a strategic plan of research impact enhancement and measurement in the CBN. This would include input from the eLibrary Phase III Software Systems Requirement, and the Business Case document which serve as the blueprints for the implementation of the initiative.

- Intermediate and advance training should be provided for relevant Staff of the Research Department (the Library and Publication and Editorial Division (PED)) Department, Economic Policy Directorate, Corporate Communications Department's to enable them effectively to implement the policy that would be developed.

- The country experience indicates the Economic Researchers Network (RIEC), of Banco de la República de la Colombia/Central Bank of Columbia. The CBN can replicate same to enhance academic collaboration in Nigeria, foster economic research, and expand the dissemination of knowledge for quality research and effective policy making that would enhance economic growth and development.

- The CBN can prioritise research visibility as part of its institutional vision and mission. This implementation of this strategy could include improving the quality, visibility, and reputation of its research, publications, online economic data and information. in specific terms, this sgould include targeted activities such as enrolling economists in ORCID, Researcher ID, and RePEc, synchronizing material across their profiles, assigning unique identifiers (DOIs), submitting materials to digital repositories, implementing search engine optimization for research output, enrolling economists in research profile services, monitoring citations and analyzing metrics, and partnering with public affairs for promotion via social media and journalists.

REFERENCES

1. Ale Ebrahim, N., Salehi, H., Embi, M. A., Habibi Tanha, F., Gholizadeh, H., Motahar, S. M., & Ordi, A. (2013). Effective Strategies for Increasing Citation Frequency. International Education Studies, 6(11), 93-99.
2. Bong, Y. B., Ale Ebrahim, N. 2017). Increasing Visibility and Enhancing Impact of Research, Asia Research News.
3. Bowen, G. A. (2009). Document analysis as a qualitative research method. Qualitative Research Journal, 9(2), 27-40.
4. Creswell, J. W., & Plano Clark, V. L. (2023). Revisiting mixed methods research designs twenty years later. Handbook of mixed methods research designs, 21-36.
5. Daly Stephen and Saskia Schwarz-de Koning (2015) "I don't use the Library; I use Google instead'—Implementing ALMA and Primo at the ECB Library, European Central Bank
6. Debreczeni Z. (2013). "What do we do?: A quick survey of central bank librarians". Paper presented at the Central Bank and Financial Institution Librarians Workshop, 30 October - 1 November 2013.
7. Elsevier.com. 2020. Scival | Navigate The World Of Research With A Ready-To-Use Solution | Elsevier Solutions. [online] Available at: <https://www.elsevier.com/solutions/scival> [Accessed 19 March 2020].
8. Espadas,J., Calero,C.,& Piattini,M.(2008).Website visibility evaluation. Journal of the American Society for Information Science & Technology, 59(11), 1727–1742.
9. Eze G. N. (2019). Implementing an Institutional Repository for long-term preservation and dissemination of research output: the case of Central Bank of Nigeria Library. Paper presented at the 5th Central Bank and International Financial Institution Librarians' Workshop, Banco de España, Madrid, Spain, 2-4 October.

10. Garrido Arenas ,H.A. (2019). " Visibility of researchers and their academic production through the implementation of a CRIS – Current Research Information System" [in Spanish, English interpretation provided] Paper presented at the 5th Central Bank and International Financial Institution Librarians' Workshop, Banco de España, Madrid, Spain, 2-4 October 2019.

11. Guest, G., Namey, E. E., & Mitchell, M. L. (2013). Collecting qualitative data: A field manual for applied research. Thousand Oaks, CA: Sage.

12. Hakonen Soile .(2017). "Institutional Repository Enhancing Digitalization, Visibility and Collaboration" , (Bank of Finland) Paper presented at the 5th Central Bank and International Financial Institution Librarians Workshop, Bank of Canada, Ottawa, Canada

13. Clarivate.com. (2020). Incites Help. [online] Available at:https://incites.help.clarivate.com/Content/home.htm [Accessed 19 March 2020].

14. Stierholz, K. (2009) FRASER and Liber8. Paper presented at the 1st Central Bank and International Financial Institution Librarians Workshop, 15 –16 October 2009 Bank for International Settlements Basel, Switzerland.

15. Kaushik, A. (2015). Content Analysis of Political Party Websites in India. World Digital Libraries-An international journal, 8(1), 19-32.

16. Kumarasinghe, B. G. N. (2009). "Digital institutional repository of publications "Presented at the 1st Central Bank and Financial Institution Librarians Workshop, 2009

17. Lindgren, S. (2018). The Concept of 'Data' in Digital Research, In, Flick, U. ed., The Sage handbook of qualitative data collection. Sage.

18. Maatta, P. (2015)." Use of repositories at the Bank of Finland". Paper presented at the 4th Central Bank and Financial Institution Librarians Workshop, 28-29 October 2015, De Nederlandsche Bank, Amsterdam, the Netherlands.

19. Mahmood A. (2019). " Implementation of SBP Knowledge Repository system in State Bank of Pakistan" Paper Presented at the 5th Central Bank and International Financial Institution Librarians' Workshop, Banco de España, Madrid, Spain, 2-4 October 2019.

20. Malliaropulos D. The role of research in Central Bank, presentation at the Conference. Getting Policy Knowledge into Government: The Greek and European experience.", Athens, 19 May 2016.

21. Marashi, S.A., et al. (2013). Impact of Wikipedia on citation trends. EXCLI Journal, 12, 15-19. http://dx.doi.org/citeulike-article-id:12202824 .

22. Nadali, A. (2015). " Summon 2.0: the new web discovery tool at the Bank of Greece Library" Bank of Greece Paper presented 4th Central Bank and Financial Institution Librarians Workshop, 28-29 October 2015, De Nederlandsche Bank, Amsterdam, the Netherlands.

23. O'Leary, Z. (2014). The essential guide to doing your research project (2nd ed.). Thousand Oaks, CA: SAGE Publications, Inc.

24. Owen, G. T. (2014). Qualitative methods in higher education policy analysis: Using interviews and document analysis. The qualitative report, 19(26),

25. Palomino, N.W.A and McKenzie-Burton, C. (2011) Strategic planning process at the IADB, Felipe Herrera Library: re-shaping library services for the new Bank's agenda. Presented at the Central Bank and Financial Institution Librarians Workshop, 19-21 October 2011, International Monetary Fund - Washington D.C.

26. Penfield, T., Baker, M. J., Scoble, R., & Wykes, M. C. (2014). Assessment, evaluations, and definitions of research impact: A review. Research evaluation, 23(1), 21-32.

27. Rapley, T., & Rees, G. (2018). Collecting documents as data. In, Flick, U. ed.,The Sage handbook of qualitative data collection. Sage.

28. Rapley, T., & Rees, G. (2018). Collecting documents as data. In, Flick, U. ed.,The Sage handbook of qualitative data collection. Sage.

29. Romano Jr, N. C., Donovan, C., Chen, H., & Nunamaker Jr, J. F. (2003). A methodology for analyizing web-based qualitative data. Journal of Management Information Systems, 19(4), 213-246.

30. Rubio Molina E. C. "The role of specialised libraries in modern knowledge society: Colombian's Central Bank experience". Paper presented at the Central Bank and Financial Institution Librarians Workshop, 30 October - 1 November 2013.

31. Selgas J. (2019) Preserving and Disseminating: the new Banco de España institutional repository/, Banco de España

32. Selgas, J. (2017) Between the Old and the New: The Role of Central Bank Libraries Regarding Institutional Publications, Presented at the 5th Central Bank and International Financial Institution Librarians Workshop, 11-13 October 2017, Bank of Canada, Ottawa, Canada

33. SIjm, J. (2015). A sketch and a peek view in the development of Sharepoint – DNB's future digital work space Paper presented at the 4th Central Bank and Financial Institution Librarians Workshop, 28-29 October 2015, De Nederlandsche Bank, Amsterdam, the Netherlands.

34. Stierholz Katrina (2017). "Increasing the Visibility of Federal Reserve Publications and Economists in Federal Reserve Bank of St. Louis. Paper presented at the 5th Central Bank and International Financial Institution Librarians Workshop, Bank of Canada, Ottawa, Canada

35. Stierholz, K and Fraser. (2015): "A preservation and access project for the Federal Reserve materials. Paper presented at the 4th Central Bank and Financial Institution Librarians Workshop, 28-29 October 2015", De Nederlandsche Bank, Amsterdam, the Netherlands.

36. Teresa Penfield T. et al (2013) Assessment, evaluations, and definitions of research impact: A review, Research Evaluation 23 (2014) pp. 21–32 doi:10.1093/reseval/rvt021 Advance Access published on 9 October 2013.

37. Trichet, Jean-Claude: The role of research in Central Banks; speech delivered at the Award of the German Bernacer Prize on 21 May 2007 at Madrid.

38. UNESCO (2015). "Research Evaluation Metrics". Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO).

39. Vajs. Kris (2015). "Integrating the Library into the Research Workstream". Paper presented at the 4th Central Bank and Financial Institution Librarians Workshop, 28-29 October 2015, De Nederlandsche Bank, Amsterdam, the Netherlands.

40. Visca Rosanna. (2017). "Inside the Central Bank Publications Process: Working on an IR Project", (Banca d'Italia). Paper presented at the 5th Central Bank and International Financial Institution Librarians Workshop, Bank of Canada, Ottawa, Canada

41. Viswambharan, A. P., & Priya, K. R. (2016). Documentary analysis as a qualitative methodology to explore disaster mental health: insights from analysing a documentary on communal riots. Qualitative research, 16(1), 43-59.

42. Vliet José van. (2015). " Enterprise search with search engine "Navi" and the making of the news portal" Paper presented 4th Central Bank and Financial Institution Librarians Workshop, 28-29 October 2015,, De Nederlandsche Bank, Amsterdam, the Netherlands.

43. Wach, E., & Ward, R. (2013). Learning about qualitative document analysis. IDS Practice Study in Brief 13, Brighton: IDS.