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Patent Landscape Report

COMPANIES CONTRIBUTING TOWARDS INNOVATIONS IN "DATA ANALYTICS"

2017

[Image Credit]

Contents

1. WHAT IS DATA ANALYTICS?

Data analytics, also known as analysis of data or data analysis, is a process of examining data sets to draw conclusions about the information they contain, increasingly with the aid of specialized systems and software. Data analytics technologies and techniques are widely used in commercial industries to enable organizations to make more informed business decisions and by scientists and researchers to verify or disprove scientific models, theories, and hypothesis. Data is extracted and categorized to identify and analyze behavioral data and patterns, and techniques vary according to organizational requirements. Global organizations collect and analyze data associated with customers, business processes, market economics or practical experiences. For example, a social networking website collects data related to user preferences and community interests and segment according to specified criteria, such as demographics, age or gender. A proper analysis reveals key user and customer trends and facilitates the social network's alignment of content, layout and overall strategy.[Source]

Data Mining–Data mining is a particular data analytics technique that focuses on modeling and knowledge discovery for predictive rather than purely descriptive purposes, while business intelligence covers data analytics that relies heavily on aggregation, focusing on business information. In statistical applications, data analytics can be divided into descriptive statistics, exploratory data analytics (EDA), and confirmatory data analytics (CDA). EDA focuses on discovering new features in the data and CDA on confirming or falsifying existing hypothesis. Predictive analytics focuses on the application of statistical models for predictive forecasting or classification, while text analytics applies statistical, linguistic, and structural techniques to extract and classify information from textual sources, a species of unstructured data.[Source]

Who performs analytics?

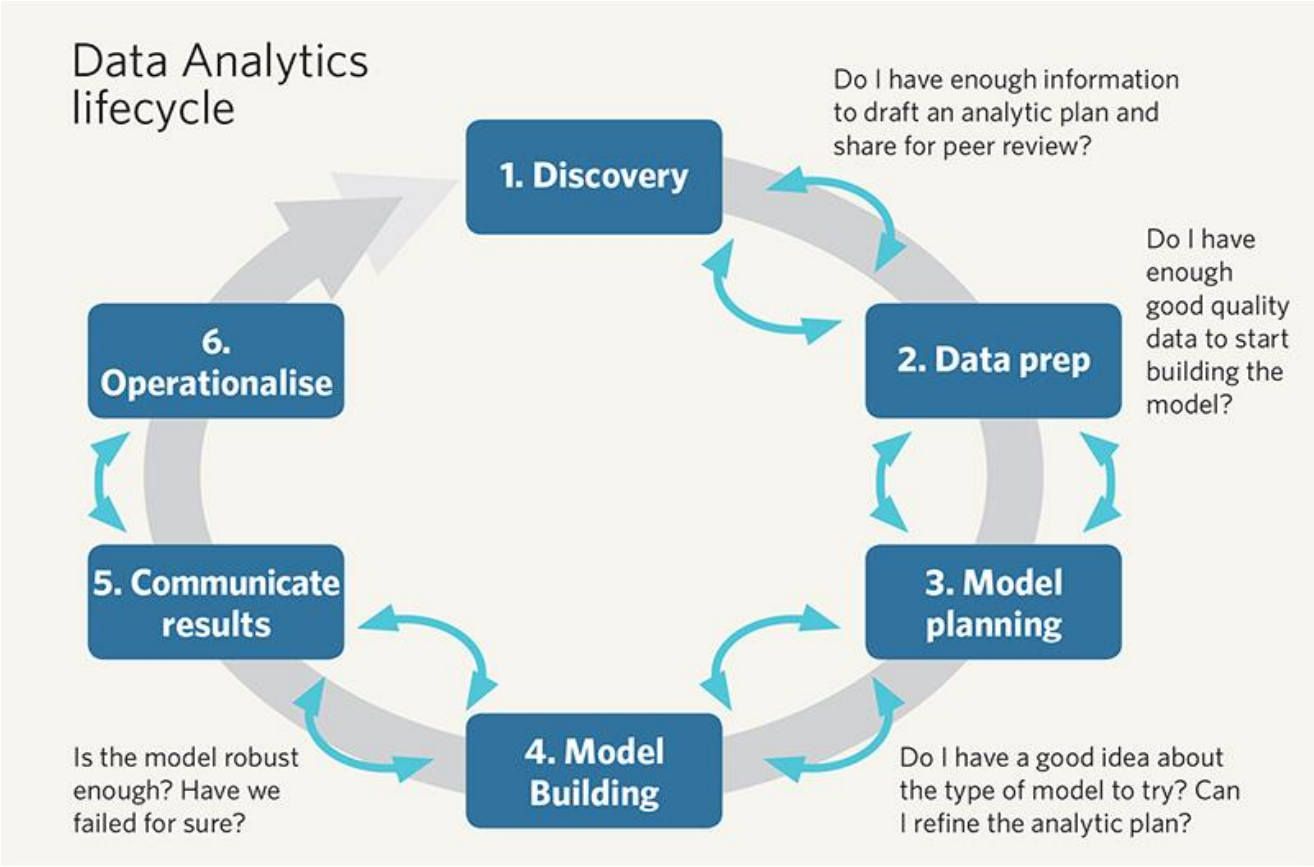
Before we approach a formal definition, it may be useful to consider who performs analytics. Traditionally, data analytics has been performed by statisticians, operations research analysts and management scientists. More recently, data analytics has also been implemented by programmers, data scientists and business intelligence analysts.[Source]

Today, businesses of all sizes use analytics. For example, if we ask a fruit vendor why he stopped servicing on our road, he may tell us that we try to bargain a lot and hence he loses money, but on the street next to ours he has some great customers for whom he provides excellent service. This is the heart of analytics. Our fruit vendor TESTED servicing our street and realized that he is losing money – within one month he stopped servicing us, and even if we ask him, he will not show up. How many businesses today know who their MOST PROFITABLE CUSTOMERS are? Do they know who their MOST COST GENERATING customers are? And given the knowledge of most profitable customers, how should they target their efforts to ACQUIRE the MOST PROFITABLE customers?[Source]

[Image Courtesy]

So how exactly data analytics is performed?

Data analytics refers to breaking a whole into its separate components for individual examination, for obtaining raw data and converting it into useful information for decision-making by users. Data is collected and analyzed to answer questions, test hypothesis or disprove theories.[Source]



[Image Courtesy]

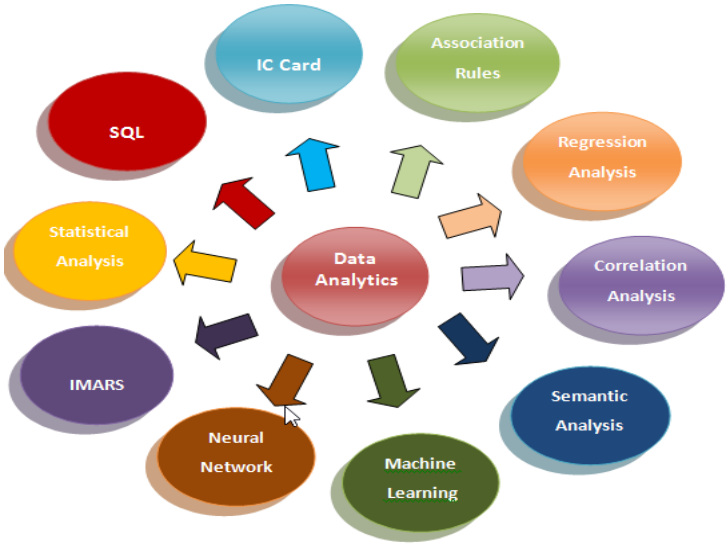
Tools and Trends in Data Analytics

The goal of any business analytics tool is to analyze data and extract actionable and commercially relevant information that can be used to increase results or performances. Some of the key analytics tools are:

1. **Visual analytics:** Visual Analytics is the science of analytical reasoning supported by interactive visual interfaces. Visual Analytics methods allow decision makers to combine their human

flexibility, creativity, and background knowledge with the enormous storage and processing capacities of today's computers to gain insight into complex problems.

2. **Correlation analysis:** Correlation is a technique for investigating the relationship between two quantitative, continuous variables; for example, age and blood pressure. It is most useful when one knows or suspects that, there is a relationship between two variables and he would like to test his assumption.
3. **Regression analysis:** Regression analysis is a statistical tool used to model the relationship between a response variable and one or more predictor variables; for example, is there a casual relationship between price and product demand? It is used if one believes that a variable is affecting another and he wants to establish whether his hypothesis is true.
4. **Data mining:** Data Mining is an analytics process designed to explore data, usually very large business-related data sets, looking for commercially relevant insights, patterns or relationships between variables that can improve performance. It is therefore useful when one has large data sets that he needs to extract insights from.
5. **Neural network analysis:** A neural network is a computer program modeled on the human brain, which can process a huge amount of information and identify patterns in a similar way that a human does. Neural network analysis is, therefore, the process of analyzing the mathematical modeling that makes up a neural network.[Source]
6. **SQL:** SQL business intelligence (BI) tools and plug-ins such as Power View enable users to tap into the back-end of SQL server to find valuable business data, create reports and visuals, and easily share data with other users. A SQL server BI system supports decision-making in companies of all sizes.[Source]



What are the application of Data Analytics?

Using data science, companies have become intelligent enough to push & sell products as per customers' purchasing power & interest.

Here are some data analytics applications:

- **Consumer Complaints Analytics:** It helps to segregate the data dynamically and intelligently across various analytical requirements. It fetches data from World Wide Web, Blogs, Forums, Articles, e-Commerce Portals, Social Media etc and gets user complaints with real-time insights.[Source]
- **Image Recognition:** We upload our image with friends on Facebook and we start getting automatic suggestions to tag our friends. This automatic tag suggestion feature uses face recognition algorithm. Similarly, while using WhatsApp web, we scan a barcode in our web browser using our mobile phone. In addition, Google provides us the option to search for images by uploading them. It uses image recognition and provides related search results.
- **Recommendation System:** A lot of companies have fervidly used this engine/system to promote their products/suggestions in accordance with user's interest and relevance of information. Internet giants like Amazon, Twitter, Google Play, Netflix, Linkedin, IMDb and many more use this system to improve the user experience. The recommendations are made based on previous search results for a user.
- **Price Comparison Websites:** At a basic level, these websites are being driven by lots and lots of data which is fetched using APIs and RSS Feed and the convenience of comparing the price of a product from multiple vendors at one place. PriceGrabber, PriceRunner, Junglee, Shopzilla, DealTime are some examples of price comparison websites. Nowadays, price comparison website can be found in almost every domain such as technology, hospitality, automobiles, durables, apparels etc.

Big Data vs. Data Analytics

Big Data is something that is used to analyze insights which can lead to better decision and strategic moves.

Data Analytics involve automating insights into a certain dataset as well as supposes the usage of queries and data aggregation procedures.

[Source]

- **Fraud and Risk Detection:** Companies were fed up of bad debts and losses every year. However, they had a lot of data which used to get collected during the initial paperwork while sanctioning loans. They decided to bring in data science practices to rescue them out of losses. Over the years, banking companies learned to divide and conquer data via customer profiling, past expenditures, and other essential variables to analyze the probabilities of risk and default. Moreover, it also helped them to push their banking products based on customer's purchasing power.

- **Miscellaneous:** Apart from applications mentioned above, data science is also used in Marketing, Finance, Human Resources, Health Care, Government Policies and every possible industry where data gets generated. Using data science, the marketing departments of companies decide which products are best for up selling and cross selling, based on the behavioral data from customers. In addition, predicting the wallet share of a customer, which customer is likely to churn, which customer should be pitched for high-value product and many other questions can be easily answered by data science. Finance (Credit Risk, Fraud), Human Resources (which employees are most likely to leave, employees performance, decide employees bonus), and many other tasks are easily accomplished using data science in these disciplines.[Source]

2. OBJECTIVES

- To perform detailed analysis of patents/published applications pertaining to "Data Analytics" to understand underlying technologies.

- In depth analysis of patents/published applications in order to categorize them, and understand focus areas of applicants/assignees.

- Graphical representation of trends (Filing, Publication, etc.), and categorical distribution of patents/applications from mined/relevant data.

Image Courtesy

Image Courtesy

3. SEARCH METHODOLOGY

We used renowned patent database "Questel Orbit" to execute search query, wherein the query consisted of G06Q-030/02 International Patent Class, further restricted for IBM, Hitachi, Google, Nippon, Fujitsu, HP, Toshiba, and Sony as the Assignees.

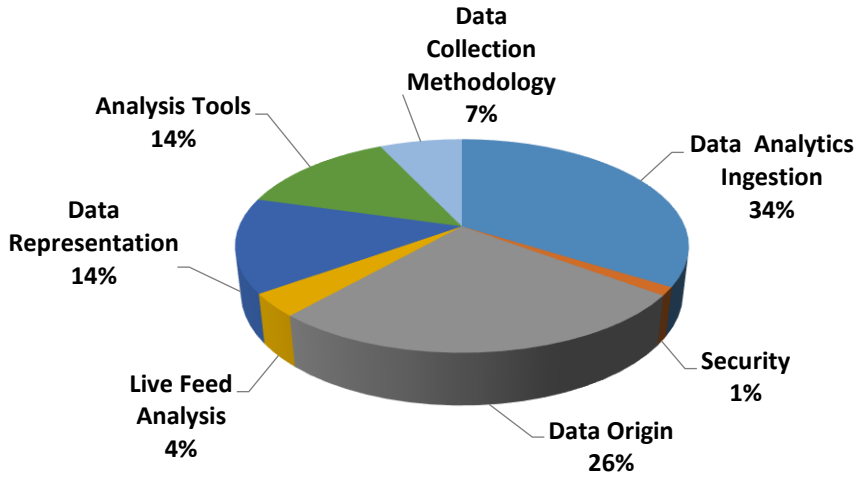
A sample dataset comprising 630 patent families was analyzed that resulted in 157 relevant patent families.

4. TECHNICAL TAXONOMY

5.TECHNICAL ANALYSIS OF ALL RELEVANT PATENTS/APPLICATIONS

5.1. DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS"

Below representation deals with distribution of all patents/applications, wherein the patents/applications relate to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications consisting of: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.



INSIGHT:

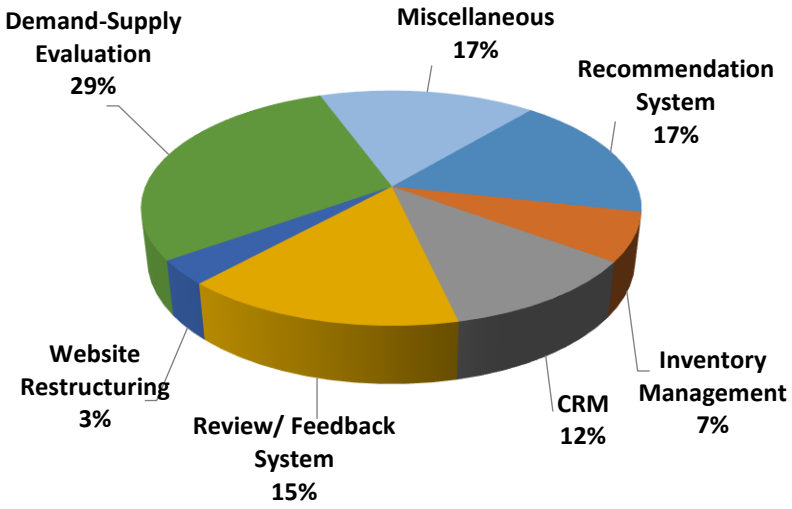
As evident, maximum number of patents/applications are falling under data analytics ingestion(**34%**), followed by data origin(**26%**).

5.1.1 DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ANALYTICS INGESTION" as the underlying category. The sub-categories consist of: recommendation system, inventory management, CRM, review/feedback system, website restructuring, and demand-supply evaluation.

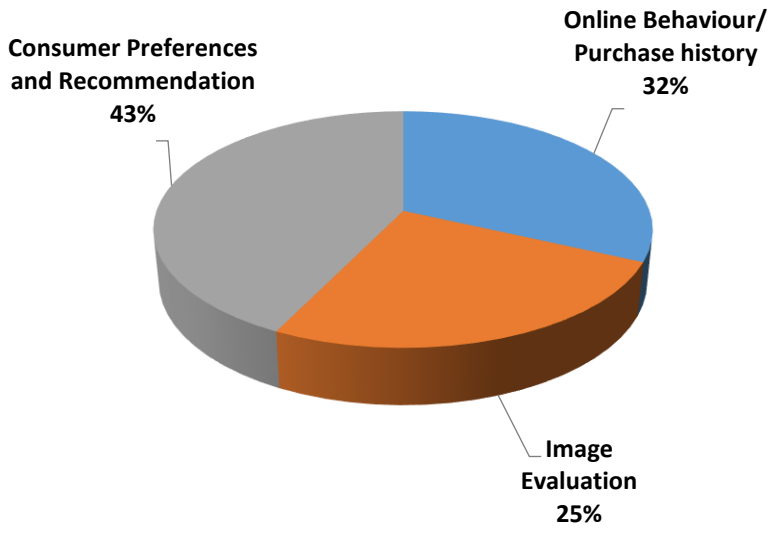
INSIGHT:

As evident, maximum number of patents/applications are falling under demand-supply evaluation(**29%**) ,followed by recommendation system(**17%**), and miscellaneous(**17%**).



5.1.2 DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category. The sub-categories consist of: online behavior/purchase history, image evaluation and consumer preferences and recommendation.

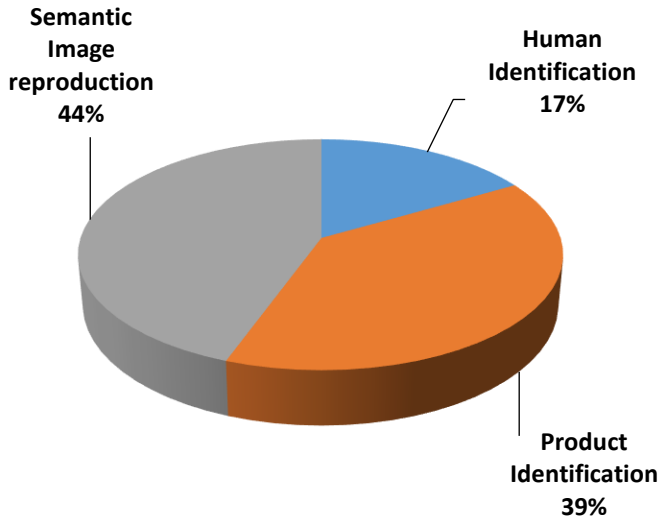


INSIGHT:

As evident, maximum number of patents/applications are falling under consumer preferences and recommendation**(43%),** followed by online behavior/purchase history**(32%).**

5.1.3 DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category. The sub-categories consist of: human identification, product identification, and semantic image reproduction.

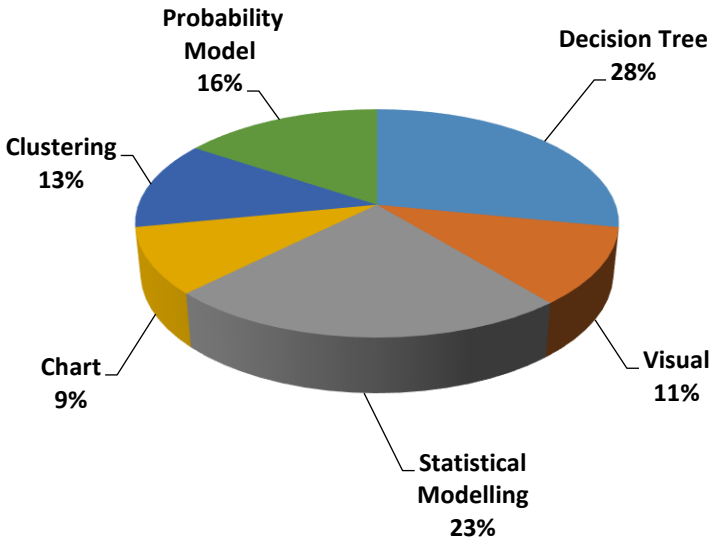


INSIGHT:

As evident, maximum number of patents/applications are falling under semantic image reproduction**(44%),** followed by product identification**(39%).**

5.1.4 DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category.The sub-categories consist of: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

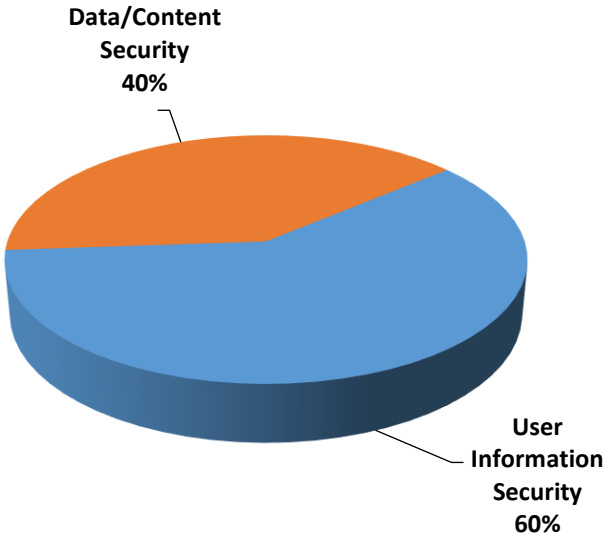
As evident, maximum number of patents/applications are falling under decision tree**(28%),** followed by statistical modelling**(23%).**

5.1.5 DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "SECURITY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "SECURITY" as the underlying category. The sub-categories consist of: user information security, and data/content security.

INSIGHT:

As evident, maximum number of patents/applications are falling under user information security**(60%),** followed by data/content security**(40%).**

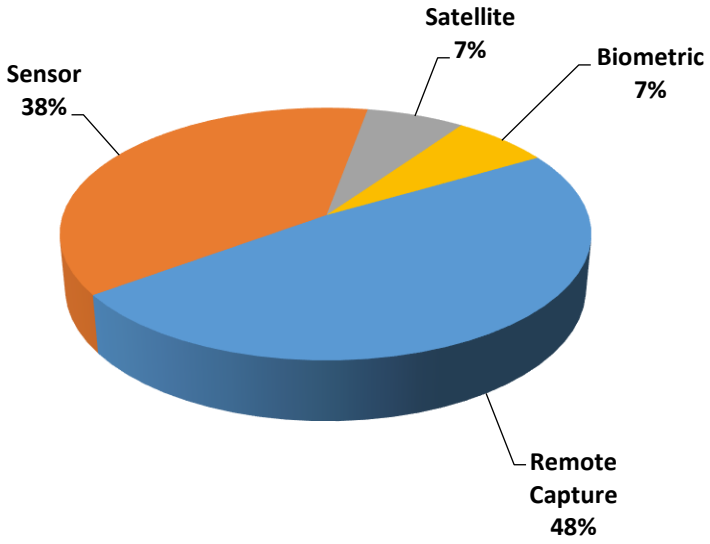


5.1.6 DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories consist of: remote capture, sensors, satellite, and biometric.

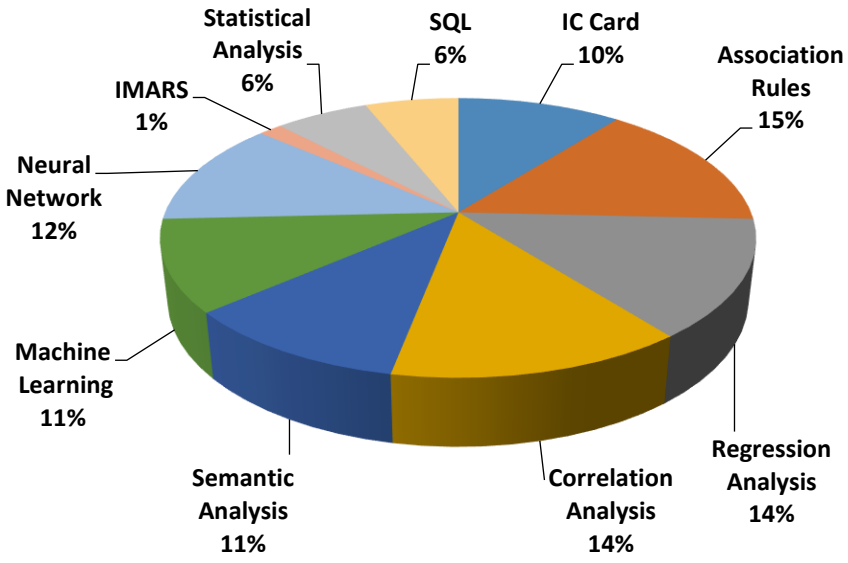
INSIGHT:

As evident, maximum number of patents/applications are falling under remote capture**(48%),** followed by sensor**(38%).**



5.1.7 DISTRIBUTION OF PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "ANALYSIS TOOLS" as the underlying category.The sub-categories consist of: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.



INSIGHT:

As evident, maximum number of patents/applications are falling under association rules**(15%),** followed by regression analysis and correlation analysis**(14% each).**

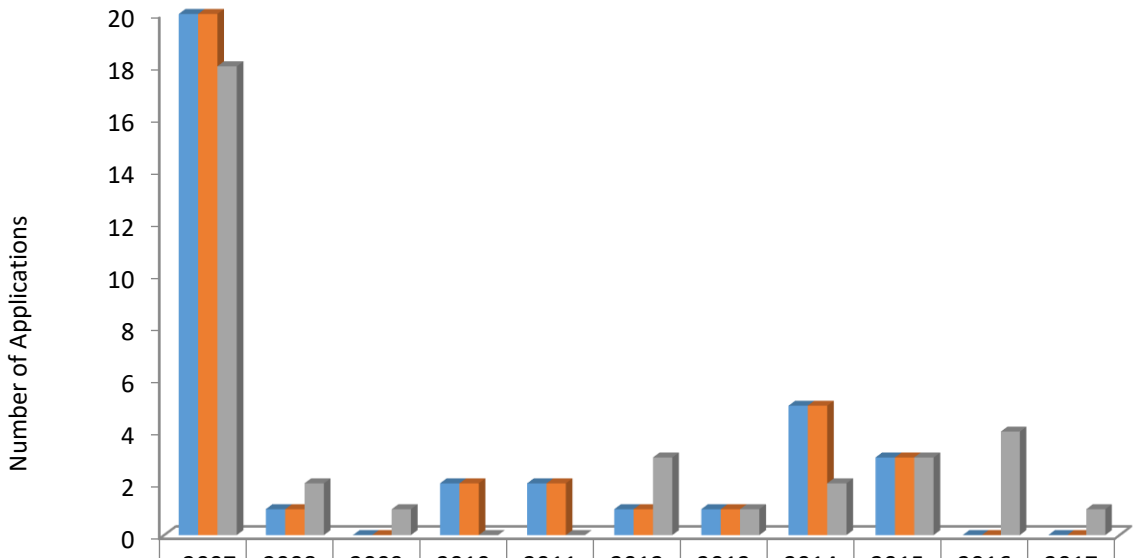
6. ANALYSIS FOCUSED ON COMPANIES CONTRIBUTING INNOVATIONS IN "DATA ANALYTICS"

6.1 IBM

6.1.1 NON-TECHNICAL ANALYSIS

6.1.1.a PRIORITY, FILING, PUBLICATION YEAR TRENDS

Below graph represents Priority, Application, and Publication year based trends of representative patents/applications member per patent family filed by IBM and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	20	1	0	2	2	1	1	5	3	0	0
Application Date	20	1	0	2	2	1	1	5	3	0	0
Publication Date	18	2	1	0	0	3	1	2	3	4	1

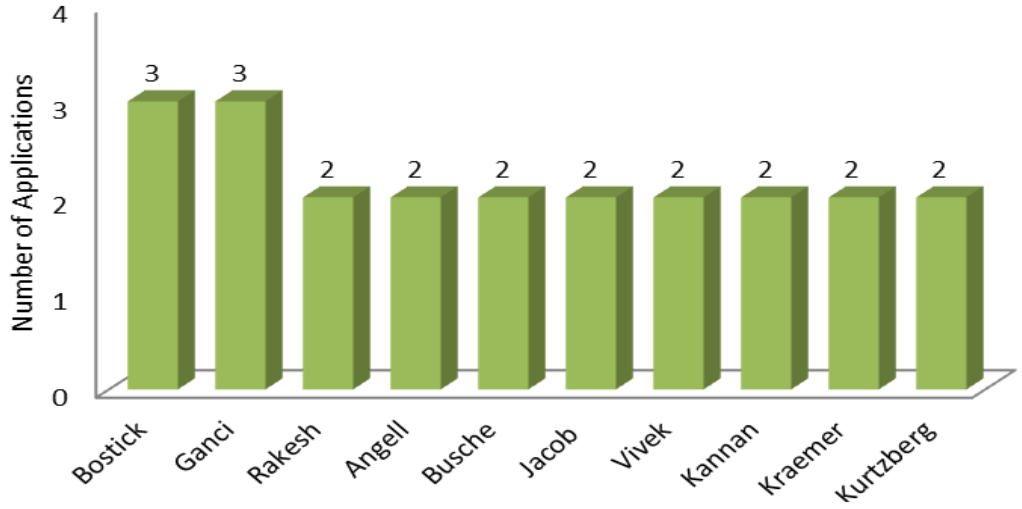
INSIGHT:

Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum**(5 nos.)** number of applications claiming priority/first filed status were filed in year **2014.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is steady application filing activity over the years, wherein maximum number of patent applications (**5 nos.**) were filed in year **2014.**
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is steady publication of applications over the years, wherein maximum number of patent applications (**4 nos.**) were published in **2016.**

6.1.1.b INVENTORS TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

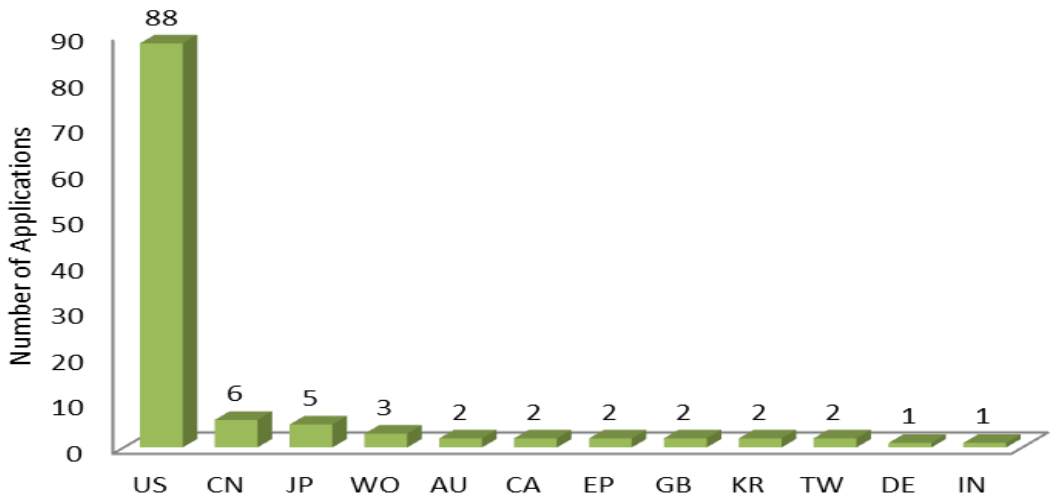


INSIGHT:

Bostick and Ganciare are leading inventors, wherein each of them has contributed **(3 nos.)** patent families, followed by Rakesh and others with **2** patent families each.

6.1.1.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where IBM has filed patent applications.



Note: There may be higher number of application for year 2015-2017, attributed to unpublished applications.

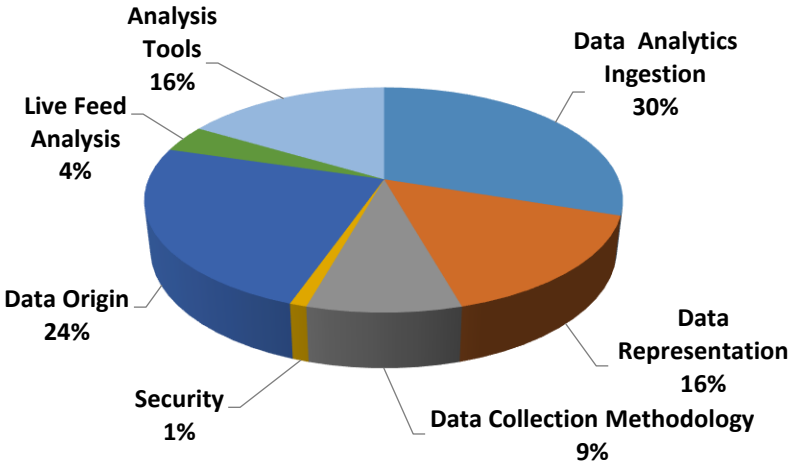
INSIGHT:

IBM has focused its application filing activity specifically in United States, since it has filed maximum number of patent applications in US **(88 nos.)**, followed by China **(6 nos.)** and Japan **(5 nos.)**.

6.1.2 TECHNICAL ANALYSIS

6.1.2.a DISTRIBUTION OF IBM's PATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by IBM, wherein the patents/applications relate to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications, the categories comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.



INSIGHT:

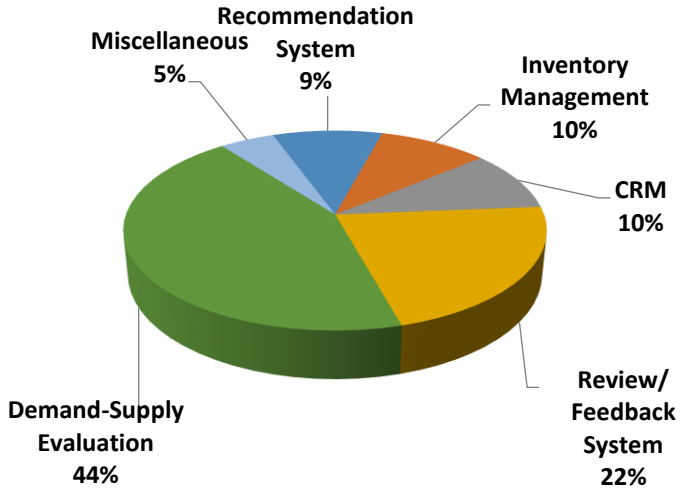
As evident, maximum number of patents/applications are falling under category of data analytics ingestion(**30%**), followed by data origin(**24%**).

6.1.2.b DISTRIBUTION OF IBM'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertain to "DATA ANALYTICS INGESTION" as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/feedback system, website restructuring, and demand-supply evaluation.

INSIGHT:

As evident, maximum number of patents/applications are falling under demand-supply evaluation(**44%**), followed by review/ feedback system(**22%**).

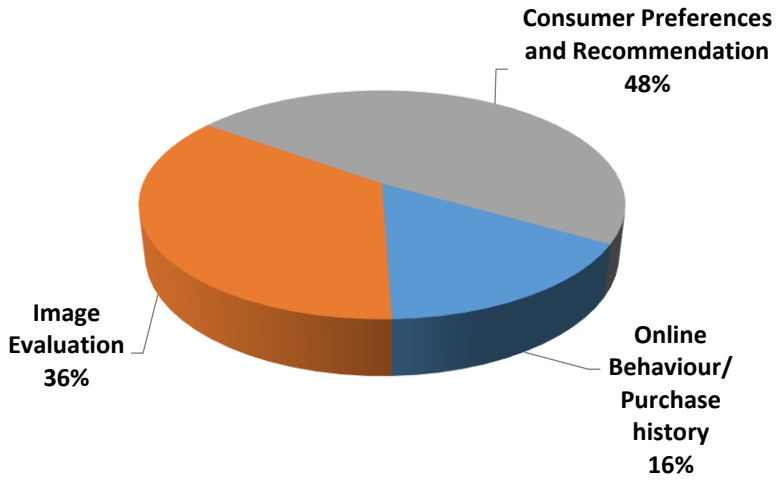


6.1.2.c DISTRIBUTION OF IBM'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category. The sub-categories comprise: online behavior/purchase history, image evaluation, and consumer preferences & recommendation.

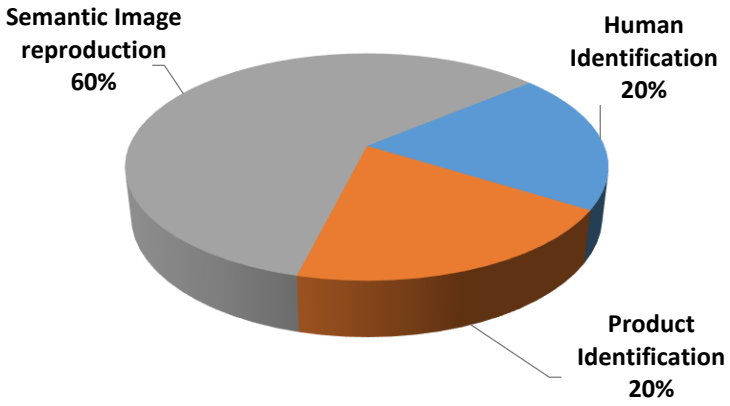
INSIGHT:

As evident, maximum number of patents/applications are falling under consumer preferences and recommendation(**48%**), followed by image evaluation(**36%**).



6.1.2.d DISTRIBUTION OF IBM'S PATENTS/APPLICATIONS PERTAINING TO"LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category.The sub-categories comprise: human identification, product identification, and semantic image reproduction.

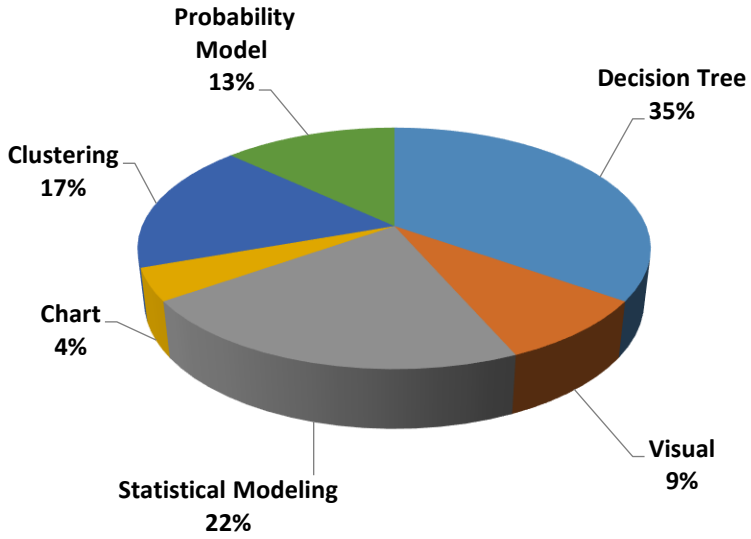


INSIGHT:

As evident, maximum number of patents/applications are falling under semantic image reproduction(**60%**), followed by human identification and product identification (**20% each**).

6.1.2.e DISTRIBUTION OF IBM'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category. The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

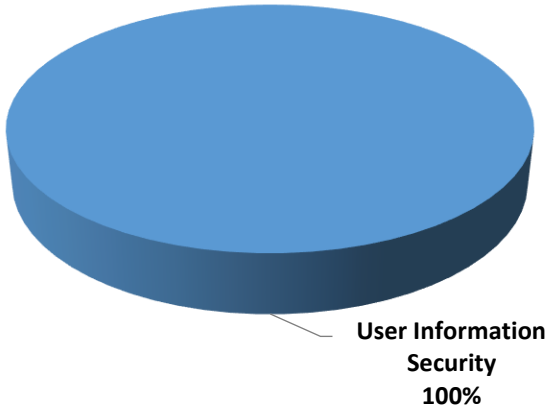
As evident, maximum number of patents/applications are falling under decision tree(**35%**), followed by statistical modeling(**22%**).

6.1.2.f DISTRIBUTION OF IBM'S PATENTS/APPLICATIONS PERTAINING TO "SECURITY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "SECURITY" as the underlying category. The sub-categories comprise: user information security, and data/content security.

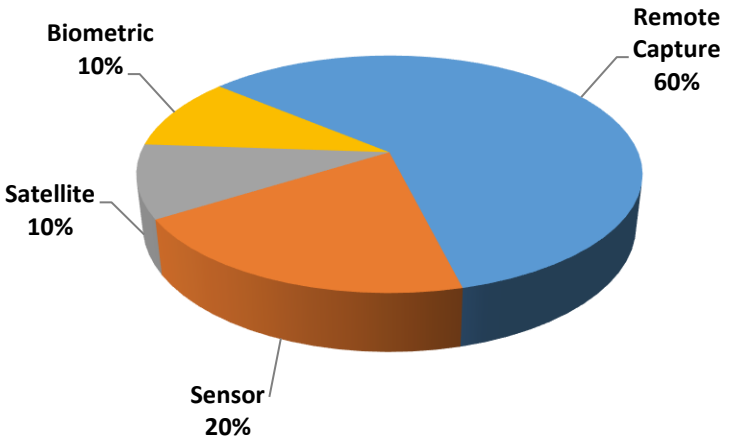
INSIGHT:

As evident, all patents/applications are falling under user information security(**100%**).



6.1.2.g DISTRIBUTION OF IBM'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories comprise: remote capture, sensors, satellite and biometric.



INSIGHT:

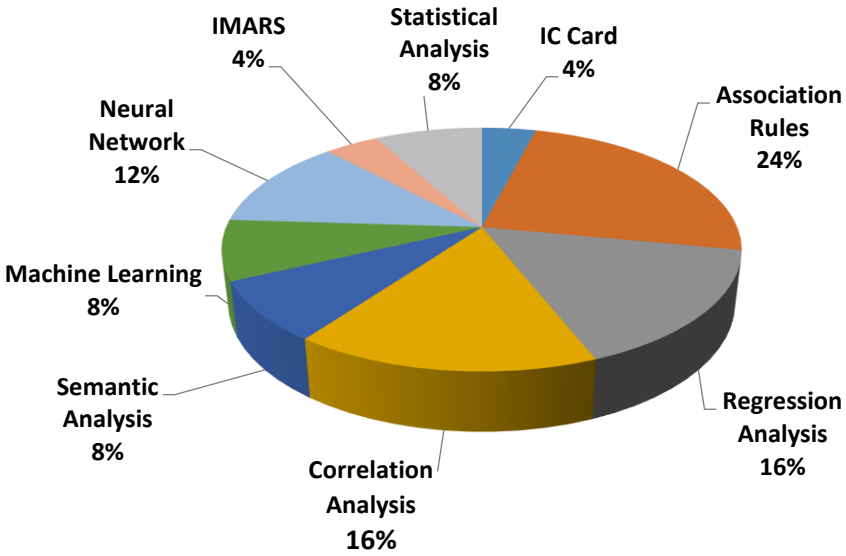
As evident, maximum number of patents/applications are falling under remote capture(**60%**) followed by sensor(**20%**).

6.1.2.h DISTRIBUTION OF IBM'S PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "ANALYSIS TOOLS" as the underlying category.The sub-categories comprise: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.

INSIGHT:

As evident, maximum number of patents/applications are falling under association rules(**24%**), followed by regression analysis and correlation analysis (**16% each**).



6.1.3 PATENT PORTFOLIO ANALYSIS

International Business Machines Corporation (commonly referred to as IBM) is an American multinational technology company headquartered in Armonk, New York, United States, with operations in over 170 countries. The company originated in 1911 as the Computing-Tabulating-Recording Company (CTR) and was renamed "International Business Machines" in 1924.

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

Patent No.	Claim
US2017091838	A method comprising: retrieving, by one or more computers, from a plurality of on-line sources, a plurality of product information for one or more products similar to a product; extracting, by one or more computers, a plurality of comments and references to the product from the retrieved plurality of product information; determining, by one or more computers, a rating adjustment for the product based, at least in part, on a sentiment analysis of the plurality of comments and references; and applying, by one or more computers, the rating adjustment to an initial rating of the product.
US20170017981	A computer program product for acquiring and publishing supplemental information for a network site, comprising a computer-readable storage medium having computer-readable program code embodied thereon, the computer-readable program code, when executed by a processor, causes the processor to: analyze information published by a user on a network site including an image of a product and corresponding metadata; identify a provider of the product based on the analysis of the published information; present a survey to the user based on the identified provider and receive responses to the survey from the user; and publish the responses from the user on the network site in association with the published information.
US20160232537	A computer program product for business intelligence (BI) analytics, the computer program product comprising a computer-readable storage medium having program code embodied therewith, the program code executable by a computing device to: perform an ontological analysis on data items in a relevant data set defined for a BI analytics query to determine one or more correlations of the data items in the relevant data set with ontological concepts in an ontological concept subsystem; perform a first statistical analysis on a set of direct analytics output data items from the relevant data set that are included in a direct BI analytics output to rank the direct analytics output data items in an order of influence on the direct BI analytics output; perform a second statistical analysis on the data items in the relevant data set relative to the direct analytics output data items to determine one or more of the data items in the relevant data set that influence the respective direct analytics output data items, thereby generating a list of key drivers from among the data items in the relevant data set such that the list of key drivers has a ranking in an order of the influence; revise the ranking of the list of key drivers based at least in part on the correlations of the key drivers with the ontological concepts; and generate a correlated analytics output comprising information on one or more of the key drivers based on the ranking of the list of key drivers.
US20160110778	A method for conditional analysis of business reviews, the method comprising: detecting a request for a report on a business entity, the request being directed to an application executing in a data processing system, the application having access to a set of reviews about the business entity; determining, using a processor and a memory, a condition associated with the request, wherein a future interaction between a user and the entity is expected to occur subject to the condition; identifying a set of factors related to the condition; selecting, using a selection criterion, a subset of the set of reviews about the entity;

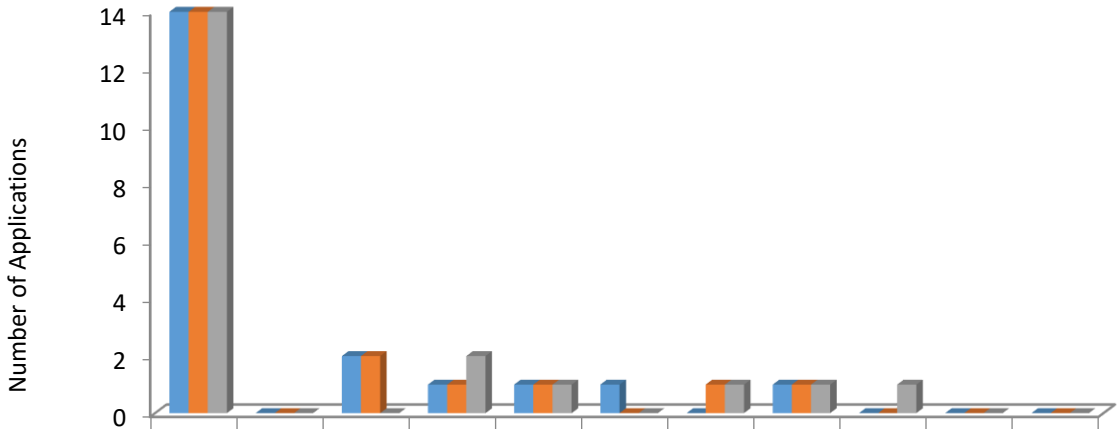
	analyzing the subset of the set of reviews; and outputting, responsive to the analyzing, the report.
US20160063096	A method for determining a search result, the method comprising: identifying, by a computer processor, a search result of a plurality of search results that includes one or more images and unstructured data corresponding to metadata of the one or more images, and unstructured data corresponding to text content in proximity of the one or more images; performing, by the computer processor, a semantic analysis of the unstructured data of the search result; determining, by the computer processor, a relevance of the one or more images to the unstructured data of the search result, based, at least in part, on the semantic analysis of the unstructured data and the one or more images of the search result; determining, by the computer processor, a count of the one or more images determined to be relevant to the search result; and ranking, by the computer processor, the search result of the plurality of search results, based on the count of the one or more images determined to be relevant to the search result.

6.2 HITACHI

6.2.1 NON-TECHNICAL ANALYSIS

6.2.1.a PRIORITY, FILING, PUBLICATION YEAR TRENDS

Below graph represents Priority, Application, and Publication year based trends of representative patent/application member per patent family filed by HITACHI and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	14	0	2	1	1	1	0	1	0	0	0
Application Date	14	0	2	1	1	0	1	1	0	0	0
Publication Date	14	0	0	2	1	0	1	1	1	0	0

Year

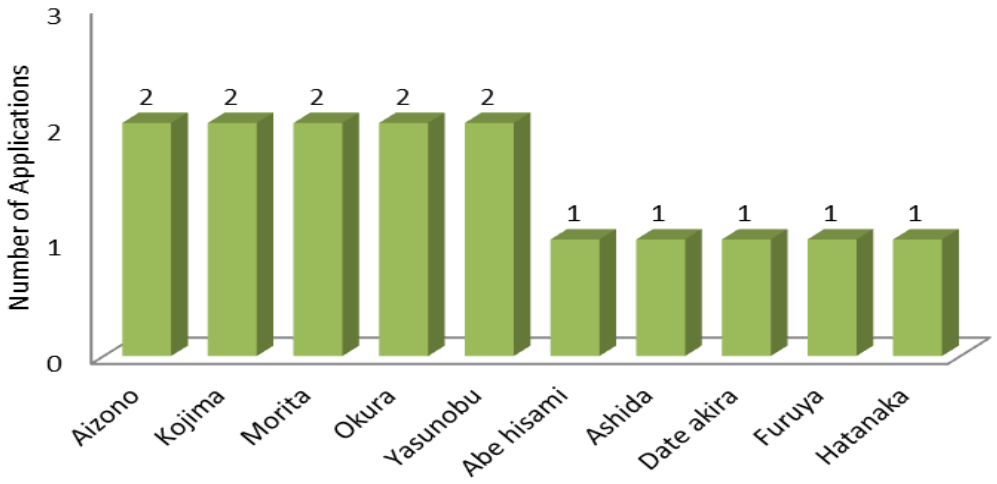
Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

INSIGHT:

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum(**2 nos.**) applications claiming priority/first filed status were filed in year **2009.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is an intermittent application filing activity over the years, wherein maximum number of patent applications(**2 nos.**) were filed in year **2009**.
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is an intermittent publication of applications over the years, wherein maximum number of patent applications(**2 nos.**) were published in **2010**.

6.2.2.b INVENTOR TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

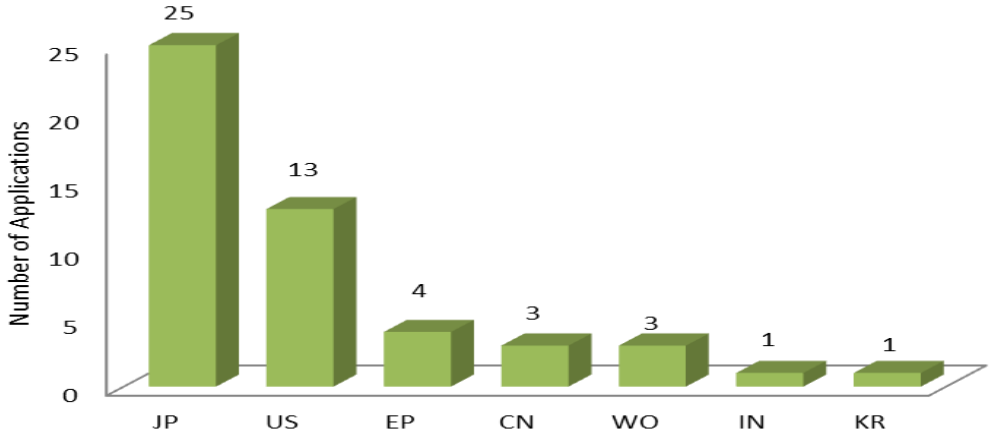


INSIGHT:

Aizono, Kojima, Morita, Okura, and Yasunobu are leading inventors, wherein each one of them has contributed **(2 nos.)** patent families, followed by Abe Hisami and others with **(1 no.)** patent family each.

6.2.2.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where HITACHI has filed patent applications.



Note: There may be higher number of application for year 2015-2017, attributed to unpublished applications.

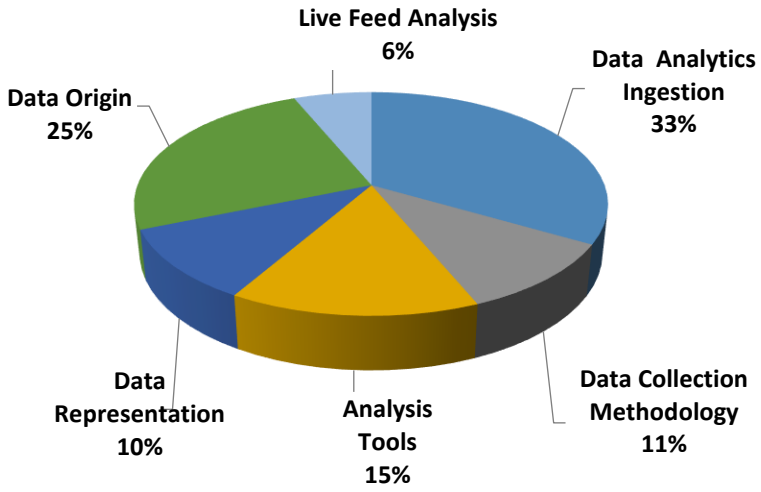
INSIGHT:

HITACHI has focused its application filing activity specifically in Japan, since it has filed maximum number of patent applications in JP **(25 nos.)**, followed by United States **(13 nos.)** and Europe **(4 nos.)**.

6.2.2 TECHNICAL ANALYSIS

6.2.2.a DISTRIBUTION OF HITACHI'SPATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by HITACHI, wherein the patents/applications relate to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications, the categories comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.



INSIGHT:

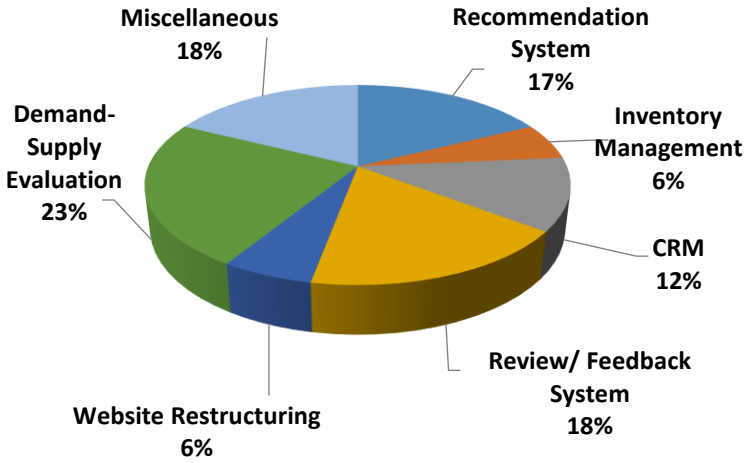
As evident, maximum number of patents/applications are falling under data analytics ingestion**(33%),** followed by data origin**(25%)**.

6.2.2.b DISTRIBUTION OFHITACHI'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertain to "DATA ANALYTICS INGESTION"as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/ feedback system, website restructuring, and demand-supply evaluation.

INSIGHT:

As evident, maximum number of patents/applications are falling under demand-supply evaluation**(23%),** followed by review/ feedback system and miscellaneous **(18% each)**.

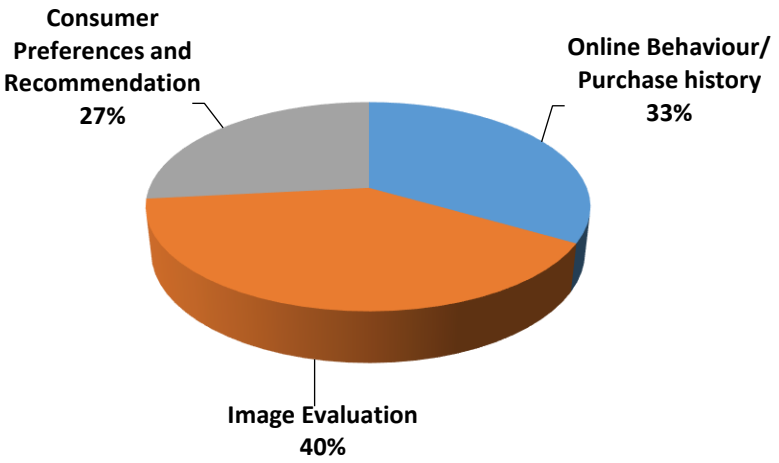


6.2.2.c DISTRIBUTION OF HITACHI'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category.The sub-categories comprise: online behavior/purchase history, image evaluation, and consumer preferences and recommendation.

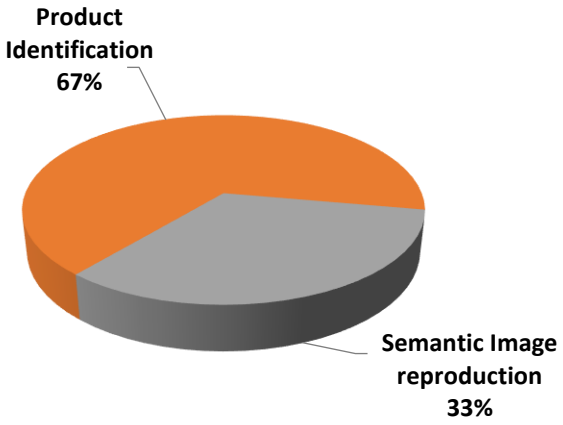
INSIGHT:

As evident, maximum number of patents/applications are falling under image evaluation**(40%),** followed by online behavior/ purchase history**(33%)**.



6.2.2.d DISTRIBUTION OF HITACHI'S PATENTS/APPLICATIONS PERTAINING TO"LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category. The sub-categories comprise: human identification, product identification, and semantic image reproduction.

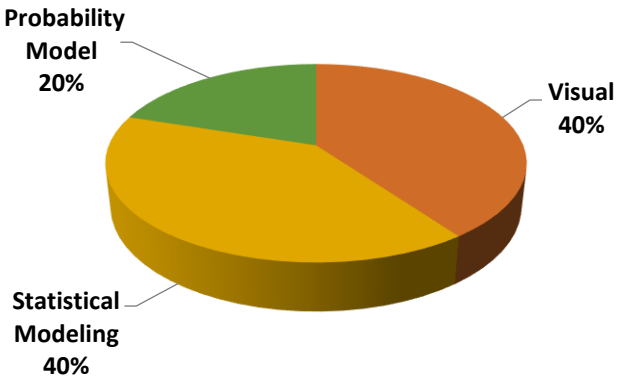


INSIGHT:

As evident, maximum number of patents/applications are falling under product identification**(67%),** followed by semantic image reproduction**(33%)**.

6.2.2.e DISTRIBUTION OF HITACHI'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category.The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

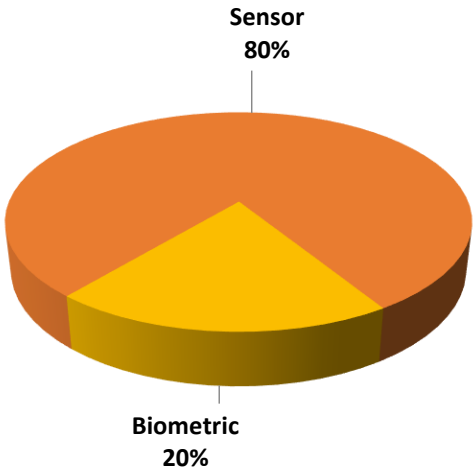
As evident, maximum number of patents/applications are falling under statistical modeling and visual(**40% each),** followed by probability model **(20%).**

6.2.2.f DISTRIBUTION OF HITACHI'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories comprise: remote capture, sensors, satellite and biometric.

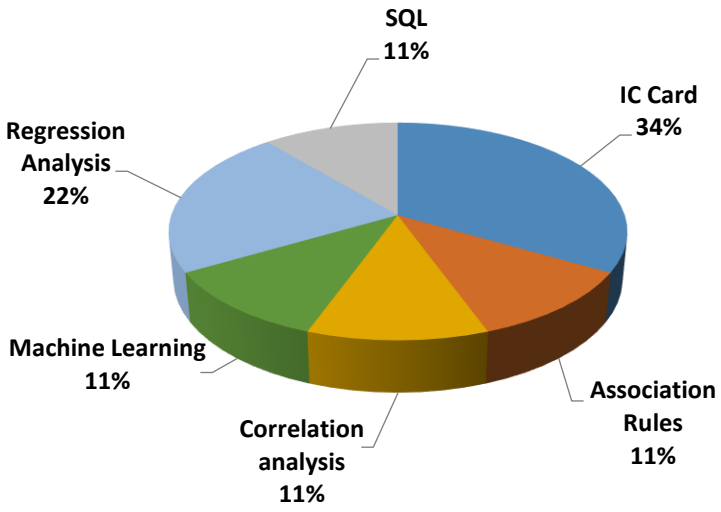
INSIGHT:

As evident, maximum number of patents/applications are falling under sensor**(80%),** followed by biometric**(20%).**



6.2.2.g DISTRIBUTION OF HITACHI'S PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "ANALYSIS TOOLS" as the underlying category.The sub-categories comprise: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.



INSIGHT:

As evident, maximum number of patents/applications are falling under IC card(**34%**), followed by regression analysis(**22%**).

6.2.3 PATENT PORTFOLIO ANALYSIS

Hitachi, Ltd. is a Japanese multinational conglomerate company headquartered in Chiyoda, Tokyo, Japan. It is the parent company of the Hitachi Group and forms part of the DKB Group of companies. Hitachi is a highly diversified company that operates eleven business segments: Information & Telecommunication Systems, Social Infrastructure, High Functional Materials & Components, Financial Services, Power Systems, Electronic Systems & Equipment, Automotive Systems, Railway & Urban Systems, Digital Media & Consumer Products, Construction Machinery and Other Components & Systems.[Source]

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

Patent No.	Claim
JP2015135589	An information analysis method for analyzing history data including a movement history including a movement history of a moving object by a processor and providing the analysis result, wherein the processor is configured to determine, on the basis of the history data, A residence extraction processing step of extracting a staying place of an individual from the stay location extracted by the stay location extraction step, a stay frequency at the stay place extracted by the stay extraction processing step is obtained, and based on the stay frequency, a place which is an individual base point for each stay purpose is estimated. A total amount of movement amounts totaled for each of the moved positions by aggregating the amount of movement for each stay purpose of the individual based on the information on the base for each stay purpose, Relative absolute direction of said moved position based on said moving position, aggregate for each said moved position based on said absolute direction and based on said personal behavior And outputting a behavior range pattern of the group of individuals by using the feature quantity of the behavior range of the individual belonging to the set of individuals.

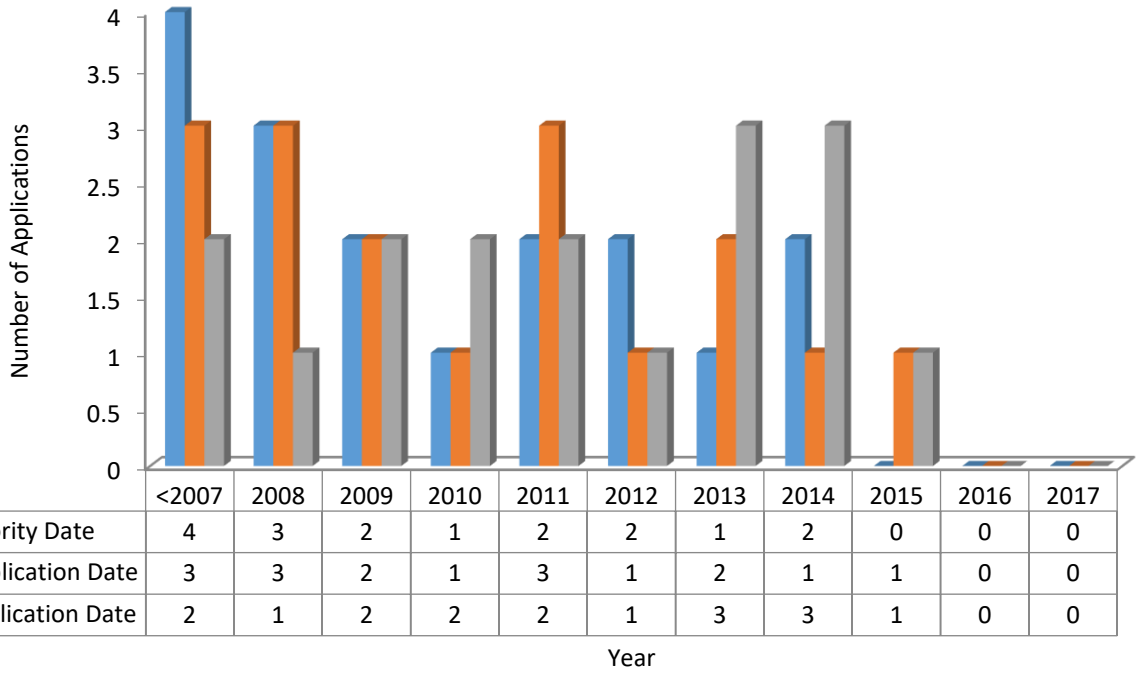
JP2010277534	In a data analysis system that conducts data analysis and performs data collection necessary for data analysis and preprocessing of data for finding knowledge useful for an analyst, collecting the data and preprocessing the data A data collecting apparatus including a data collecting apparatus that performs data processing and a data transmitting section that transmits the data pre-processed by the data collecting apparatus, and a data collecting apparatus that receives the preprocessed data transmitted from the data transmitting section And a data analyzing apparatus including a data receiving section for receiving data processed by the data receiving section and a data analyzing apparatus for analyzing the preprocessed data received by the data receiving section.
EP2226758	A relationship analysis method performed by a relationship analysis apparatus that analyzes a relationship between a visual line data on a visual line of a user to a commodity and an action data on an action of the user of purchasing the commodity, wherein the relationship analysis apparatus comprising a storage part, a visual line detection part, an attention degree calculation part, an action processing unit, and an analysis processing unit, wherein the storage part stores therein a zone definition data for identifying a commodity to which a visual line is directed, based on positional information on each commodity arranged in a commodity display part; the zone definition data includes, for each commodity, a basic zone including a commodity and an extended zone at least a portion of which is overlapped with the basic zone; and the storage part stores therein the basic zone and the extended zone in association with each other, wherein the visual line detection part detects the visual line data to each commodity arranged in the commodity display part, wherein the attention degree calculation part compares, for each zone, positional information on the visual line data detected by the visual line detection part and positional information on each zone defined in a zone definition data, calculates an attention degree for each zone based on the compared result, aggregates attention degrees in each zone for each commodity corresponding to the each zone to calculate an attention degree data for each commodity, and stores the calculated data in the storage unit, wherein the action processing unit receives an input of the action data with respect to each commodity arranged in the commodity display part and stores the received data in the storage unit, and wherein the analysis processing unit joins the attention degree data for each commodity and the action data for each commodity stored in the storage unit, calculates a correlative relationship between the both data, and outputs the calculated result.
US20050289582	A method comprising: capturing biometric information while a person perceives a product; and storing information based on the biometric information and information about the product in a database for future consumption.

6.3 GOOGLE

6.3.1 NON-TECHNICAL ANALYSIS

6.3.1.a PRIORITY, FILING, PUBLICATION YEAR TRENDS

Below graph represents Priority, Application, and Publication year based trends of representative patents/applications member per patent family filed by GOOGLE and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	4	3	2	1	2	2	1	2	0	0	0
Application Date	3	3	2	1	3	1	2	1	1	0	0
Publication Date	2	1	2	2	2	1	3	3	1	0	0

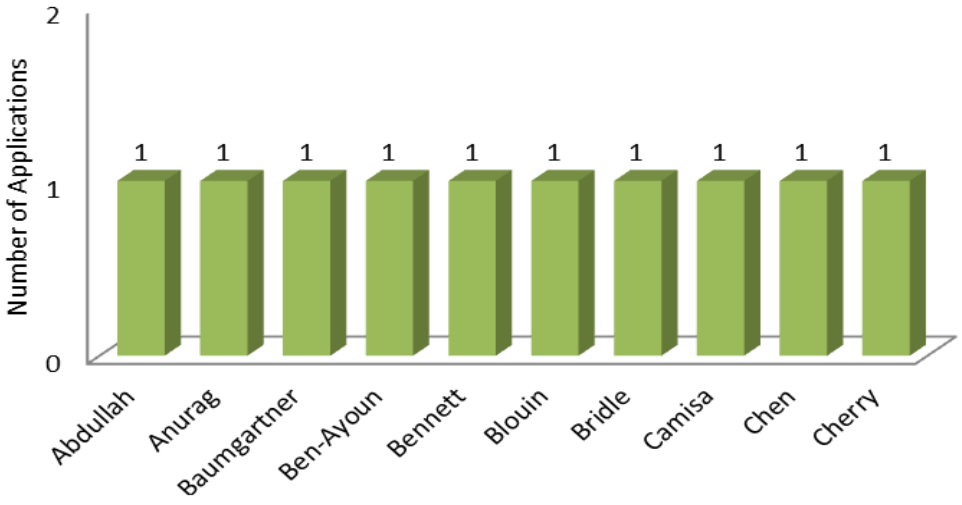
Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

INSIGHT:

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum**(3 nos.)** applications claiming priority/first filed status were filed in year **2008.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is intermittent application filing activity over the years, wherein maximum number of patent applications(**3 nos.**) were filed each in year**2008** and **2011.**
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is steady publication of applications over the years, wherein maximum number of patent applications(**3 nos.**) were published each in year **2013** and **2014.**

6.3.1.b INVENTOR TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

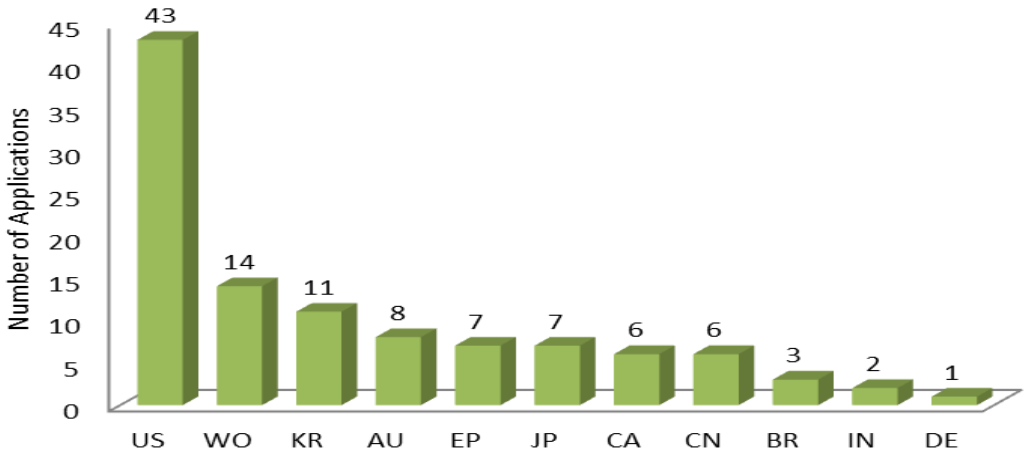


INSIGHT:

Abdullah, Anurag and others, each inventor has contributed with **(1 nos.)**patent family each.

6.3.1.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where GOOGLE has filed patent applications.



Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

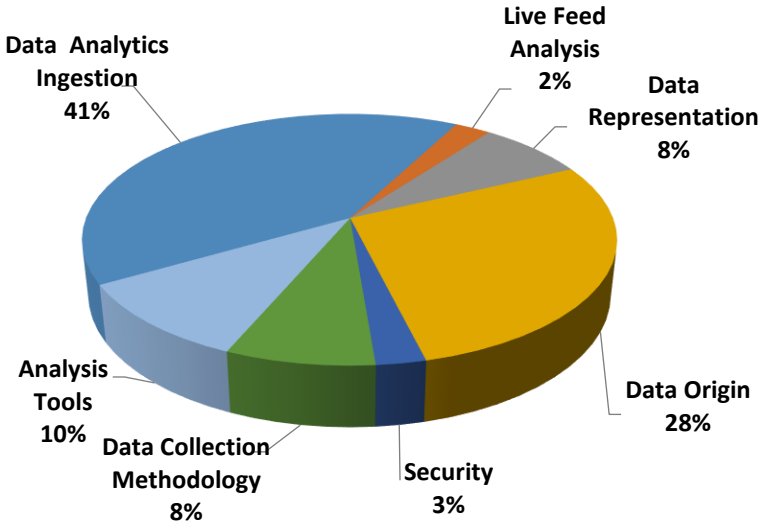
INSIGHT:

GOOGLE has focused its application filing activity specifically in United States, since it has filed maximum number of patent applications in US**(43 nos.)**, followed by Korea**(11 nos.)** and Australia**(8 nos.)**.

6.3.2 TECHNICAL ANALYSIS

6.3.2.a DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by GOOGLE, wherein the patents/applications relate to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications, the categories comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.



INSIGHT:

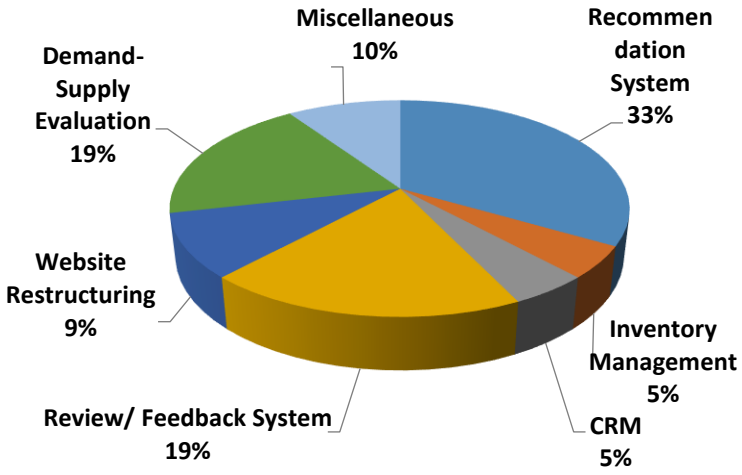
As evident, maximum number of patents/applications are falling under data analytics ingestion(**41%**), followed by data origin(**28%**).

6.3.2.b DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertains to "DATA ANALYTICS INGESTION" as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/ feedback system, website restructuring, and demand-supply evaluation.

INSIGHT:

As evident, maximum number of patents/applications are falling under recommendation system(**33%**), followed by demand-supply evaluation and review/feedback system (**19% each**).

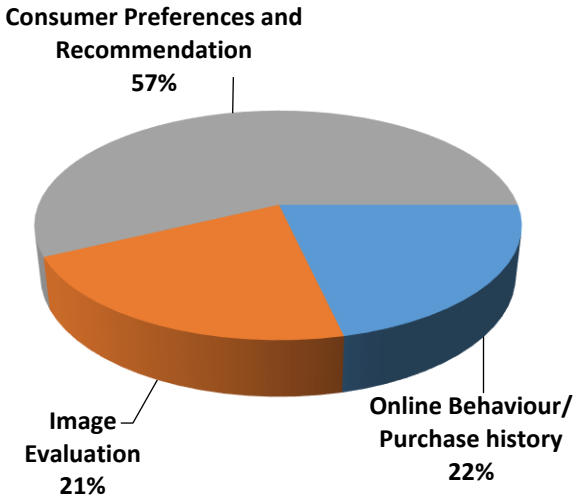


6.3.2.c DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category.The sub-categories comprise: online behavior/purchase history, image evaluation, and consumer preferences and recommendation.

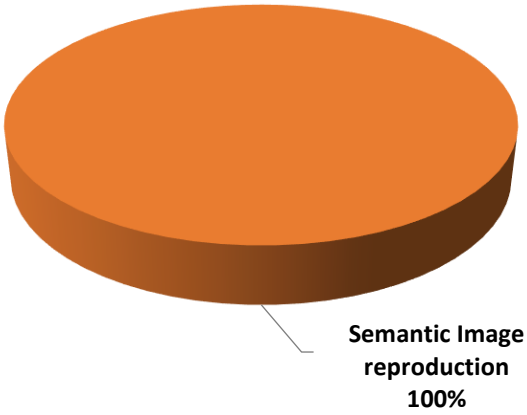
INSIGHT:

As evident, maximum number of patents/ applications are falling under consumer preferences and recommendation(**57%**), followed by online behavior/ purchase history(**22%**).



6.3.2.d DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS PERTAINING TO "LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category.The sub-categories comprise: human identification, product identification, and semantic image reproduction.

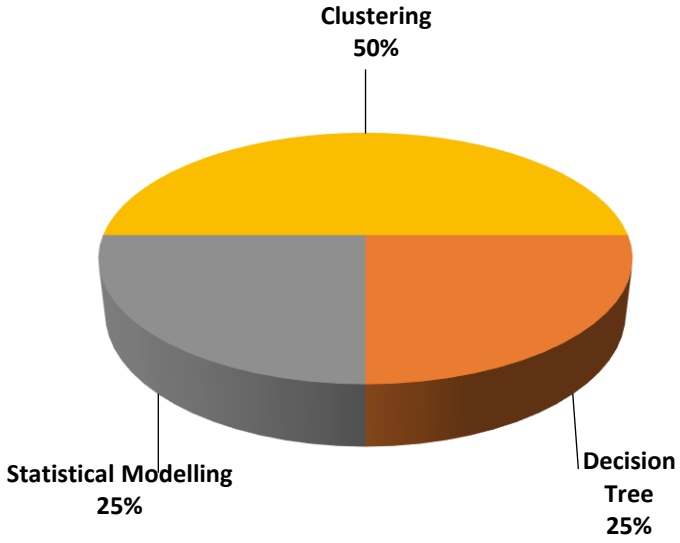


INSIGHT:

As evident, maximum number of patents/applications are falling under semantic image reproduction(**100%**).

6.3.2.e DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category. The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

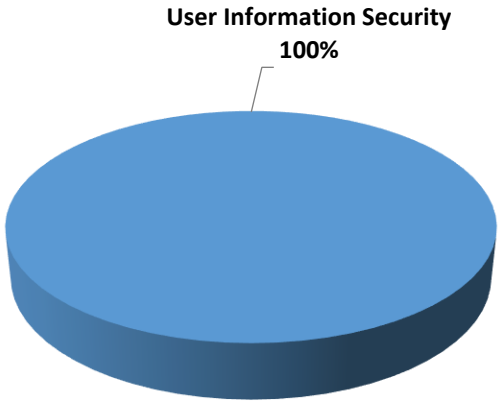
As evident, maximum number of patents/applications are falling under clustering**(50%),** followed by statistical modeling**(25%)**.

6.3.2.f DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS PERTAINING TO "SECURITY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "SECURITY" as the underlying category. The sub-categories comprise: user information security, and data/content security.

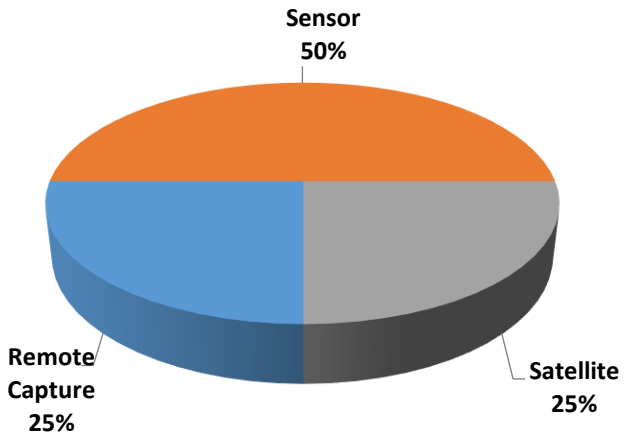
INSIGHT:

As evident, maximum number of patents/applications are falling under user information security**(100%)**.



6.3.2.g DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories comprise: remote capture, sensors, satellite, and biometric.



INSIGHT:

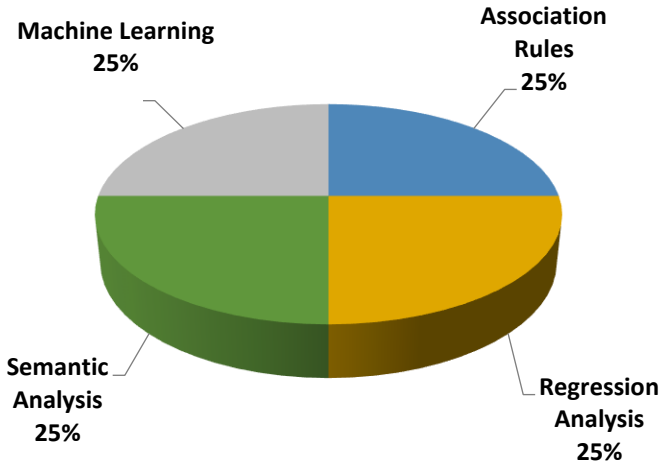
As evident, maximum number of patents/applications are falling under sensor**(50%),** followed by satellite and wireless **(25% each)**.

6.3.2.h DISTRIBUTION OF GOOGLE'S PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "ANALYSIS TOOLS" as the underlying category.The sub-categories comprise: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.

INSIGHT:

As evident, patents/applications are falling under association rules**,** regression analysis, machine learning, and semantic analysis **(25% each).**



6.3.3 PATENT PORTFOLIO ANALYSIS

Google offers a freemium web analytics service (Google analytics) that tracks and reports website traffic. Google launched the service in November 2005 after acquiring Urchin. Google Analytics is now the most widely used web analytics service on the Internet. Google Analytics is offered also in two additional versions: the subscription based Google Analytics 360, previously Google Analytics Premium, targeted at enterprise users and Google Analytics for Mobile Apps, an SDK that allows gathering usage data from iOS and Android Apps.

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

Patent No.	Claim
US2015363842	A method comprising: receiving, at a computerized analysis system, user path data representing a plurality of user paths, each of the plurality of user paths comprising one or more content interactions in which a user was presented with a content item featuring information relating to an item available for purchase and one or more sales interactions in which a user was presented with an offer to purchase an item at an offer price, the item being at least one of a product or service offered by a content provider, and one or more of the plurality of user paths comprising conversion events in which the user purchases the item; receiving, at the analysis system, competitive price data indicating one or more prices at which the item was offered for sale by one or more third party entities;determining, by the analysis system, a price-competitiveness metric for at least one of the one or more sales interactions based on a comparison of the offer price with the competitive price data; and providing data based on the price-competitiveness metric to the content provider.
US2015066583	A method, comprising: obtaining a user profile for a user; receiving a selection of media content based on a recommendation; providing the selected media content for consumption by the user;receiving an indication of an abandonment event that indicates discontinuation of consumption of the selected media content at a position in the selected media content; based on the abandonment event, selecting, by a processor, analytic data, wherein the analytic data indicates a likelihood of continued consumption beyond the position in the selected media content by a plurality of users having profiles similar to the user profile, wherein the analytic data includes at least one of a completion percentage of content consumption by the plurality of users, a completion percentage for a plurality of segments of the content by the plurality of users, a satisfaction rating, and a click-through metric; providing to the user, by the processor, an indication of the analytic data showing the likelihood of continued consumption of the media content by the plurality of users having profiles similar to the user profile; and receiving an indication of a decision by the user to continue consumption of the selected media content beyond the position in the selected media content.
US20160189186	A computing system, comprising: one or more processors; and one or more memory devices, the one or more memory devices storing computer-readable instructions that when executed by the one or more processors, cause the one or more processors to perform operations, the operations comprising: receiving a semantic location model that provides information about semantic places within one or more geographic region buckets, wherein the semantic location model is generated at least in part from hierarchical clustering algorithms performed on data derived from previous location data reports collected from a plurality of mobile devices operating in the one or more geographic region buckets; providing one or more new location data reports indicative of a user's current or past geographic location; and generating semantic place data associated with the provided one or more new location data reports by processing the one or more new location data reports using the semantic location model.
US20120239492	A computer-implemented method, comprising: accessing, by a processing device and from a request log, resource requests that specify request criteria with which targeted resources responsive to the resource request are selected; segmenting, by a processing device and based on the specified request criteria, the resource requests into request groups, each request group requiring each resource request in the request group to specify a request criterion that matches a reference targeting criterion for the request group; receiving, from a processing device, a performance estimate request requesting a measure of predicted performance of a resource targeted according to one or more candidate targeting criteria, the one or more candidate targeting criteria specifying request criteria of resource requests for which the resource is eligible for selection; computing a performance estimate responsive to the performance estimate request, the

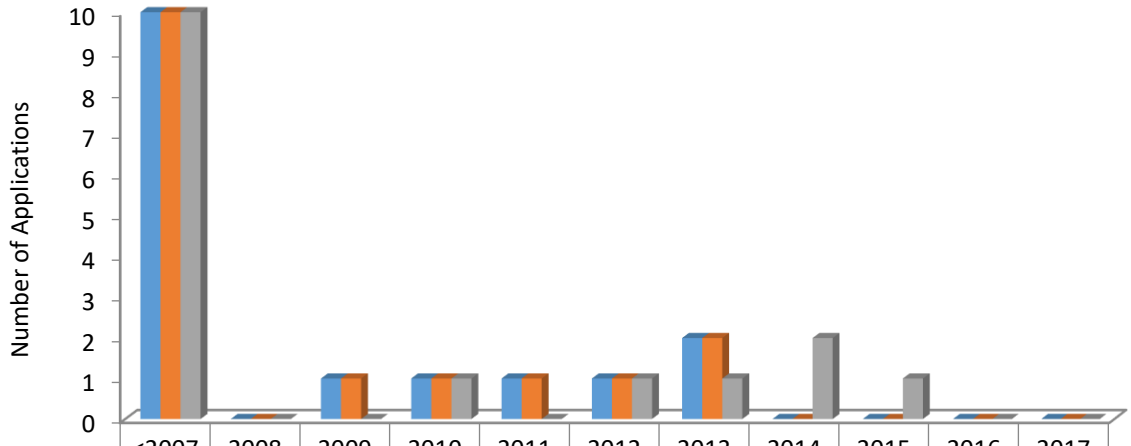
	performance estimate being computed based on a request group having a reference targeting criterion that matches a candidate targeting criterion from the one or more candidate targeting criteria; and providing, by a processing device and in response to the performance estimate request, the performance estimate.

6.4 NIPPON

6.4.1 NON-TECHNICAL ANALYSIS

6.4.1.a PRIORITY, FILING, PUBLICATION YEAR TREND

Below graph represents Priority, Application, and Publication year based trends of representative patents/applications member per patent family filed by NIPPON and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	10	0	1	1	1	1	2	0	0	0	0
Application Date	10	0	1	1	1	1	2	0	0	0	0
Publication Date	10	0	0	1	0	1	1	2	1	0	0

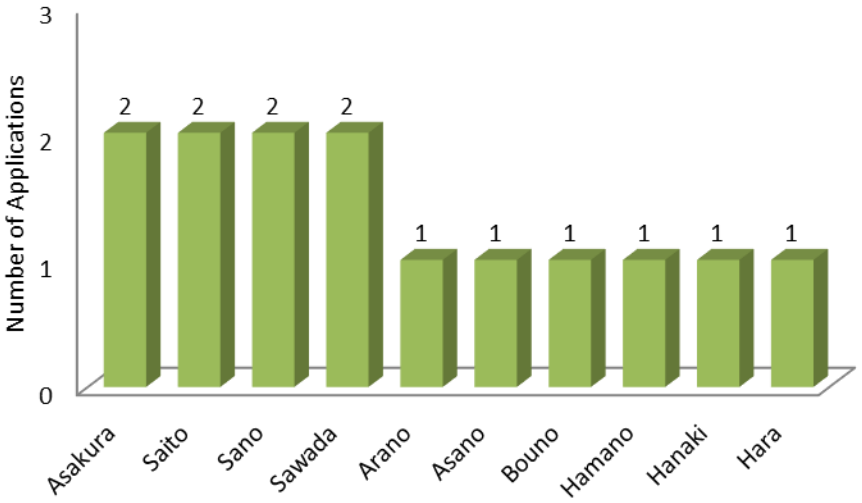
Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

INSIGHT:

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum(**2 nos.**) applications claiming priority/first filed status were filed in year **2013.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is steady application filing activity over the years, wherein maximum number of patent applications(**2 nos.**) were filed in year **2013**.
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is intermittent publication of applications over the years, wherein maximum number of patent applications(**2 nos.**) were published in **2014**.

6.4.1.b INVENTOR TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

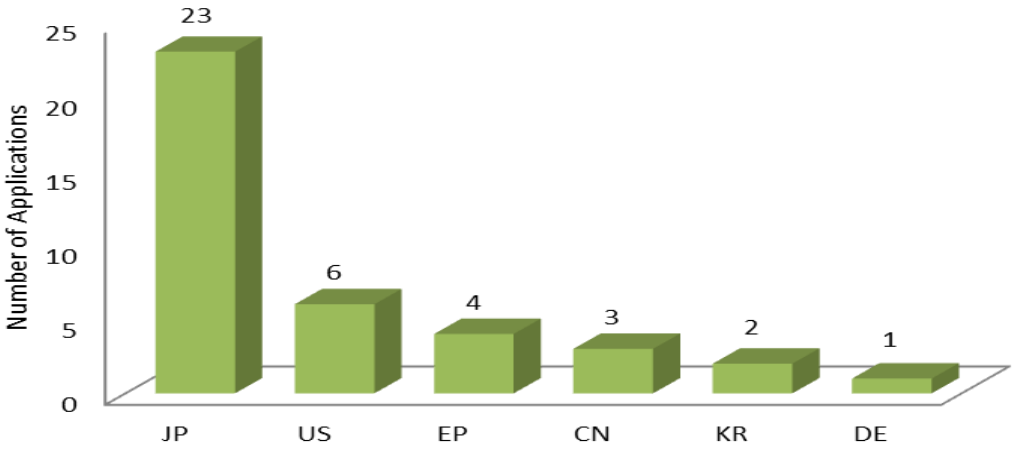


INSIGHT:

Asakura, Saito, Sano, and Sawada are the leading inventors, wherein each inventor has contributed with **(2 nos.)** patent families, followed by Arano, Asano, and others with **(1 nos.)** patent families each.

6.4.1.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where NIPPON has filed patent applications.



Note: There may be higher number of application for year 2015-2017, attributed to unpublished

INSIGHT:

NIPPON has focused its application filing activity specifically in Japan, since it has filed maximum number of patent applications in JP**(23 nos.)**, followed by United States**(6 nos.),** and Europe**(4 nos.)**.

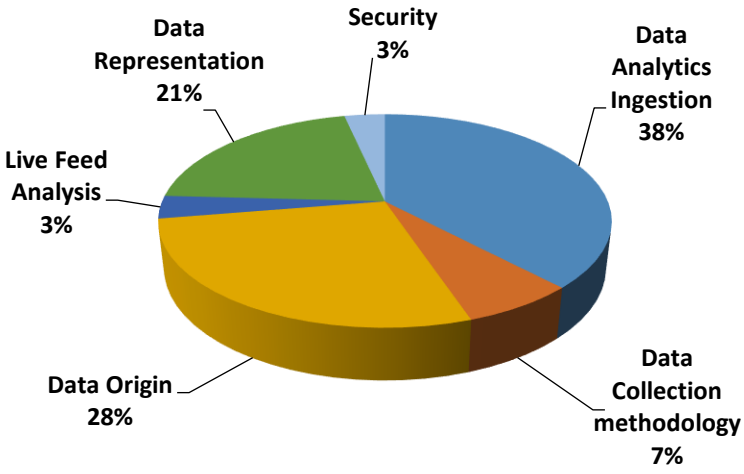
6.4.2 TECHNICAL ANALYSIS

6.4.2.a DISTRIBUTION OF NIPPON'S PATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by NIPPON, wherein the patents/applications relates to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications, the categories comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.

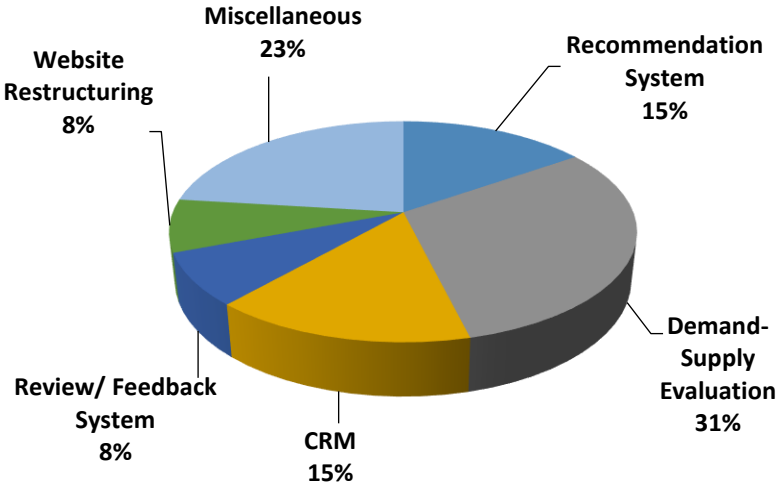
INSIGHT:

As evident, maximum number of patents/applications are falling under data analytics ingestion**(38%),** followed by data origin**(28%).**



6.4.2.b DISTRIBUTION OF NIPPON'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertains to "DATA ANALYTICS INGESTION" as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/ feedback system, website restructuring, and demand-supply evaluation.



INSIGHT:

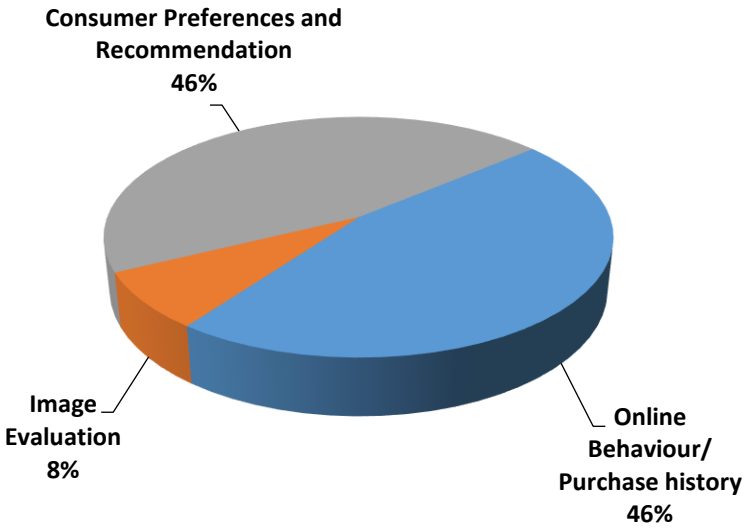
As evident, maximum number of patents/applications are falling under demand-supply evaluation**(31%),** followed by miscellaneous**(23%).**

6.4.2.c DISTRIBUTION OF NIPPON'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category. The sub-categories comprise: online behavior/purchase history, image evaluation, and consumer preferences and recommendation.

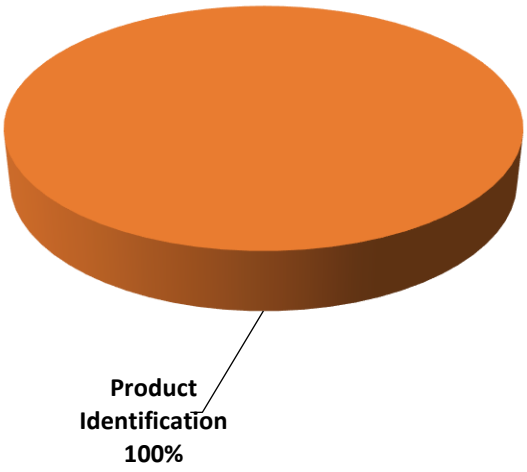
INSIGHT:

As evident, maximum number of patents/ applications are falling under consumer preferences and recommendation(**46%**), and online behavior/purchase history(**46%**) followed by image evalution(**8%**).



6.4.2.d DISTRIBUTION OF NIPPON'S PATENTS/APPLICATIONS PERTAINING TO"LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category. The sub-categories comprise: human identification, product identification, and semantic image reproduction.

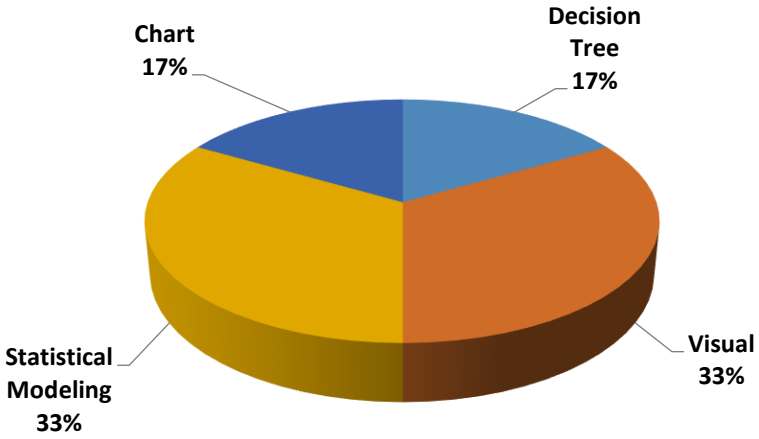


INSIGHT:

As evident, all patents/applications are falling under product identification(**100%**).

6.4.2.e DISTRIBUTION OF NIPPON'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category. The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

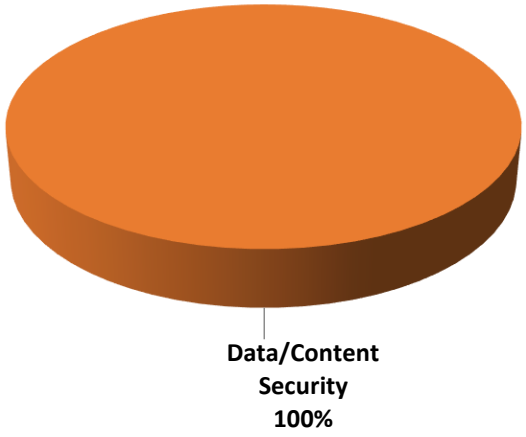
As evident, maximum number of patents/applications are falling under statistical modeling and visual (**33% each**), followed by decision tree and chart(**17% each**)

6.4.2.f DISTRIBUTION OF NIPPON'S PATENTS/APPLICATIONS PERTAINING TO "SECURITY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "SECURITY" as the underlying category. The sub-categories comprise: user information security, and data/content security.

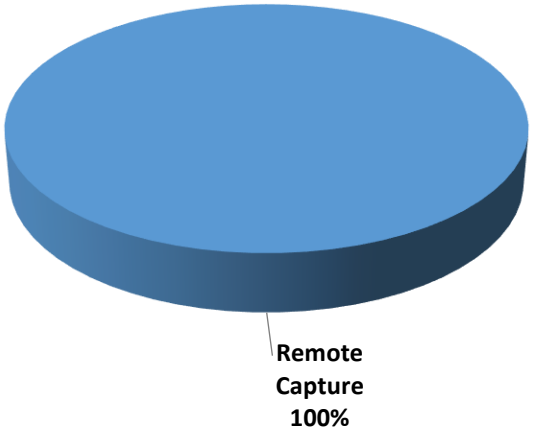
INSIGHT:

As evident, all patents/applications are falling under data/content security(**100%**).



6.4.2.g DISTRIBUTION OF NIPPON'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories comprise: remote capture, sensors, satellite and biometric.



INSIGHT:

As evident, maximum number of patents/applications are falling under remote capture(**100%**).

6.4.3 PATENT PORTFOLIO ANALYSIS

The Nippon Telegraph and Telephone Corporation commonly known as NTT, is a Japanese telecommunications company headquartered in Tokyo, Japan. Ranked 65th in Fortune Global 500, NTT is the third largest telecommunications company in the world in terms of revenue.[Source]

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

Patent No.	Claim
JP2012089014	An acquisition unit for acquiring a Web browsing data that contains a Web page that the user has browsed by the user terminal, By executing extraction processing in accordance with a predetermined extraction condition to the Web browsing data acquired by the acquisition unit, and extracts the page information which is information included in a Web page about products of the Web page that the user has viewed and page information extraction unit, From said page information page information extracted by the extraction unit, and the commodity information extracting unit that extracts product information, which is information about the product contained in the page information, From the page information extracted by the page information extracting unit, a summary generator for generating summary information summarizes the information included in the page information, Purchasing behavior, characterized in that the relative and the commodity information extracting unit summary information generated by the product information and the summary generation unit extracted by, and a statistical analysis unit for executing a predetermined statistical analysis Analysis equipment.

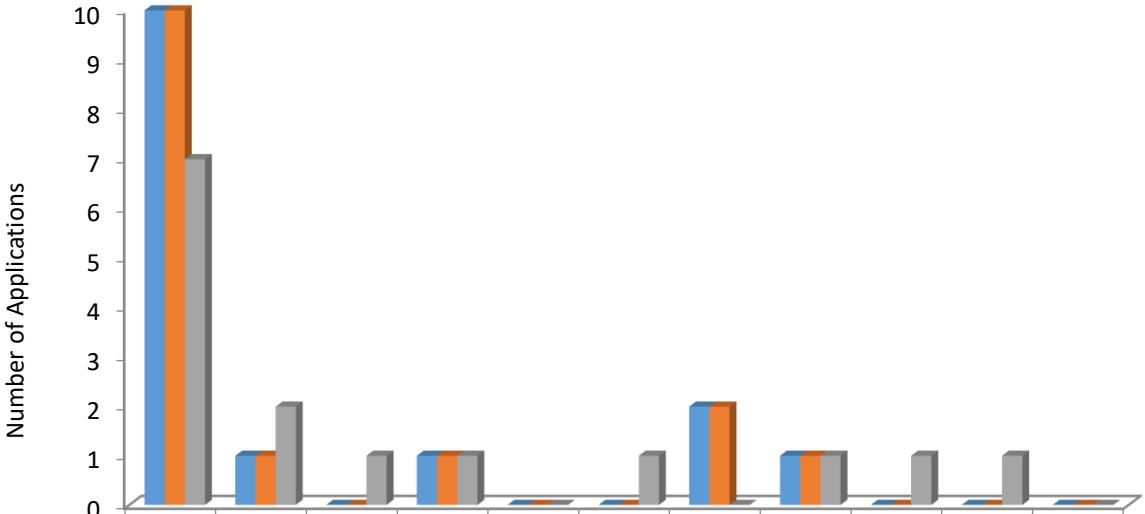
JP2004341626	An access history analysis method to analyze the access history information of the customer, Customers to browse through products, by purchasing or, or the product information of interest in preference act of goods to interested to gather together with customer information as the access history information, the collected access history information the customer or service provider is divided on the basis of the intrinsic split information, access history analysis method is characterized in that to produce a new access history information with as the same classification units of instruments with the contents or related similar on the basis of internal standing division information.
JP2013109470	Identification information for identifying a user, and the purchase data set input a set of purchasing data including information indicating the type of product which the user purchased, for each user, identification information for identifying the user, and out of the kind of set of products available, and reading means for reading the input has been taken into account aggregate data, including the consideration set is a set of types of products to be consideration of the user, On the basis of the purchase data set and the consideration set data, it said not included in the consideration set product when it is assumed that no purchased, the user estimates the model parameters of the model for selecting a product for purchase from the consideration set and estimating means, And output means for outputting the model parameters estimated by the estimating means, Purchasing data analyzer comprising a. Said output means, said using the model parameters estimated by the estimating means performs the purchasing behavior clustering of users to determine the user group to be similar, and at least one of the clustering of the product to obtain the purchased easily product group simultaneously, purchasing data analyzing apparatus according to claim 1, wherein outputting the result of the clustering.
JP2010272014	And user identification information storage unit for storing in association with the user identification information in the user name and the external content server apparatus, And access history information storage unit for the user to store the attributes and access history information that the user name and are associated with each of the history and the content server device that accesses the content server apparatus, A preference information storage unit which stores preference information indicating a preference of the user indicated by the user name, A receiver outside of the user terminal device receives the response signal to the transmitted content acquisition request signal to the content server device and the content server apparatus transmits to the user terminal device in response to the content acquisition request signal, Acquires the user name from the user identification information storage unit based on the user identification information the receiving unit is included in the content acquisition request signal received, the access history information stored in the access history information storage unit read by using the user name, the generated preference information, the preference information generating device generated the preference information includes a preference analysis unit to be stored in the preference information storage unit based on the access history information, It reads the preference information from the preference information storage unit based on the user name, the advertisement information corresponding to the preference information, the user terminal of the transmission destination of the response signal in response to the response signal received by the receiving unit advertisement information distribution system characterized by comprising an advertisement information distribution server device for distributing the device.

6.5 FUJITSU

6.5.1 NON-TECHNICAL ANALYSIS

6.5.1.a PRIORITY, FILING, PUBLICATION YEAR TREND

Below graph represents Priority, Application, and Publication year based trends of representative patents/applications member per patent family filed by FUJITSU and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	10	1	0	1	0	0	2	1	0	0	0
Application Date	10	1	0	1	0	0	2	1	0	0	0
Publication Date	7	2	1	1	0	1	0	1	1	1	0

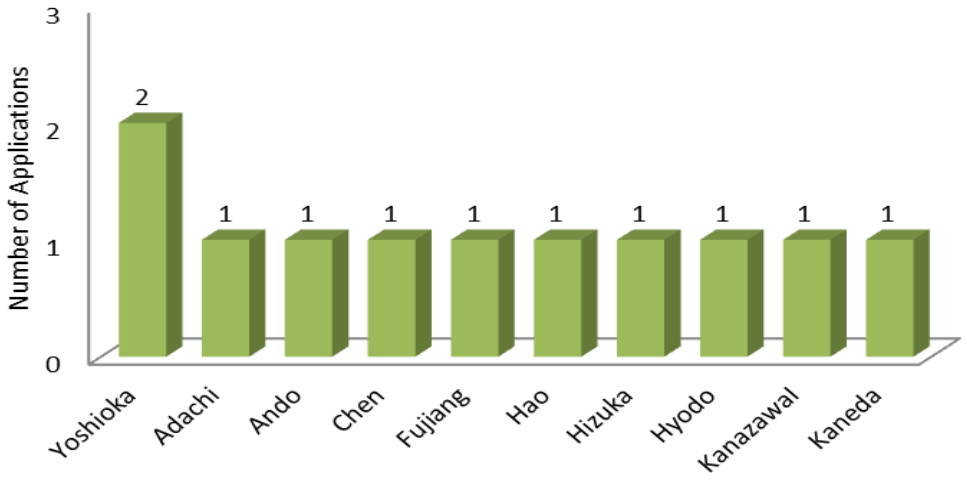
Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

INSIGHT:

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum(**2 nos.**) applications claiming priority/first filed status were filed in year **2013.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is steady application filing activity over the years, wherein maximum number of patent applications(**2 nos.**) were filed in year **2013**.
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is intermittent publication of applications over the years, wherein maximum number of patent applications(**2 nos.**) were published in **2008**.

6.5.1.b INVENTORS TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

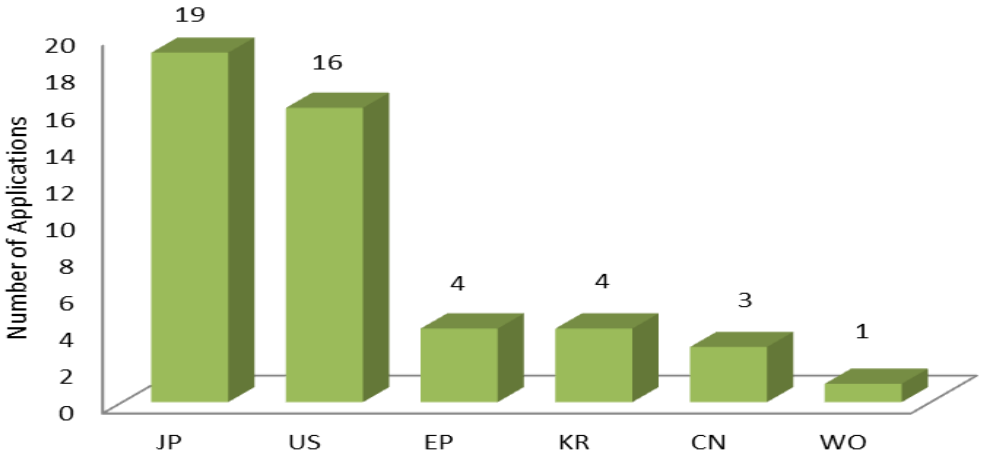


INSIGHT:

Yoshioka is the leading inventor who has contributed with **(2 nos.)** patent families, followed by Adachi, Ando and others with **(1 nos.)**patent family each.

6.5.1.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where FUJITSU has filed patent applications.



Note: There may be higher number of application for year 2015-2017, attributed to unpublished

INSIGHT:

FUJITSU has focused its application filing activity specifically in Japan, since it has filed maximum number of patent applications in Japan**(19 nos.)**, followed by United States**(16 nos.)** and Europe **(4 nos.)**.

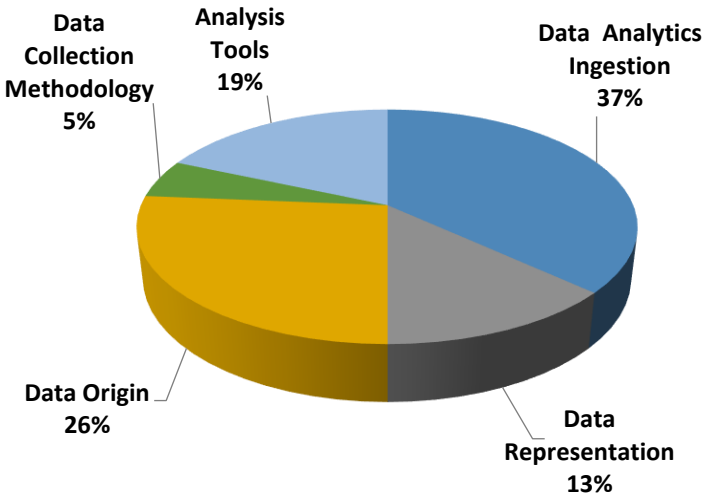
6.5.2TECHNICAL ANALYSIS

6.5.2.a DISTRIBUTION OF FUJITSU'S PATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by FUJITSU, wherein the patents/applications relate to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.

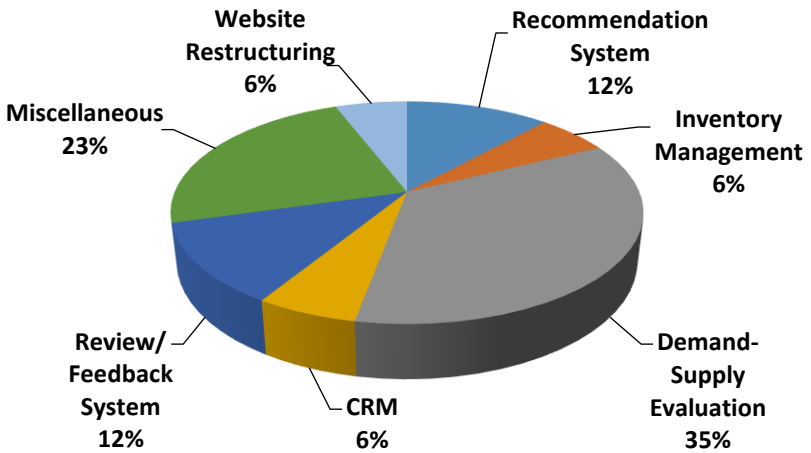
INSIGHT:

As evident, maximum number of patents/applications are falling under data analytics ingestion**(37%),** followed by data origin**(26%).**



6.5.2.b DISTRIBUTION OF FUJITSU'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertain to "DATA ANALYTICS INGESTION" as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/ feedback system, website restructuring, and demand-supply evaluation.



INSIGHT:

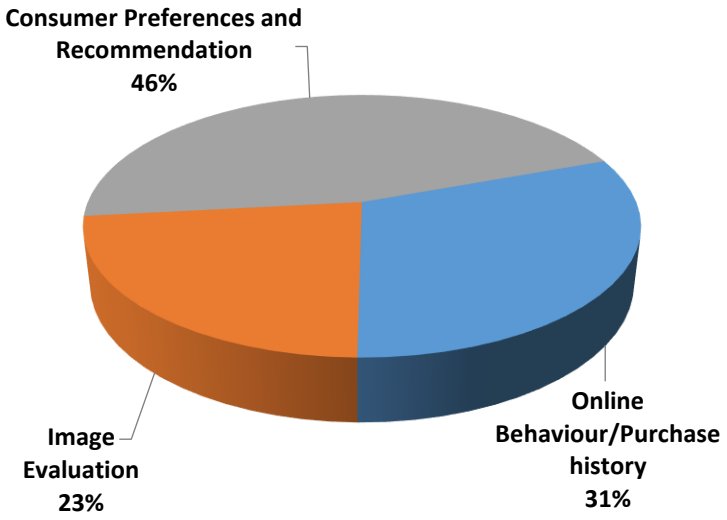
As evident, maximum number of patents/applications are falling under demand-supply evaluation**(35%),** followed by miscellaneous**(23%).**

6.5.2.c DISTRIBUTION OF FUJITSU'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category. The sub-categories comprise: online behavior/purchase history, image evaluation and consumer preferences and recommendation.

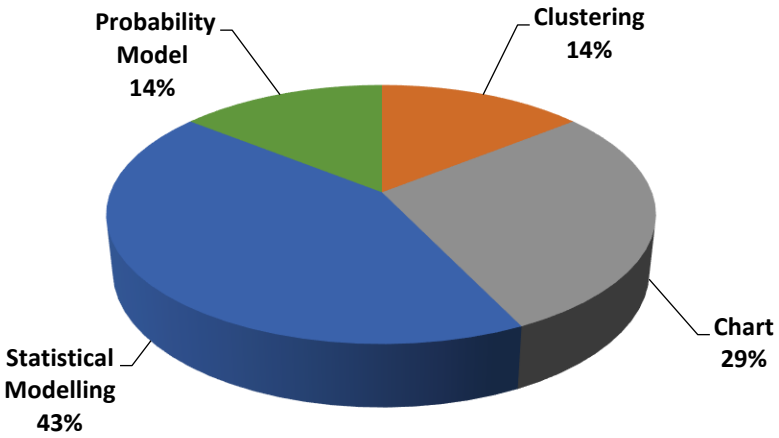
INSIGHT:

As evident, maximum number of patents/applications are falling under consumer preferences and recommendation(**46%**), followed by online behavior/ purchase history(**31%**).



6.5.2.d DISTRIBUTION OF FUJITSU'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category. The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.

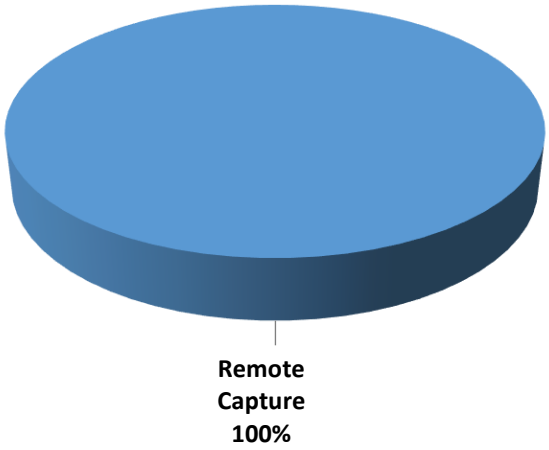


INSIGHT:

As evident, maximum number of patents/applications are falling under statistical modeling(**43%**), followed by chart(**29%**).

6.5.2.e DISTRIBUTION OF FUJITSU'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY " as the underlying category.The sub-categories comprise: remote capture, sensors, satellite and biometric.

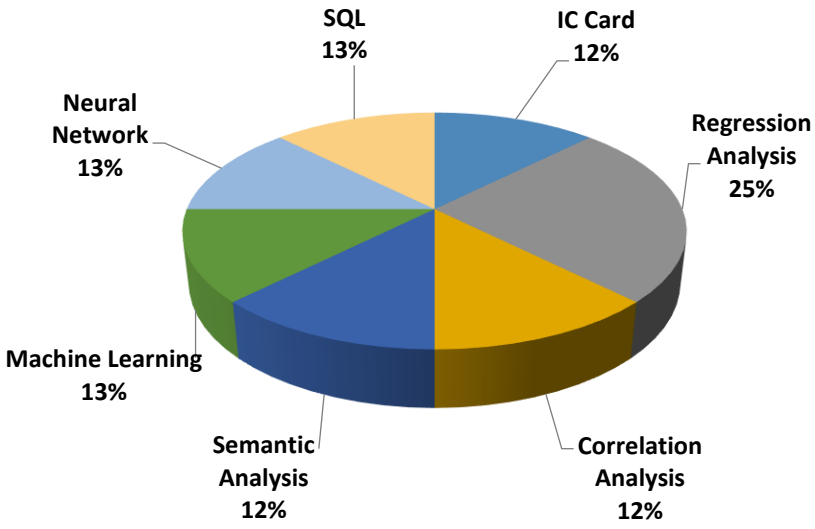


INSIGHT:

As evident, all patents/applications are falling under remote capture**(100%).**

6.5.2.f DISTRIBUTION OF FUJITSU'S PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "ANALYSIS TOOLS" as the underlying category.The sub-categories comprise: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.



INSIGHT:

As evident, maximum number of patents/applications are falling under regression analysis**(25%),** followed by SQL, neural network, and machine learning **(13% each).**

6.5.3 PATENT PORTFOLIO ANALYSIS

Fujitsu is the leading Japanese information and communication technology (ICT) company, offering a full range of technology products, solutions and services. Approximately 159,000 Fujitsu people support customers in more than 100 countries. Fujitsu Limited (TSE: 6702) reported consolidated revenues of 4.8 trillion yen (US$40 billion) for the fiscal year ended March 31, 2015.[Source]

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

Patent No.	Claim
JP2014182750	A storage unit that stores purchase data including attributes of products and purchase amounts in association with each of customer identification data that identifies a plurality of customers; and a purchase price storage unit that stores, based on the purchase data stored in the storage unit, In a case where a point representing the purchase data is placed in a multidimensional space to which a dimension is assigned by each of a plurality of attributes of the commodities, A dispersion direction axis specifying unit that specifies a plurality of predetermined axes in descending order of variance of the plurality of points to the plurality of predetermined axes; A representative data set generation unit that extracts a plurality of pieces of purchase data to be created as representative data from the plurality of customer purchase data stored in the storage unit and generates a set of representative data, A representative data set generation unit that assigns a predetermined customer layer identifier to each of representative data included in the set of table data; and a representative data set generation unit that adds, to each of the purchase data excluding the set of representative data, A customer layer identifier assigning unit that assigns the customer layer identifier of the representative data having the closest distance from each included representative data included in the customer layer identifier to the customer layer identifier; And an information output unit for outputting information on purchase data of said data.
US20100156086	An information providing apparatus, comprising: a leaflet obtaining section that obtains at least one leaflet containing data; a leaflet analysis section that extracts information on the at least one leaflet obtained by the leaflet obtaining section and updates leaflet list data, the leaflet list data being a list of the information extracted from a plurality of the leaflets; a preference analysis section that calculates a number of appearances of information of a same keyword in the leaflet list data and generates preference data in which a correspondence between the keyword and the number of appearances thereof has been recorded; a recommendation information generation section that selects a keyword based on the number of appearances in the preference data, extracts information including the selected keyword from the leaflet list data, and generates recommendation information based on the extracted information; and a recommendation information providing section that provides the recommendation information to a user.
US20090100103	An information collecting method comprising: a provided information accepting step of accepting provided information which is information provided from an information provider, as electronic data; a provided information management step of associating the provided information accepted in the provided information accepting step with the information provider, and registering the provided information associated with the information provider in a table to store the provided information associated with the information provider in a database; an analysis step of reading out the provided information stored in the database in the provided information management step and analyzing the provided information; an analysis information management step of associating analysis information that is an analysis result of the analysis step with the provided information and registering the analysis information associated with the provided information in the table to store the analysis information associated with the provided information in the database; an output step of outputting the analysis information stored in the database in the analysis information management step, as electronic data; an evaluation information accepting step of accepting first evaluation information that is evaluation information of the analysis information outputted in the output step, as electronic data; and

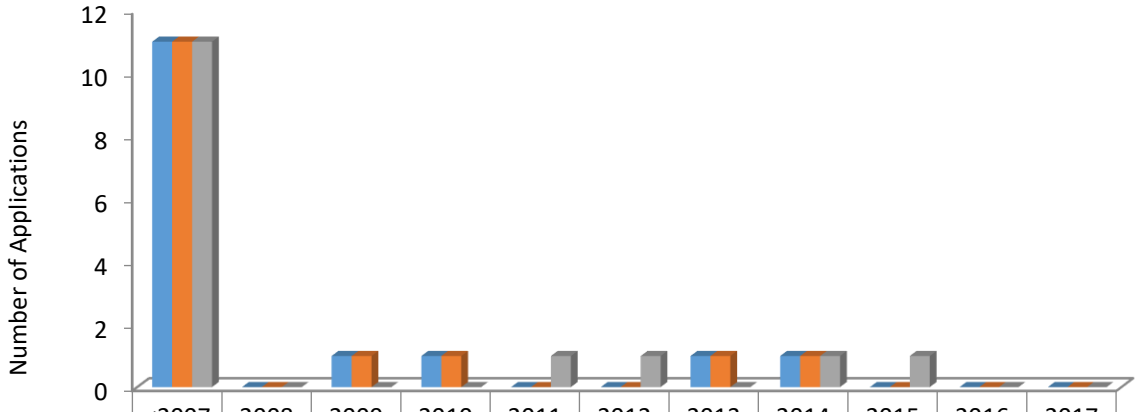
	an evaluation step of calculating second evaluation information that is evaluation information of the information provider stored in the database, based on the first evaluation information accepted in the evaluation information accepting step.
CN102376057	A method of generating information for the consumer media processing device, comprising: gathering and extraction unit is configured to supply the information collected and consumer-generated media information extraction; filtration unit is configured based on a predetermined theme through the said collection and extraction unit of consumer-generated media information obtained is filtered to obtain a predetermined topics related to consumer-generated media information; integration unit configured based on customized rules obtained by the filtration unit consumer-generated media information integration, in order to obtain a customized consumer generated media information; and a presentation unit configured to visually render obtained by the integration of consumer-generated media information unit, wherein the extraction unit and the collection and The filter unit is further configured to at least one user model based on collected by filtration and the corresponding at least one of the user preference model includes information regarding the user of the consumer generated media information; and wherein said means further comprising a user model update unit, the user model update unit configured to update the information based on the user-generated media presented to the user model of consumer feedback.

6.6 HEWLETT PACKARD (HP)

6.6.1 NON-TECHNICAL ANALYSIS

6.6.1.a PRIORITY, FILING, PUBLICATION YEAR TREND

Below graph represents Priority, Application, and Publication year based trends of representative patents/applications member per patent family filed by HP and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	11	0	1	1	0	0	1	1	0	0	0
Application Date	11	0	1	1	0	0	1	1	0	0	0
Publication Date	11	0	0	0	1	1	0	1	1	0	0

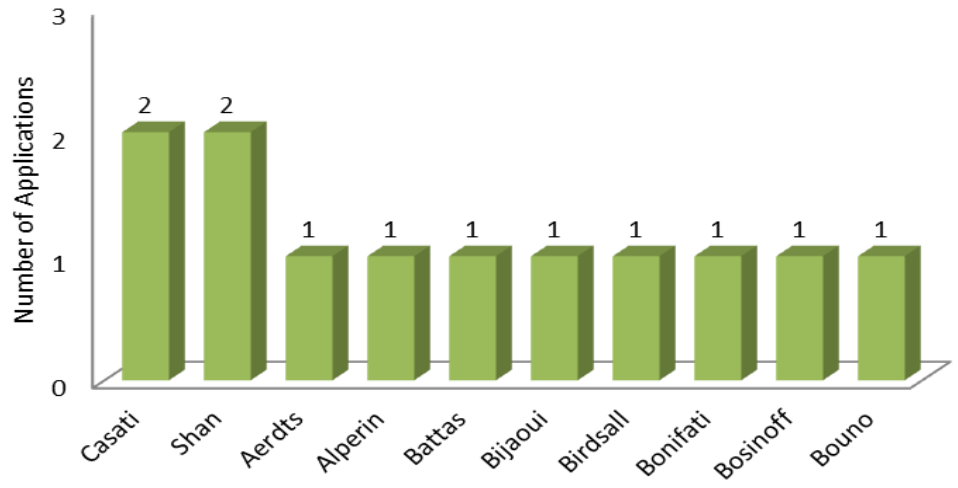
Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

INSIGHT:

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum**(1 nos.)** applications claiming priority/first filed status were filed each in year **2009, 2010, 2013** and **2014.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is steady application filing activity over the years, wherein maximum number of patent applications(**1 nos.**) were filed each in year **2009, 2010, 2013** and **2014.**
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is steady publication of applications over the years, wherein maximum number of patent applications(**1 nos.**) were published in **2011, 2012, 2014** and **2015.**

6.6.1.b INVENTORS TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

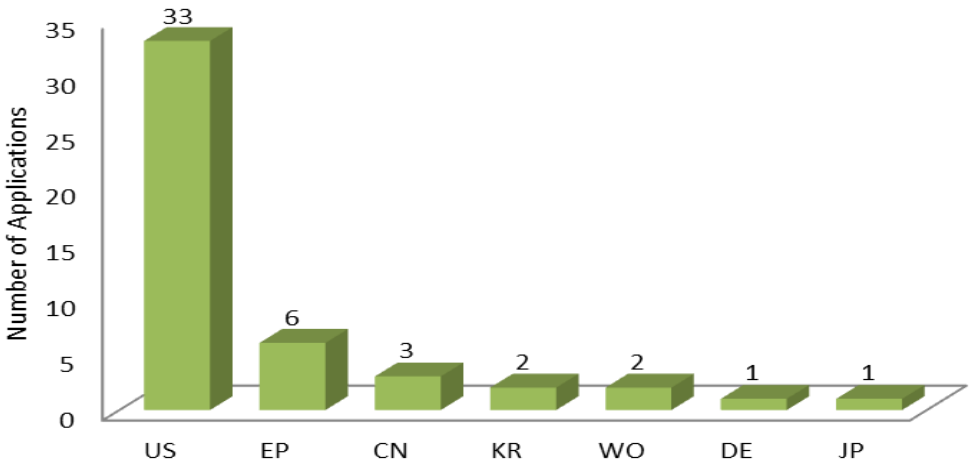


INSIGHT:

Casati and Shan are the leading inventors, wherein each inventor has contributed with**(2 nos.)** patent families, followed by Aerdts, Alperin and others with**(1 nos.)** patent family each.

6.6.1.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where HP has filed patent applications.



Note: There may be higher number of application for year 2015-2017, attributed to unpublished applications.

INSIGHT:

HP has focused its application filing activity specifically in United States, since it has filed maximum number of patent applications in US**(33 nos.)**, followed by Europe**(6 nos.)** and China**(3 nos.)**.

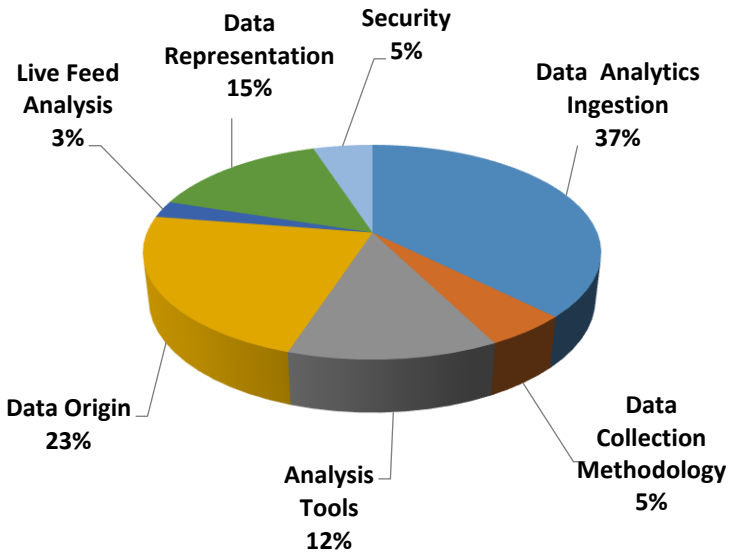
6.6.2 TECHNICAL ANALYSIS

6.6.2.a DISTRIBUTION OF HP'S PATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by Hewlett Packard, wherein the patents/applications relates to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications, the categories comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.

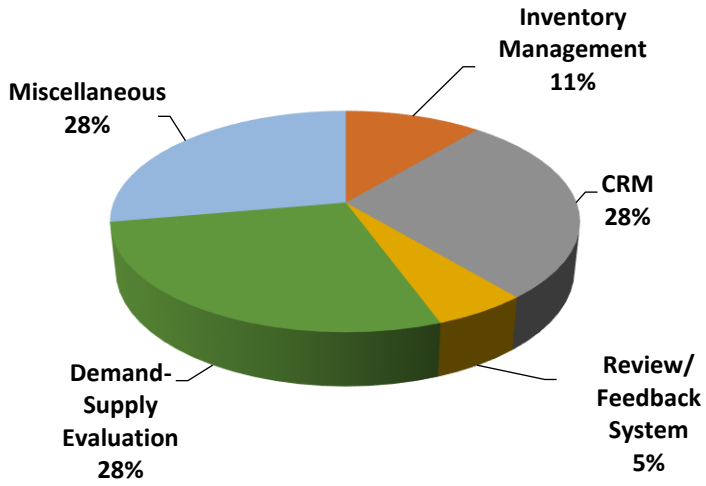
INSIGHT:

As evident, maximum number of patents/applications are falling under data analytics ingestion**(37%),** followed by data origin**(23%)**.



6.6.2.b DISTRIBUTION OF HP'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertain to "DATA ANALYTICS INGESTION" as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/ feedback system, website restructuring, and demand-supply evaluation.



INSIGHT:

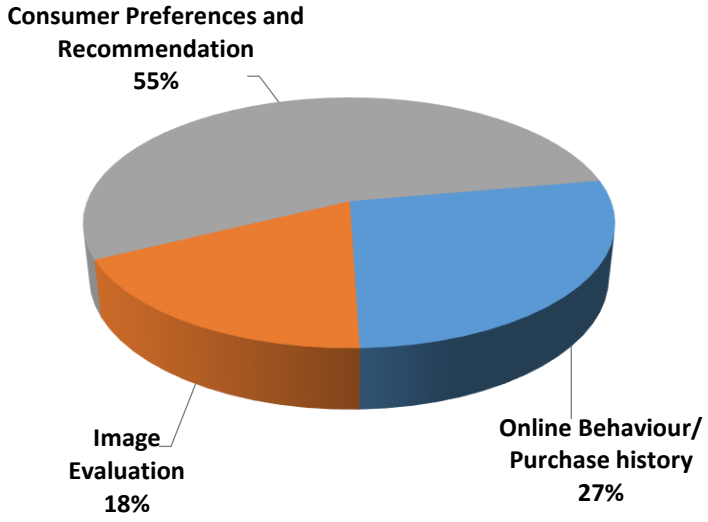
As evident, maximum number of patents/applications are falling under demand-supply evaluation **(28%)** and CRM**(28% each),** followed by inventory management**(11%).**

6.6.2.c DISTRIBUTION OF HP'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category. The sub-categories comprise: online behavior/purchase history, image evaluation and consumer preferences and recommendation.

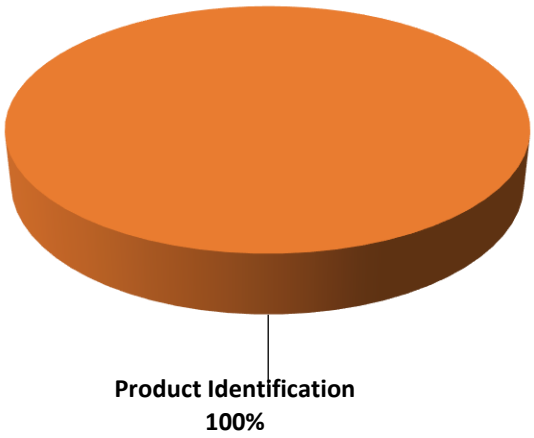
INSIGHT:

As evident, maximum number of patents/ applications are falling under consumer preferences and recommendation(**55%**), followed by online behavior/purchase history (**27%**).



6.6.2.d DISTRIBUTION OF HP'S PATENTS/APPLICATIONS PERTAINING TO "LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category. The sub-categories comprise: human identification, product identification, and semantic image reproduction.

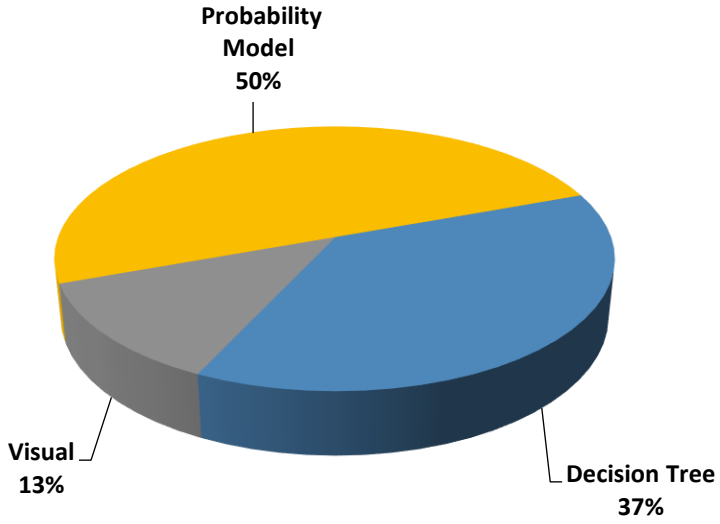


INSIGHT:

As evident, all patents/applications are falling under product identification (**100%**).

6.6.2.e DISTRIBUTION OF HP'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category. The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

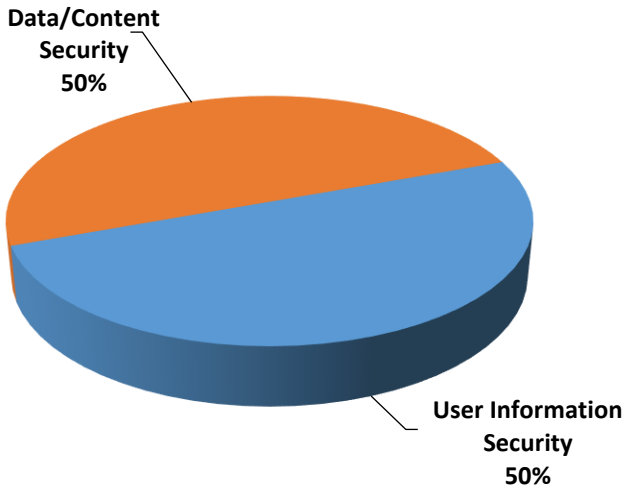
As evident, maximum number of patents/applications are falling under probability model**(50%),** followed by decision tree**(37%)**.

6.6.2.f DISTRIBUTION OF HP'S PATENTS/APPLICATIONS PERTAINING TO "SECURITY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "SECURITY" as the underlying category. The sub-categories comprise: user information security, and data/content security.

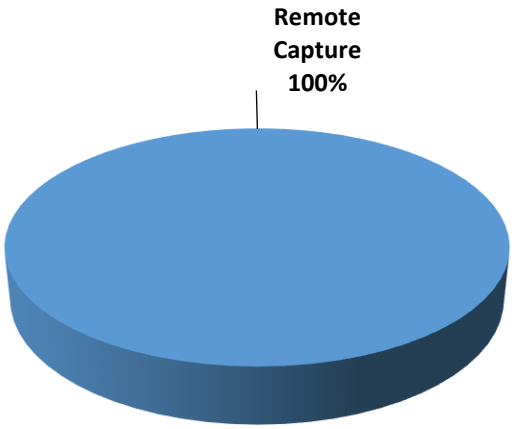
INSIGHT:

As evident, maximum number of patents/applications are falling under user information security**(50%),** followed by data/content security**(50%)**.



6.6.2.g DISTRIBUTION OF HP'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories comprise: remote capture, sensors, satellite and biometric.



INSIGHT:

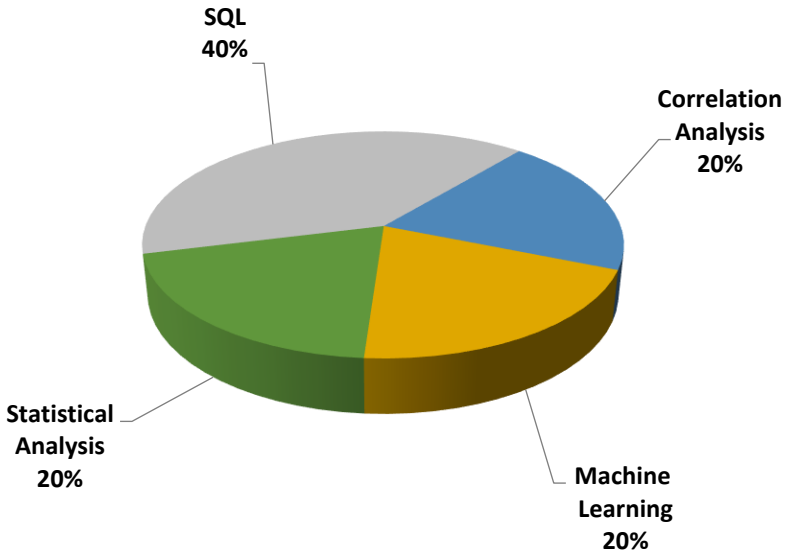
As evident, all patents/applications are falling under remote capture(**100%**)

6.6.2.h DISTRIBUTION OF HP'S PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "ANALYSIS TOOLS" as the underlying category. The sub-categories comprise: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.

INSIGHT:

As evident, maximum number of patents/applications are falling under SQL(**40%**), followed by statistical analysis, machine learning, and correlation analysis(**20% each**).



6.6.3 PATENT PORTFOLIO ANALYSIS

The Hewlett-Packard Company (commonly referred to as HP) or shortened to Hewlett-Packard is an American multinational information technology company headquartered in Palo Alto, California. On October 6, 2014, Hewlett-Packard announced plans to split the PC and printers business from its enterprise products and services business. The split closed on November 1, 2015, and resulted in two publicly traded companies: HP Inc. and Hewlett Packard Enterprise. In 2017, Hewlett Packard Enterprise spun-off it's Enterprises Services division as DXC Technology and its Software division to Micro Focus.[Source]

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

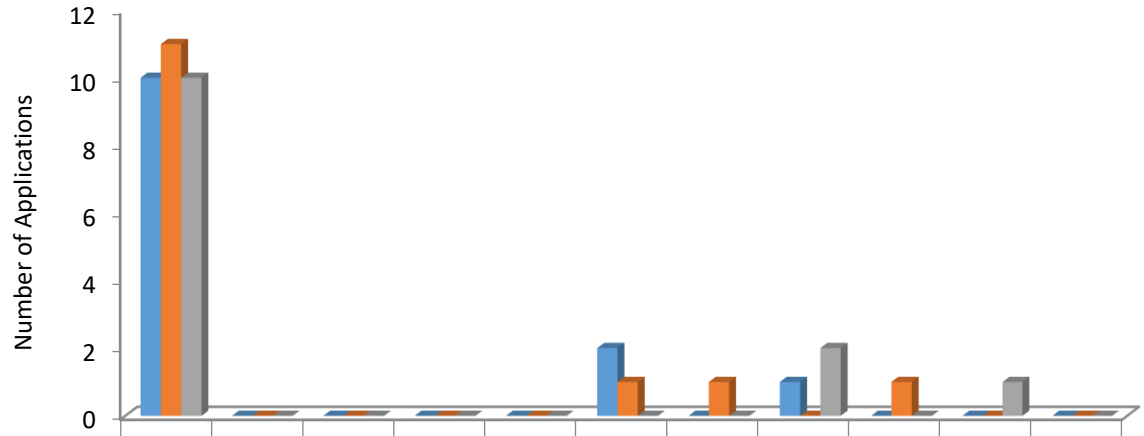
Patent No.	Claim
US2011055158	A method for distributed data analysis using a computing system, comprising: sending data using a processor in a subsystem to a data broker; distributing the data from the data broker to an information consumer subscribed to the data; receiving the data at a first information consumer when the first information consumer is subscribed to the data, wherein the first information consumer analyzes the data to obtain an analyzed result and sends the analyzed result to the data broker when at least one of a second information consumer and a repository consumer is subscribed to the analyzed result; and receiving at least one of the data and the analyzed result at the repository consumer from the data broker when the repository consumer is subscribed to the at least one of the data and the analyzed result, wherein the repository consumer stores the at least one of the data and the analyzed result in a data repository on a computer readable medium.
US20040059624	A system for analyzing a customer survey associated with a Web site, said system comprising: a customer analysis system operative to determine whether a user of a Web site is to be provided with a customer survey and to generate identification information corresponding to the user such that, if the user is to be provided with a customer survey, the identification information is generated, and is enabled to be associated with the customer survey and information corresponding to a path through the Web site traversed by the user.
CN1525356	An information management apparatus comprising: Output means information storage means for storing information relating to the output means of the output information, the stored information relating to the identification information for identifying said output means, Output request receiving means for receiving an information output request transmitted by the portable terminal; Query signal transmitting means for transmitting a inquiry signal for inquiring the output terminal as an output destination to said portable terminal when said output request receiving means receives an output request, Image data receiving means for receiving image data transmitted from said portable terminal; Identification information obtaining means for analyzing image data transmitted from said portable terminal and received by said image data receiving means in response to said inquiry signal and for obtaining identification information relating to said output means included in said image data information; Output destination information retrieving means for retrieving information relating to said output means from said output means information storage means on the basis of the identification information obtained by said identification information obtaining means; and
EP2940630	A non-transitory computer readable medium for inventory allocation prediction having programmed instructions stored thereon for causing a processor to: receive an inventory availability request from a subscriber for a desired item; calculate a predicted availability based on inventory assessment data; analyzing social media data associated with the target item calculating a predicted purchase rate for the item based on the analysis of social media determine an optimum purchase timing based on the predicted availability and predicted purchase rate of the item; and provide the optimum purchase timing to the subscriber.

6.7 TOSHIBA

6.7.1 NON-TECHNICAL ANALYSIS

6.7.1.a PRIORITY, FILING, PUBLICATION YEAR TREND

Below graph represents Priority, Application, and Publication year based trends of representative patents/applications member per patent family filed by TOSHIBA and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	10	0	0	0	0	2	0	1	0	0	0
Application Date	11	0	0	0	0	1	1	0	1	0	0
Publication Date	10	0	0	0	0	0	0	2	0	1	0

Year

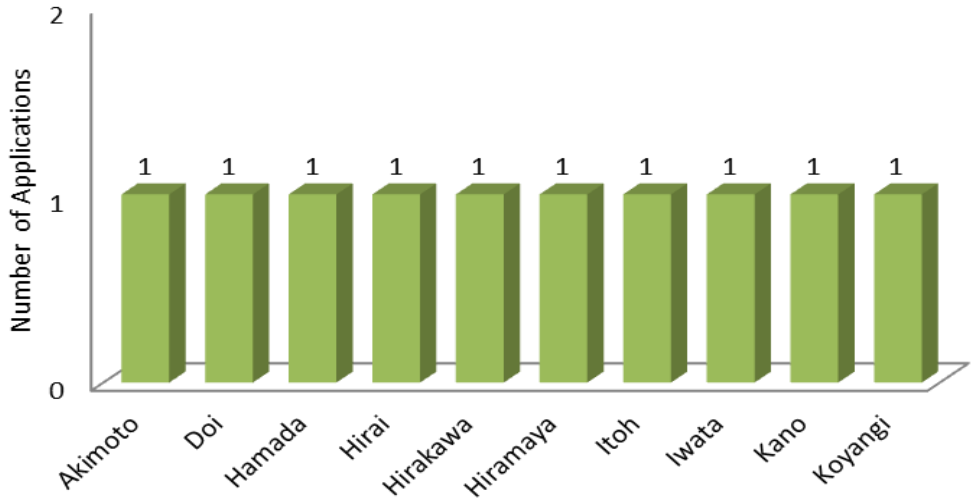
Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

INSIGHT:

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum**(2 nos.)** applications claiming priority/first filed status were filed in year **2012.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is steady application filing activity over the years, wherein maximum number of patent applications(**1 nos.**) were filed each in year **2012, 2013** and **2015.**
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is steady publication of applications over the years, wherein maximum number of patent applications(**2 nos.**) were published in **2014.**

6.7.1.b INVENTOR TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

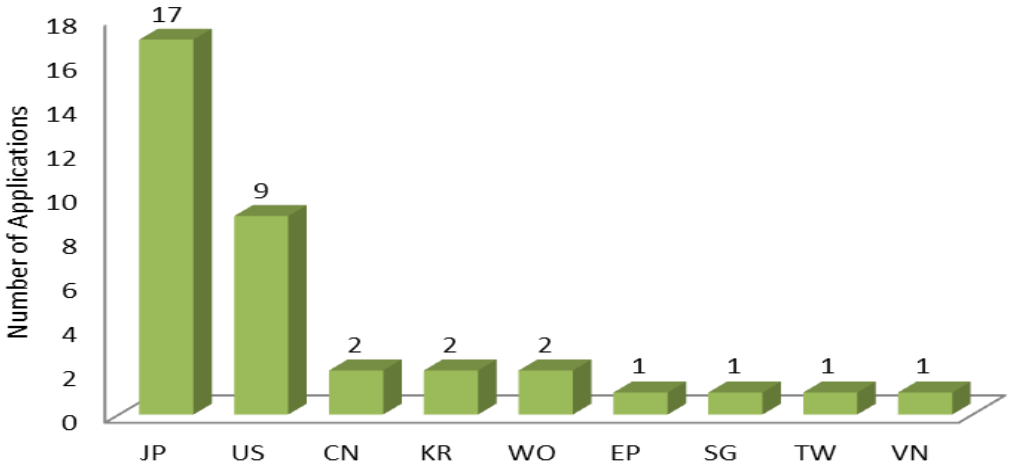


INSIGHT:

Akimoto, Doi, and all other inventors have each contributed with**(1 nos.)**patent family.

6.7.1.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where TOSHIBA has filed patent applications.



Note: There may be higher number of application for year 2015-2017, attributed to unpublished

INSIGHT:

TOSHIBA has focused its application filing activity specifically in Japan, since it has filed maximum number of patent applications in Japan(**17 nos.**), followed by United States(**9 nos.**) and China(**2 nos.**).

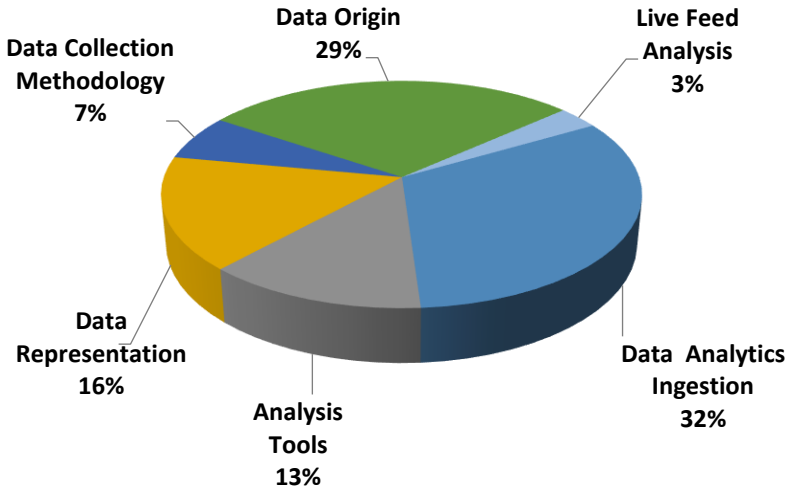
6.7.2TECHNICAL ANALYSIS

6.7.2.a DISTRIBUTION OF TOSHIBA'S PATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by TOSHIBA, wherein the patents/applications relate to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications, the categories comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.

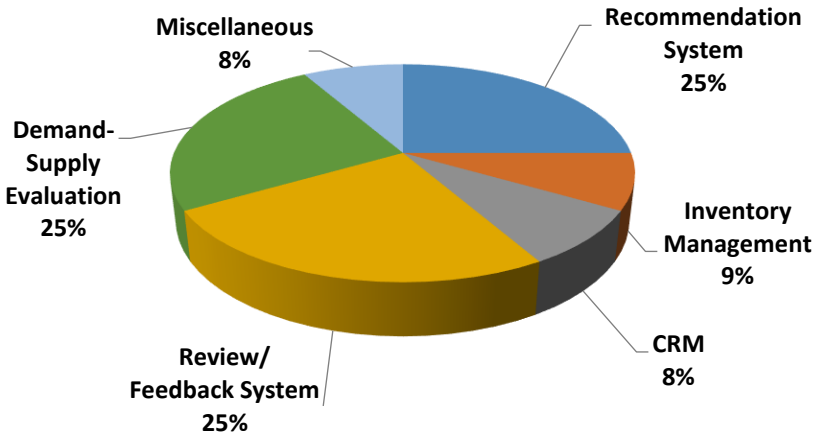
INSIGHT:

As evident, maximum number of patents/applications are falling under data analytics ingestion(**32%**) followed by data origin(**29%**).



6.7.2.b DISTRIBUTION OF TOSHIBA'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertain to "DATA ANALYTICS INGESTION" as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/ feedback system, website restructuring, and demand-supply evaluation.



INSIGHT:

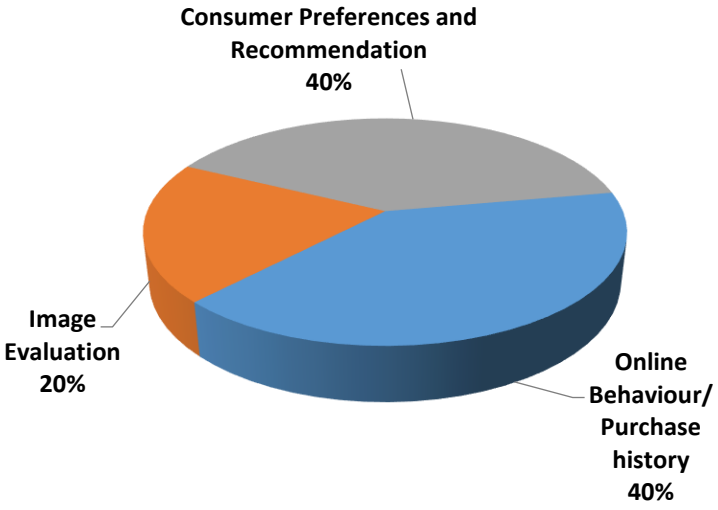
As evident, maximum number of patents/applications are falling under review/feedback system**,** demand-supply evaluation, and recommendation system(**25% each**), followed by inventory management(**9%**)

6.7.2.c DISTRIBUTION OF TOSHIBA'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category. The sub-categories comprise: online behavior/purchase history, image evaluation, and consumer preferences and recommendation.

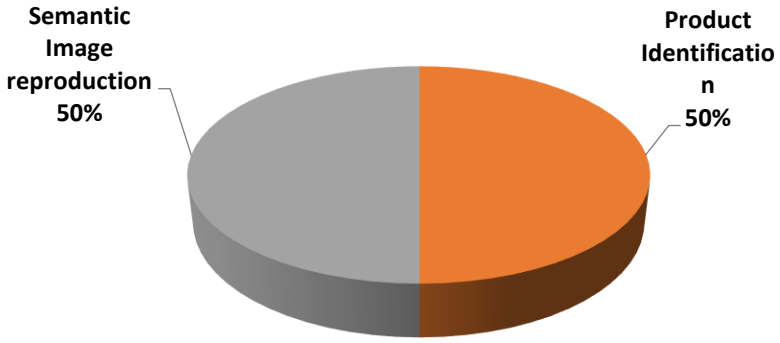
INSIGHT:

As evident, maximum number of patents/ applications are falling under consumer preferences and recommendation and online behavior/ purchase history(**40% each),** followed by image evaluation(**20%**).



6.7.2.d DISTRIBUTION OF TOSHIBA'S PATENTS/APPLICATIONS PERTAINING TO "LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category. The sub-categories comprise: human identification, product identification, and semantic image reproduction.

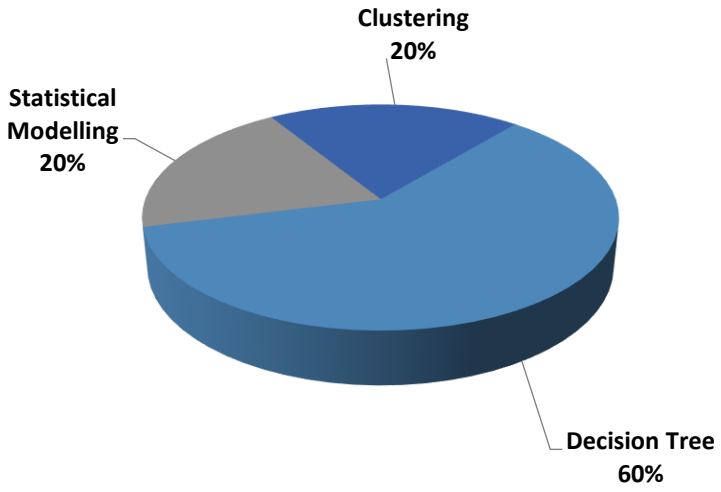


INSIGHT:

As evident, patents/applications are equally falling under categories of product identification and semantic image reproduction(**50% each).**

6.7.2.e DISTRIBUTION OF TOSHIBA'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category. The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

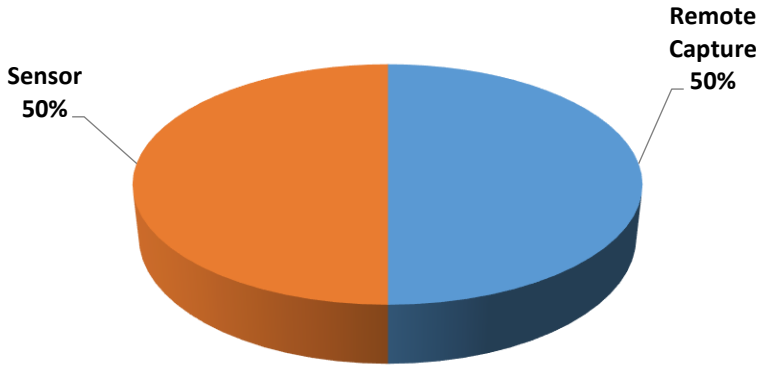
As evident, maximum number of patents/applications are falling under decision tree**(60%),** followed by statistical modeling**(20%).**

6.7.2.f DISTRIBUTION OF TOSHIBA'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories comprise: remote capture, sensors, satellite and biometric.

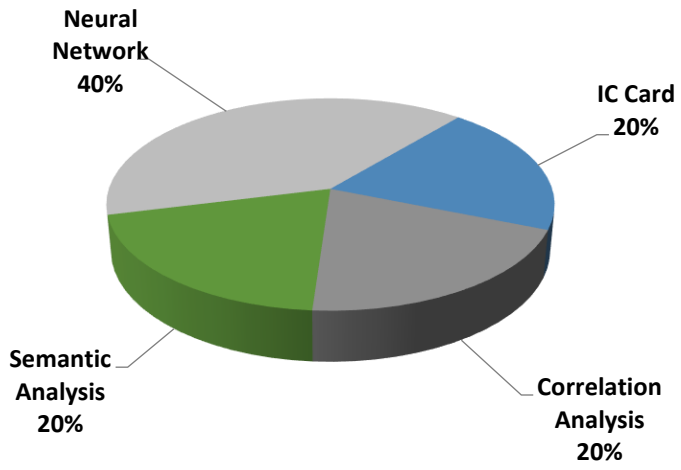
INSIGHT:

As evident, patents/applications are equally falling under categories of remote capture and sensor**(50% each).**



6.7.2.g DISTRIBUTION OF TOSHIBA'S PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "ANALYSIS TOOLS" as the underlying category.The sub-categories comprise: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.



INSIGHT:

As evident, maximum number of patents/applications are falling under neural network**(40%),** followed by semantic analysis, IC card and correlation analysis**(20% each).**

6.7.3 PATENT PORTFOLIO ANALYSIS

Toshiba was founded in 1939 as Tokyo Shibaura Denki K.K. through the merger of Shibaura Seisaku-sho (founded in 1875) and Tokyo Denki (founded in 1890). The company name was officially changed to Toshiba Corporation in 1978. Toshiba made a large number of corporate acquisitions during its history, including of Semp in 1977, of Westinghouse Electric LLC in 2006, of Landis+Gyr in 2011, and IBM's point-of-sale business in 2012.[Source]

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

Patent No.	Claim
US2016125048	An item recommendation device comprising: a context information generator that generates and outputs context information including user intention by performing semantic analysis on a natural language request which is input; and a ranker that ranks candidates of items to be presented to a user based on the context information, user information representing an attribute of the user, and history information representing item usage history of the user. The device according to claim 1, further comprising a context tag dictionary that stores therein a context tag, which straightforwardly represents a context, in association with a phrase which is semantically similar to the context tag, wherein when a phrase extracted from the natural language request which is input matches with the context tag stored in the context tag dictionary, the context information generator outputs the context tag as the context information, and when a phrase extracted from the natural language request which is input matches with a phrase stored in the context tag dictionary, the context information generator outputs the context tag, which is stored in association with the phrase in the context tag dictionary, as the context information.

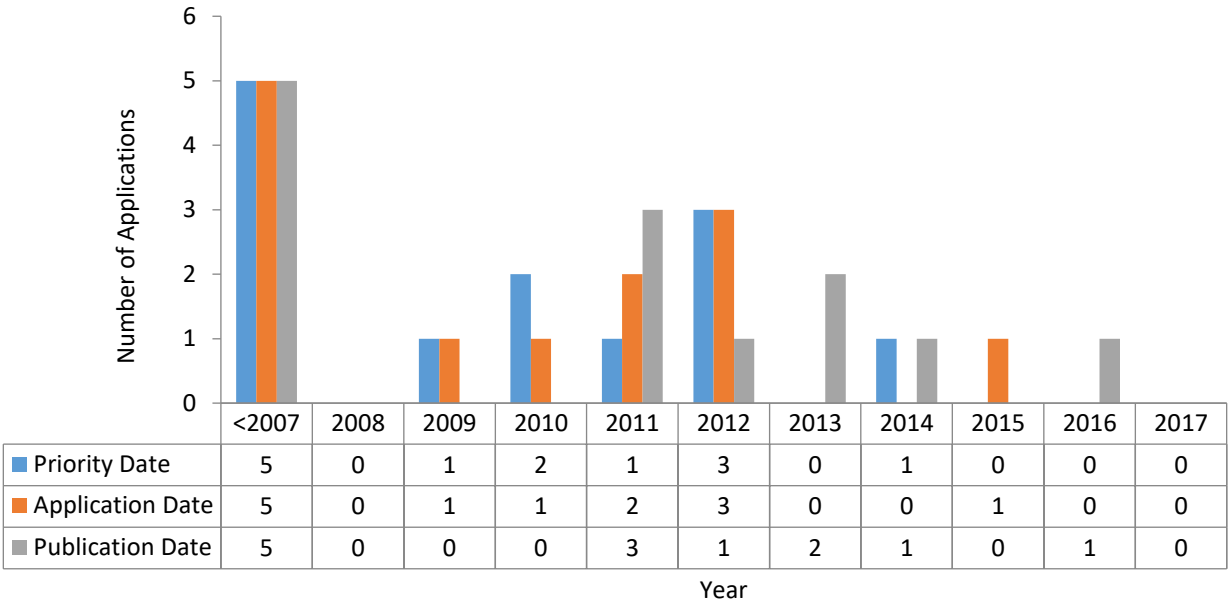
	The device according to claim 1, wherein the context information generator generates a feature vector that represents meaning of entire text of the natural language request by performing statistical semantic analysis on the natural language request which is input, and outputs the feature vector as the context information.
WO2014030529	Means for obtaining a usage history information recorded in accordance with the usage of the IC card, And database means for storing the usage history information, And generating prediction information for using the use history information stored in said database means to predict the behavior of the user of the IC card, and generates the guide information for the user of the IC card on the basis of the predicted behavior behavior prediction apparatus comprising the action prediction means that. Using the product sales history information using the IC card as a stored usage history information to said database means, and predicts sales information on near a store of the expected participating stations, are shown the estimated participation station and the sales information The behavior prediction apparatus according to claim 4 for generating a predictive information.
US2014129329	A server comprising: a first acquiring unit configured to acquire a piece of recognition information including a piece of product identification information for identifying a product included in a product image;a recognition information storage unit configured to store the piece of recognition information; a second acquiring unit configured to acquire a piece of combination information including the piece of product identification information of the product to be combined with an object image including an object; a combination information storage unit configured to store the piece of combination information; an analyzing unit configured to calculate product priorities for respective products by analyzing a plurality of pieces of recognition information stored in the recognition information storage unit and a plurality of pieces of combination information stored in the combination information storage unit; and an output unit configured to output information based on the product priorities.
US2003088454	A complaint-report-issuing system comprising: a master database section which holds product information related to a sales product and a report having no solution; a point calculation section which periodically calculates points for each analysis-determination item used to analyze and determine the report on the basis of a result obtained by analyzing the product information and a preset condition for the result and totals the points of the analysis-determination items; and a complaint-report-issuing section which issues a complaint report of the report to a host center on the basis of the point totaled by said point calculation section and a preset point range for complaint-

6.8 SONY

6.8.1 NON-TECHNICAL ANALYSIS

6.8.1.a PRIORITY, FILING, PUBLICATION YEAR TREND

Below graph represents Priority, Application, and Publication year based trends of representative patents/applications member per patent family filed by SONY and considered/selected as relevant.



	<2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Priority Date	5	0	1	2	1	3	0	1	0	0	0
Application Date	5	0	1	1	2	3	0	0	1	0	0
Publication Date	5	0	0	0	3	1	2	1	0	1	0

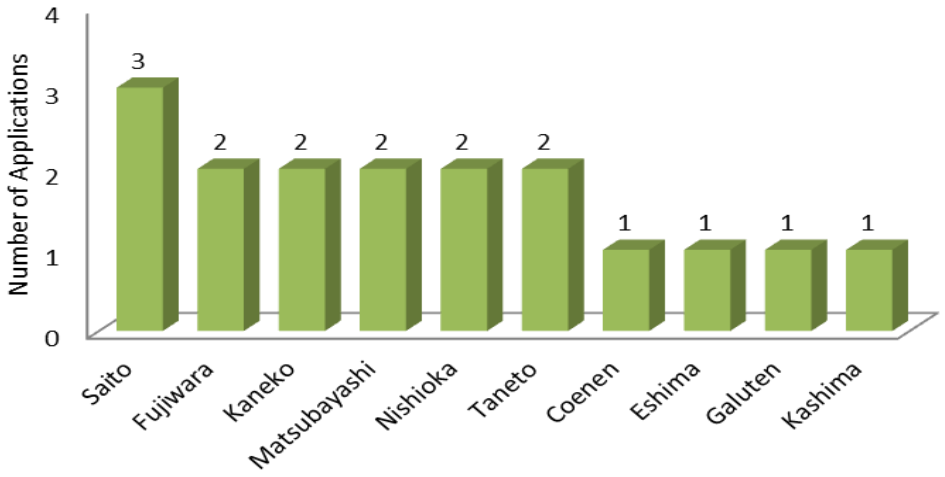
Note: There may be higher number of applications for year 2015-2017, attributed to unpublished applications.

INSIGHT:

- Priority trend indicates number of applications first filed/claiming priority from a particular year. As represented by the graph, maximum(**3 nos.**) applications claiming priority/first filed status were filed in year **2012.**
- Application trend indicates number of applications filed in a particular year. As represented by the graph, there is steady application filing activity over the years, wherein maximum number of patent applications(**3 nos.**) were filed in year **2012.**
- Publication trend indicates number of applications published in a particular year. As represented by the graph, there is intermittent publication of applications over the years, wherein maximum number of patent applications(**3 nos.**) were published in **2011.**

6.8.1.b INVENTORS TREND

Below graph shows inventors involved in research and development activities in Data Analytics field.

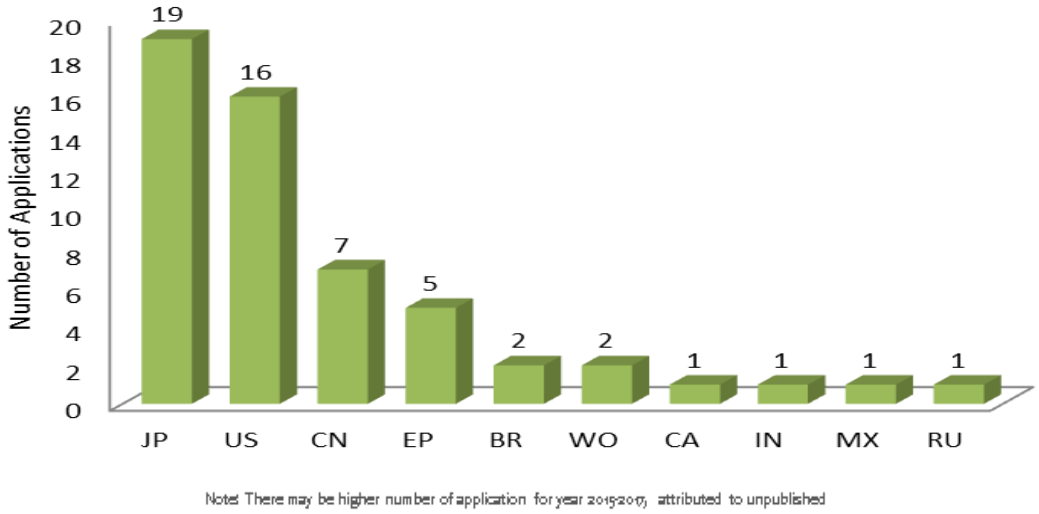


INSIGHT:

Saito is the leading inventor, wherein inventor has contributed with **(3 nos.)**patent families, followed by Fujiwara, Kaneko, and others with **(2 nos.)**patent families each.

6.8.1.c GEOGRAPHICAL TREND (Based on expanded patent families)

Below graph represents various countries/jurisdictions where SONY has filed patent applications.



INSIGHT:

SONY has focused its application filing activity specifically in Japan, since it has filed maximum number of patent applications in Japan**(19 nos.)**, followed by Unted States**(16 nos.)** and China**(7 nos.)**.

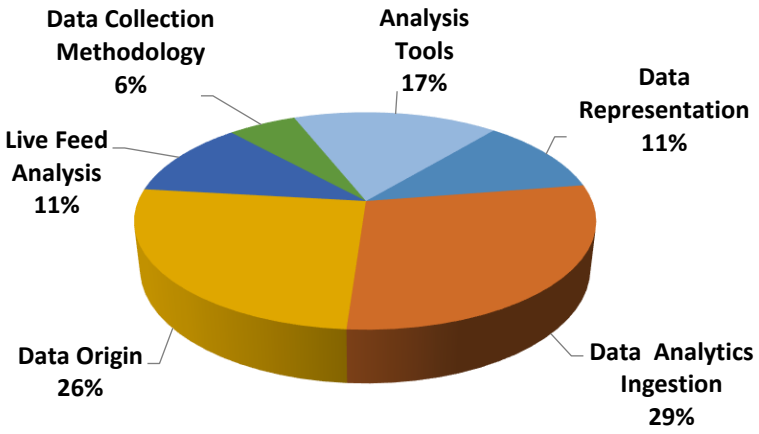
6.8.2 TECHNICAL ANALYSIS

6.8.2.a DISTRIBUTION OF SONY'S PATENTS/APPLICATIONS

Below representation deals with distribution of all patents/applications filed by SONY, wherein the patents/applications relate to "Data Analytics" as the underlying technology. Further, below graph depicts parent/main categorical distribution of patents/applications, the categories comprising: Data Analytics Ingestion, Data Origin, Live Feed Analysis, Data Representation, Data Collection Methodology, Security, and Analysis Tools.

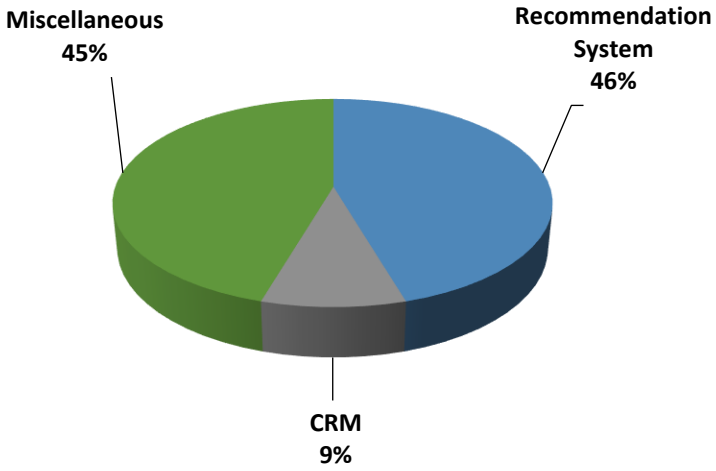
INSIGHT:

As evident, maximum number of patents/applications are falling under data analytics ingestion**(29%),** followed by data origin**(26%)**.



6.8.2.b DISTRIBUTION OF SONY'S PATENTS/APPLICATIONS PERTAINING TO "DATA ANALYTICS INGESTION"

This category deals with distribution of patents/applications that pertain to "DATA ANALYTICS INGESTION" as the underlying technology. The sub-categories comprise: recommendation system, inventory management, CRM, review/ feedback system, website restructuring, and demand-supply evaluation.



INSIGHT:

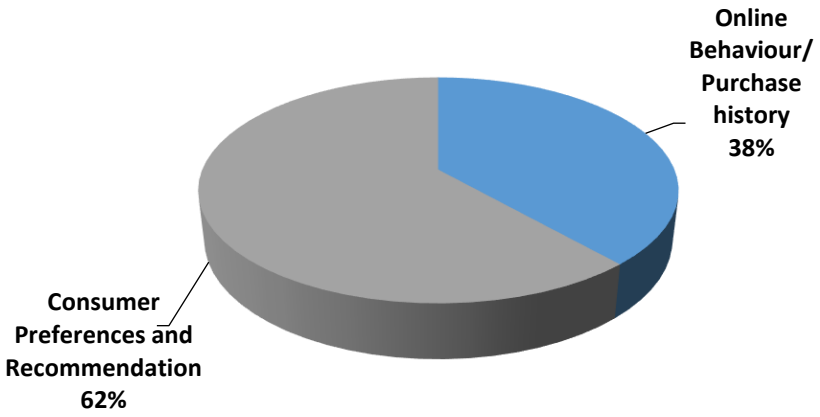
As evident, maximum number of patents/applications are falling under recommendation system**(46%),** followed by miscellaneous**(45%)**.

6.8.2.c DISTRIBUTION OF SONY'S PATENTS/APPLICATIONS PERTAINING TO "DATA ORIGIN"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA ORIGIN" as the underlying category. The sub-categories comprise: online behavior/purchase history, image evaluation and consumer preferences and recommendation.

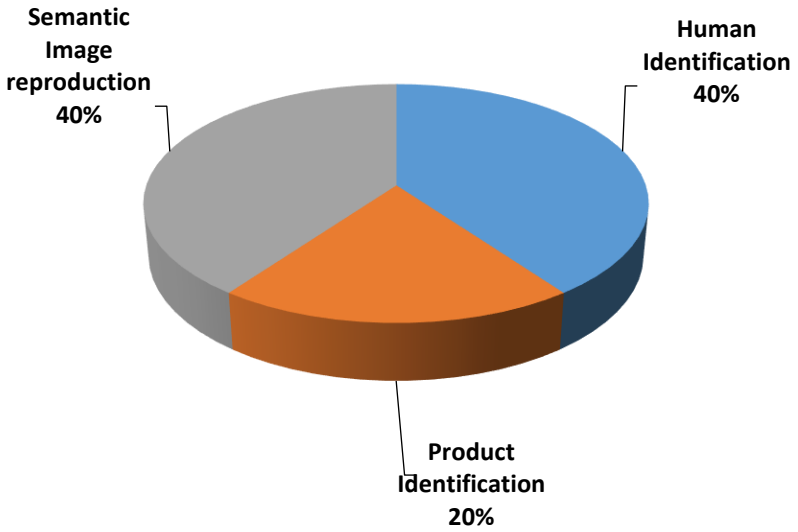
INSIGHT:

As evident, maximum number of patents/ applications are falling under consumer preferences and recommendation**(62%),** followed by online behavior/ purchase history**(38%).**



6.8.2.d DISTRIBUTION OF SONY'S PATENTS/APPLICATIONS PERTAINING TO "LIVE FEED ANALYSIS"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "LIVE FEED ANALYSIS" as the underlying category. The sub-categories comprise: human identification, product identification, and semantic image reproduction.

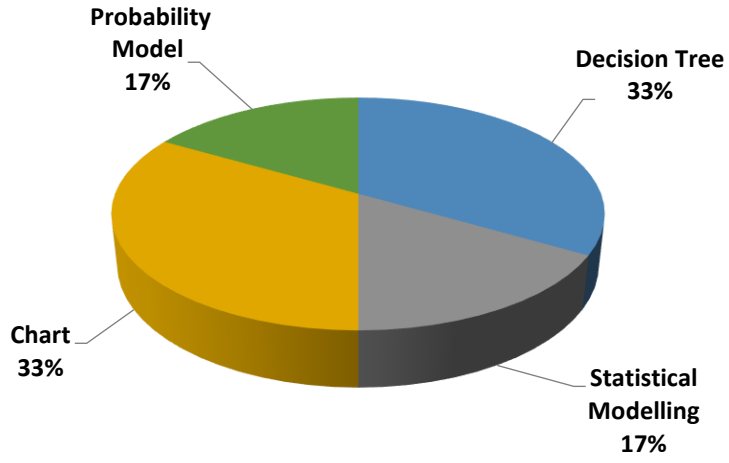


INSIGHT:

As evident, maximum number of patents/applications are falling under semantic image reproduction and human identification**(40% each),** followed by product identification.

6.8.2.e DISTRIBUTION OF SONY'S PATENTS/APPLICATIONS PERTAINING TO "DATA REPRESENTATION"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA REPRESENTATION" as the underlying category. The sub-categories comprise: decision tree, visual, statistical modeling, chart, clustering, and probability model.



INSIGHT:

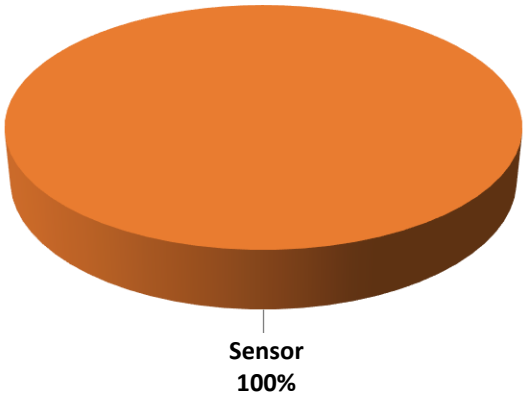
As evident, maximum number of patents/applications is falling under decision tree and chart**(33% each),** followed by probability model and statistical modelling**(17% each)**

6.8.2.f DISTRIBUTION OF SONY'S PATENTS/APPLICATIONS PERTAINING TO "DATA COLLECTION METHODOLOGY"

Below representation depicts sub-categorical distribution of patents/applications pertaining to "DATA COLLECTION METHODOLOGY" as the underlying category. The sub-categories comprise: remote capture, sensors, satellite and biometric.

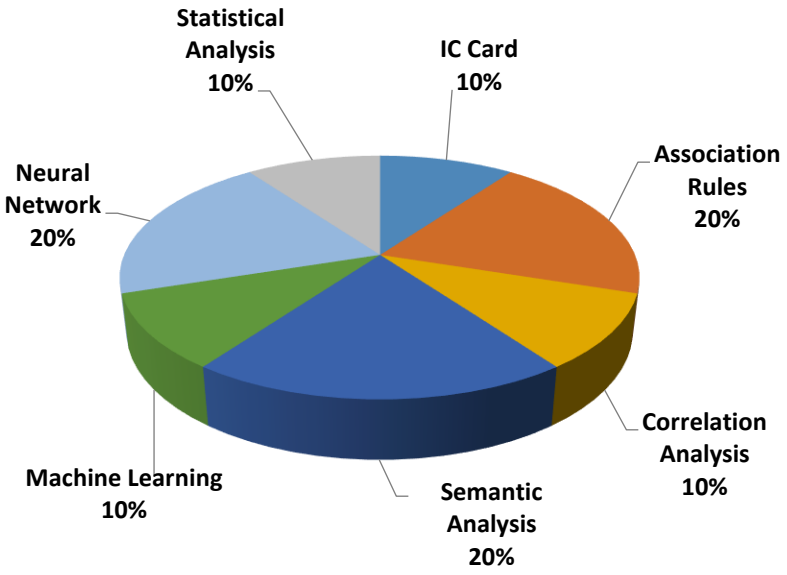
INSIGHT:

As evident, all patents/applications are falling under sensor**(100%).**



6.8.2.g DISTRIBUTION OF SONY'S PATENTS/APPLICATIONS PERTAINING TO "ANALYSIS TOOLS"

Below representation depicts sub-categorical distribution of patents/applicationspertaining to "ANALYSIS TOOLS" as the underlying category. The sub-categories comprise: IC Card, association rules, regression analysis, correlation analysis, semantic analysis, machine learning, neural network, IMARS, statistical analysis, and SQL.



INSIGHT:

As evident, maximum number of patents/applications are falling under semantic analysis, neural network**,** and association rules **(20% each),** followed by others**(10% each).**

6.8.3 PATENT PORTFOLIO ANALYSIS

Sony Corporation is a Japanese multinational conglomerate that is headquartered in Kōnan, Minato, Tokyo. Its diversified business includes consumer and professional electronics, gaming, entertainment, and financial services. The company is one of the leading manufacturers of electronic products for the consumer and professional markets. In November 2011, Sony was ranked 9th (jointly with Panasonic) in Greenpeace's Guide to Greener Electronics.[Source]

EXEMPLARY PATENTS/PUBLISHED APPLICATIONS

Patent No.	Claim
EP2290529	A program for causing a computer to function as: means for analyzing a user's preference based on a user's operation and generating preference information indicating the user's preference; means for detecting, based on a user's operation, a change in status of an operation application having a first status for displaying a first operation screen on which applications are registered and the registered applications can be selectively executed through a user's selecting operation and a second status for displaying a second operation screen on which the first operation screen is hidden and display information acquired based on the preference information, which enables a user's selecting operation and attracts the user, is displayed, and determining the status of the operation application; means for selectively displaying the first operation screen and the second operation screen on a display screen based on a determination result of the determination means; means for displaying the display information on the second operation screen based on a determination result of the determination means; and

	means for, when an application is selected on the first operation screen or the display information is selected on the second operation screen, performing a processing corresponding to the selected application or the selected display information.
US20130301939	An information processing method, comprising: analyzing event information related to an event in which a person participates; analyzing, for the person participating in the event, a person image group including one or a plurality of person images including the person; and estimating a profile of the person participating in the event based on a result obtained by analyzing the person image group and a result obtained by analyzing the event information.
US20130325887	An information processing method comprising: acquiring first behavior information, the first behavior information being detected by analysis of an image related to an object and indicating behavior of the object; acquiring second behavior information, the second behavior information being detected from an output of a sensor in a terminal device carried by or attached to the object and indicating the behavior of the object; and specifying a relationship between the object and the terminal device by matching the first behavior information to the second behavior information.
US20110246561	A content recommendation method, comprising: storing statistical information that is generated by performing a statistical process of a plurality of pieces of first meta information and a plurality of pieces of second meta information and that indicates a frequency of the plurality of pieces of first meta information as a derivation source of the plurality of pieces of second meta information for each piece of second meta information, , the plurality of pieces of second meta information being derived from the plurality of pieces of first meta information through an analysis; storing a plurality of different pieces of content information that indicates one of a commodity content and a service content to be recommended; receiving, from a client apparatus of one of the plurality of users, the second meta information derived from the plurality of pieces of first meta information in the client apparatus; selecting, on the basis of the second meta information received and the statistical information stored, content information relating to the first meta information having predetermined frequencies or more with respect to the received second meta information from the plurality of pieces of content information stored; and transmitting the content information selected to the client apparatus.

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