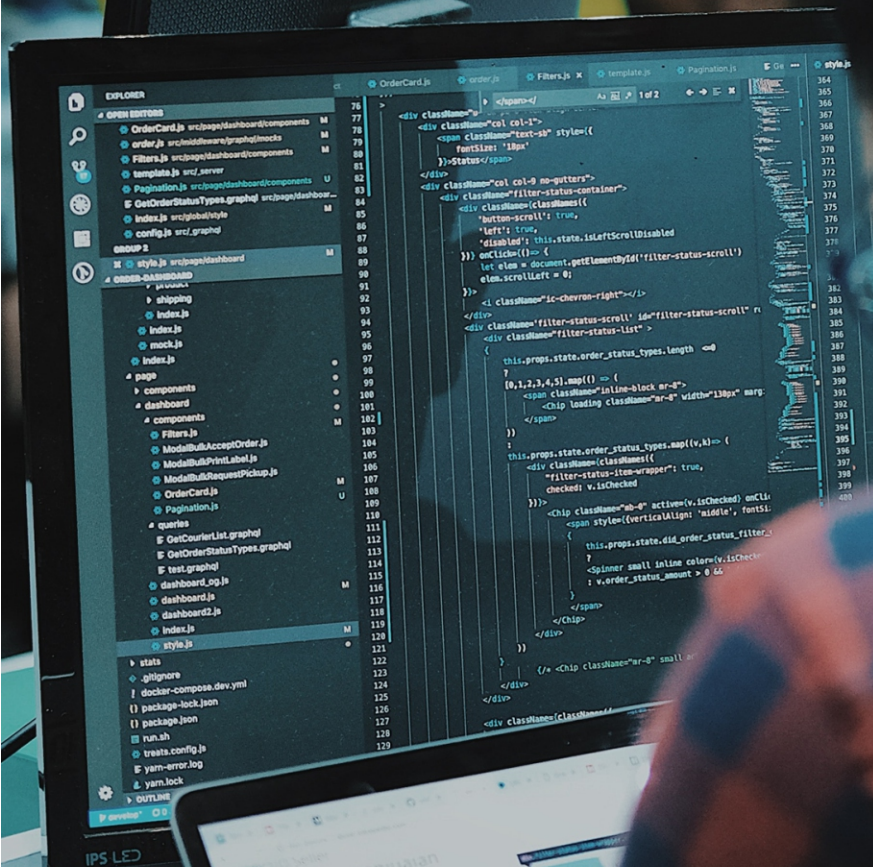


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A Study of Firs Abakaliki

Accomplishment of Waterfall Model

Highlights

Technology for Database Systems

Implementation of Graphical Package

Discovering Thoughts, Inventing Future



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Information and Communication Technology (ICT) as a Tool in Revenue Generation and Tax Administration, a Study of Firs Abakaliki, Ebonyi State-Nigeria

By Igwe Sylvester Agbo

Ebonyi State University

Abstract- Information and Communication Technology (ICT) has opened a new visage to globalization in revenue generation and tax administration. The deployment and integration of ICT facilities into revenue generation and tax administration for internet access and a web portal implementation that enable the organizations in charge of revenue generation and tax administration in Nigeria; federal inland revenue service (FIRS) to carry out most of its activities ubiquitously on the internet is steadily growing in Nigeria. This has enabled many financial operations such as Pay-direct, E-tax, M-banking, E-banking, E-filing, E-assessment, E-auditing among others. In Nigeria, quite a large number of revenue generation and tax administration organizations in different state have either developed their portal or have had one deployed for the purpose of ICT-related operations. This development has had tremendous impact on revenue generation and tax administration or management. It now provides these organizations with opportunities for e-revenue and tax operations.

Keywords: *ICT, revenue generation, tax administration, firs, ebonyi state.*

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Keywords: ICT, revenue generation, tax administration, firs, ebonyi state.

I. INTRODUCTION

Good governance is when the social contract between the governments and the governed are satisfied and it is achievable using modern technique of Information Technology. Putting in place good welfare facilities and up to-date securities apparatus for citizens is largely dependent on financial strength of that country. According to Sven Steinmo (1993) Governments need money; modern governments need lots of money, how they get this money and whom they take it from are two of the most difficult political issues faced in any modern political economy. Daniel Armah-Attoh and Mohammed Awal (2013) pointed out that the capacity of a country to provide for the welfare

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and security of its citizens, as well as to develop and consolidate representative democracy, is determined by its ability to raise enough resources. As in many African countries, Internally Generated Revenue in Nigeria depends totally on taxation.

According to the Federal Inland Revenue handbook on "Taxation Reform in Democratic Nigeria", the history of modern taxation in Nigeria started with the Stamp Duties Proclamation in 1903 in the then Northern Protectorate, which later became part of amalgamated British Colony of Nigeria. It was the Native Revenue Proclamation of 1906 that systematizes all existing pre-colonial taxes, thus bringing into place a new regime of tax rates. The amalgamation of the Northern and Southern Protectorates to form the colonial federation of Nigeria in 1914 led to the Native Revenue Ordinance in 1917, which was extended from the northern territories to the western and eastern territories in 1918 and 1927, respectively. Since then, there has been a steady progress in the tax regime with various attempts to modernize, expand, reform and improve the process, procedure, and sanctions inherent in the system of taxation in Nigeria. In 1943, the Nigerian Inland Revenue Department was carved out of the Inland Revenue Department of British West Africa. This Department was later renamed the Federal Board of Inland Revenue under the Income Tax Ordinance, No. 39 (1958). This was followed by the Companies and Income Tax Act, No. 22 (1961), which established the Federal Board of Inland Revenue, FBIR. The Act also created a Body of Appeal Commissioners to resolve tax-related disputes. In 1993, the Finance (Miscellaneous Taxation Provisions) Act No. 3 and Decree No. 104 established the Federal Inland Revenue Service (FIRS) as the operational arm of the FBIR and reviewed the functions of the Joint Tax Board (JTB), respectively. However, the history of tax administration in Nigeria changed dramatically in 2007 with the granting of financial and administrative autonomy to the Federal Inland Revenue Service (FIRS) through the passage of the Federal Inland Revenue Service (Establishment) Act 2007. In the Taxation as commonly used can be defined as the imposition by government of compulsory contributions

or levies on the citizens, property, income, commodities, transactions and so forth, for the purpose of raising revenue for government expenditure. The major reasons of impose tax includes; to raise money for the purpose of financing social services like health, defense, law and order, education and infrastructure; second, to raise share of the national cake going to the poor; to encourage investment; and to defend local market on domestic products through heavy taxes on unnecessary imports(TRA 2012).

II. TAX SYSTEM IN EBONYI STATE- NIGERIA

The tax system in Ebonyi state just as it is in other states in Nigeria is made up of the tax policy, the tax laws and the tax administration. All of these are expected to work together in order to achieve the economic goal of the state and the nation generally. According to the Presidential Committee on National tax policy (2008), the central objective of the Nigerian tax system is to contribute to the well being of all Nigerians directly through improved policy formulation and indirectly through appropriate utilization of tax revenue generated for the benefit of the people. In generating revenue to achieve this goal, the tax system is expected to minimize distortion in the economy. Other expectations of the Nigerian tax system according to the Presidential Committee on National tax policy (2008) include;

- ☛ Encourage economic growth and development.
- ☛ Generate stable revenue or resources needed by government to accomplish loadable projects and or investment for the benefit of the people.
- ☛ Provide economic stabilization.
- ☛ To pursue fairness and distributive equity
- ☛ Correction of market failure and imperfection.

In an attempt to fulfill the above expectation, the national tax policy is expected to be in compliance with the principle of taxation, the lubricant to effective tax system. The Nigerian tax system has been flawed by what is termed multiplicity of tax and collecting entities at the three tiers of government levels – Federal level, State state level and Local government level (Ahunwan, 2009). Since major functions of government to the general public using taxation as a tool, according to Nightingale (2002) and Lyme and Oats (2010) the objective of taxation are also highlighted as follows;

- ✓ Raising revenue to finance government expenditure.
- ✓ Redistribution of wealth and income to promote the welfare and equality of the citizens.
- ✓ Regulation of the economy thereby creating enabling environment for business to thrive.

Taxation is therefore, one among other means of revenue generation of any government to meet the need of the citizens some of which have been pointed out above. It is worthy of note however, that there are

other sources of revenue generation by the government such as grants, borrowing and so forth.

III. THE MAJOR ORGANS OF TAX ADMINISTRATION IN NIGERIA

The organs of the Nigerian Tax Administration are listed below;

1. Federal Inland Revenue Service Board
2. State Internal Revenue Service Board
3. Joint Tax Board
4. Local Government Revenue Committee
5. Joint State Revenue Committee. (ICAN, 2010)

IV. BRIEF HISTORY OF FEDERAL INLAND REVENUE SERVICE(FIRS) AND ITS TAXATION OPERATIONS

The Federal Inland Revenue Service started as part of a colonial tax organization under the name the Inland Revenue Department of Anglophone West Africa. The department's scope of administration covered Nigeria, Ghana, Sierra Leone and the Gambia. In 1943, the Nigerian Inland Revenue Department was carved out of the Inland Revenue Department of Anglophone West Africa and established as an autonomous body under the supervision of the Commissioner of Income Tax.

Investment in ICT and modern work tools has led to automation of key processes including collection. This has blocked leakages in the system and boosted government revenue profile. The Service also underwent structural reorganization within this period and new offices were created. In 2010, the Service recruited more than 1800 new staff to fill these new vacancies with relevant skills and competencies.

Overall, since 1943 when the Nigerian Inland Revenue Department was established, it has undergone series of modification within a period of 69 years of existence to attain its present form which is totally ICT oriented.

V. TAX AND REVENUE ADMINISTRATION

It is one thing to make policies, rules and regulation in an attempt to attain a desired goal or objective and it is another thing to implement these policies, rules and regulation. The organs and or agencies in charge of tax policy implementation in Nigeria are referred to as the administrative organ or agency in this research. Efficiency and effectiveness should be the watch word in designing a tax administration structure that will give the desired result (McPherson 2004). Put differently, tax administration in Nigeria is the responsibility of the various tax authorities as established by the relevant tax laws (Kibel and Nwokah 2009). Citing Section 100 of the personal income tax Decree, 1993 and amended by Decree No 18-Finance (Miscellaneous Taxation Provisions) Decree

1998, Kiabel and Nwokah (2009) noted "Tax authority "to mean Federal Board of Inland Revenue, the State board of internal revenue and the local government revenue committee. Together with the Joint tax board (JTB) and Joint state revenue committee or Local Revenue Committee, Nigerian tax authority administers taxes in Nigeria. The fiscal autonomy granted the three tier of government had led to multiplicity of tax. Tax payers and corporate bodies had been subjected to multiple levies or charges of tax of same name in different form. This had increased evasion and avoidance as such payment either eat deep into the profit of business or affect negatively, the distributable income of the individual.

a) *Modernization of Tax Administration using ICT*

Information and Communication Technology (ICT) is used to enhance performance in revenue and tax administrations and has demonstrated itself in the following ways;

- ❖ Reduction of human error in tax and revenue administration.
- ❖ Fast, efficient and easier tax and revenue report processing or generation.
- ❖ Providing readily accessible data for tax officers,
- ❖ Development of National Tax Database linking all revenue authorities and major stakeholders in the entire country.
- ❖ It serves as legitimate and technological way of dragging every taxable Ebonyian (indegine of the state) and Nigerian into the tax net through the TIN ICT platform.
- ❖ Untimely making report available.
- ❖ Promoting voluntary compliance thereby minimizing tax evasion.
- ❖ It ensures highest accuracy of identity uniqueness of all taxable citizen of the state through the TIN system.
- ❖ Finally, it also facilitating better decision making by tax authorities.

The tax administration in Ebonyi state-Nigeria has been automated which also include electronic processes and tailored made projects to address specified areas of the tax system such as:

- *Taxpayer Identification Number (TIN) System:* TIN (Taxpayer Identification Number) Project is an electronic system of tax identification, involving the assignment of a computer-generated unique identifier called "TIN Number" to every taxable person in the state. This project helps in the development of National Tax Database linking all revenue authorities and major stakeholders in the country. It is being overseen by the Joint Tax Board and funded by Federal Government of Nigeria and States in the country. TIN project is a legitimate and technological way of dragging every taxable Nigerian into the tax net. The TIN registration has the

facility that captures the properties, assets, bio-data and biometric details (fingerprints) of the taxpayers to ensure highest accuracy of identity uniqueness. Precautionary measures such as Disaster recovery and contact management centers are put in place to ensure minimal downtime and outright failure of the project. It is now compulsory for any individual, corporate entity, registered organizations and group of people that want to carry out vital operations such as opening of Bank Account and award of contract to have TIN which will reduce to the barest minimum the incidence of tax evasion.

- *Factual Accurate Complete Timely (Fact):* Project FACT (Factual Accurate Complete Timely) is an integrated electronic system of tax registration, tax payment and accounting empowered by Information and Communication Technology adoption in tax and revenue administration in Nigeria.
- *Integrated System of Tax Administration (ITAS):* Integrated system of tax administration (ITAS) includes, Business Process Re-engineering, Systems Development, Change Management and automation of Finance and Accounts Functions which is shortlisted as follows;
 - Tax clearance verification.
 - Tax refund application software.
 - Contact management centre.

b) *Possible Mistakes/Challenges of E-Taxing Administration Platform and Solutions*

The possible mistake a tax payer can do during Electronic payment are;

- Double payment.
- System failure.
- Over payment.
- Excess of Excess VAT and
- Error in computation.

c) *System Generated Solutions*

The possible measure or solutions are;

1. Validation system or facilities
2. Tax refund process/facility
3. Error Identification facilities etc

d) *National Information Technology Development Agency (Nitda) Act, Lfn 2007*

This law is one of the most recent tax laws in Nigeria. Its inception follows the technological innovations that brought about the use of mobile phones, cyber companies and Internet providers, etc. Administered by the federal government through FIRS, the law places a levy of 1% on the profit before tax of: "GSM service providers and all Telecommunication Companies. Cyber Companies and Internet providers.

VI. CONCLUSION

This study shows clearly that ICT plays an important role in the increase of internally generated revenue in Ebonyi state-Nigeria by ensuring compliance thereby boosting productivity and economic activities in the state among others. It is a change agent for accelerated growth and poverty reduction in Ebonyi state-Nigeria and the whole of African continent at large. The emerging global infrastructure could make it increasingly possible for eligible taxpayers to pay tax online anywhere and anytime. The establishment of an integrated broadband plan is a positive indicator of the government of Nigeria to provide ambience for enhancing the use of information technology and promoting information transmission and connectivity to the global infrastructure. However, necessary laws and regulations have to be passed by the appropriate authorities to reduce or abolish import taxes on information technology hardware such as computers, Servers, printers, biometric scanners and other devices.

VII. RECOMMENDATIONS

ICT tax and revenue administration projects frequently encounter downtime at critical moments and have a significant failure rate on account of various challenges such as inadequate funding and maintenance due to organizational, political and technical complexities among other challenges or lapses. Government and other concerned bodies have to find solutions to these challenges. All citizen of the state should as matter of fact be educated on need, use and importance of all Electronic application and operations such as Pay-direct, TIN application etc

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Accomplishment of Waterfall Model Exhausting Agile Data Science

By Dr. Santosh Kumar Dwivedi

Abstract- Agile information science is a technique to information technology targeted around net utility improvement. It asserts that the handiest output of the information technological know-how procedure appropriate for effecting alternate in an organization is the net application. It asserts that application development is an essential talent of a facts scientist. Consequently, doing data science will become approximately constructing applications that describe the applied research procedure: speedy prototyping, exploratory data analysis, interactive visualization, and applied system gaining knowledge of.

Agile software strategies have come to be the de facto manner software is delivered these days. There are a variety of fully evolved methodologies, inclusive of Scrum, that supply a framework inside which properly software program can be constructed in small increments. There had been some tries to use agile software program methods to facts science; however those have had unsatisfactory results. There's an essential distinction between delivering production software and actionable insights as artifacts of an agile method. The need for insights to be actionable creates an element of uncertainty across the artifacts of statistics technology—they might be “whole” in a software program experience, and but lack any value because they don't yield actual, actionable insights.

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The Agile data science “manifesto” is my try to create a rigorous technique to apply agility to the exercise of records technology. Those ideas observe past records scientists constructing statistics merchandise in production. The internet software is the great layout to proportion actionable insights both within and out of doors and enterprise.

I. INTRODUCTION

Agile facts science isn't just about how to ship working software program, however how to higher align data technology with the rest of the enterprise. there may be a continual misalignment among information technological know-how and engineering, wherein the engineering team often marvel what the information technology team are doing as they

perform exploratory statistics evaluation and carried out research. The engineering group are regularly uncertain what to do inside the meanwhile, developing the “pull of the waterfall,” wherein supposedly agile tasks tackle characteristics of the waterfall. Agile records technology bridges this gap among the 2 groups, developing a more powerful alignment of their efforts.

This e book is likewise approximately “massive statistics.” Agile facts science is a improvement technique that copes with the unpredictable realities of making analytics packages from information at scale. It's miles a theoretical and technical guide for operating a Spark records refinery to harness the energy of the “huge records” in your employer. Warehouse-scale computing has given us significant storage and compute resources to clear up new kinds of troubles concerning storing and processing extraordinary quantities of information. There may be tremendous hobby in bringing new gear to endure on previously intractable problems, allowing us to derive totally new products from raw statistics, to refine raw records into profitable insights, and to productize and productionize insights in new kinds of analytics applications. These gears are processor cores and disk spindles, paired with visualization, information, and gadget learning. That is records technological know-how.

On the same time, during the last twenty years, the sector huge net has emerged because the dominant medium for statistics trade. For the duration of this time, software engineering has been converted through the “agile” revolution in how programs are conceived, constructed, and maintained. Those new procedures convey in more projects and merchandise on time and under budget, and permit small groups or single actors to develop whole applications spanning extensive domain names. That is agile software development.

However there's a problem. working with real data inside the wild, doing facts science, and acting serious research takes time—longer than an agile cycle (at the order of months). It takes extra time than is to be had in many businesses for an undertaking sprint, which means today's carried out researcher is more than pressed for time. Statistics technological know-how is stuck within the antique-faculty software program agenda referred to as the waterfall technique.

Our hassle and our opportunity come at the intersection of those two developments: how can we contain facts technological know-how, that's applied

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studies and requires exhaustive effort on an unpredictable timeline, into the agile application? How can analytics applications do better than the waterfall technique that we've long because left at the back of? How can we craft programs for unknown, evolving facts models? How can we broaden new agile techniques to suit the records science procedure to create terrific products?

This eBook tries to synthesize two fields, agile development and data technology on large datasets; to meld research and engineering into a efficient relationship. To acquire this, it gives a brand new agile method and examples of constructing merchandise with an appropriate software program stack. The methodology is designed to maximize the advent of software capabilities primarily based at the most penetrating insights. The software stack is a light-weight toolset which could deal with the uncertain, shifting sea of uncooked information and promises enough productivity to allow the agile system to be successful. The book is going on to expose you a way to iteratively build fee using this stack, to get returned to agility and mine facts to turn it into bucks.

Agile information technology objectives to put you again inside the driving force's seat, making sure that you're carried out research produces useful products that meet the desires of real users.

II. DEFINITION

What is Agile information technological know-how (ads)? in this bankruptcy I define a new method for analytics product development, something I hinted at inside the first version but did now not specific in detail. To begin, what is the purpose of the commercials procedure?

III. METHODOLOGY AS TWEET

The intention of the Agile statistics technology procedure is to record, facilitate, and manual exploratory statistics evaluation to discover and comply with the essential path to a compelling analytics product (parent 1-1. Agile data technology "goes meta" and places the lens on the exploratory information evaluation technique, to file insight because it happens. This turns into the primary pastime of product development. by means of "going meta," we make the technique awareness on something that is predictable, that can be managed, in preference to the product output itself, which can't.

IV. AGILE DATA SCIENCE MANIFESTO

Agile facts technological know-how is prepared round the subsequent principles:

- Iterate, iterate, and iterate: tables, charts, reports, predictions.

- Deliver intermediate output. Even failed experiments have output.
- Prototype experiments over implementing tasks.
- Combine the tyrannical opinion of records in product management.
- Climb up and down the statistics-fee pyramid as we paintings.
- Discover and pursue the important course to a killer product.
- Get Meta. Describe the procedure, not just the quit country.

Perception comes from the twenty-5th question in a chain of queries, now not the first one. Information tables need to be parsed, formatted, sorted, aggregated, and summarized before they can be understood. Insightful charts typically come from the 0.33 or fourth attempt, now not the primary. Building correct predictive models can take much iteration of feature engineering and hyperparameter tuning. In statistics technological know-how, generation is the essential element to the extraction, visualization, and productization of perception. While we build, we iterate.

V. SHIP INTERMEDIATE OUTPUT

New release is the vital act in crafting analytics programs, this means that we're often left on the end of a dash with matters that aren't entire. If we didn't deliver incomplete or intermediate output via the stop of a dash, we'd frequently become delivery not anything at all. And that isn't agile; I call it the "death loop," where infinite time may be wasted perfecting matters no one desires.

Precise structures are self-documenting, and in Agile statistics technology we document and share the incomplete belongings we create as we work. We commit all work to source control. We proportion this work with teammates and, as soon as possible, with end users. This principle isn't obvious to anyone. Many statistics scientists come from instructional backgrounds, in which years of excessive research effort went into a unmarried huge paper called a thesis that led to a sophisticated degree.

VI. PROTOTYPE EXPERIMENTS OVER ENFORCING OBLIGATIONS

In software program engineering, a product manager assigns a chart to a developer to enforce throughout a dash. The developer interprets the assignment right into a square institution by and creates an internet web page for it. Task accomplished? Wrong. Charts which can be designated this manner are not going to have cost. Information technological know-how differs from software program engineering in that it is a component technology, component engineering.

In any given project, we have to iterate to gain perception, and those iterations can first-class be summarized as experiments. Coping with a information

technology team approach overseeing more than one concurrent experiments more than it approach handing out obligations. Suitable belongings (tables, charts, reviews, predictions) turn out to be artifacts of exploratory records analysis, so we should think more in terms of experiments than responsibilities.

VII. COMBINE THE TYRANNICAL OPINION OF FACTS

What's possible is as crucial as what is supposed. What is simple and what is difficult are as important matters to understand as what is favored. In software utility improvement there are three views to don't forget: those of the clients, the developers, and the commercial enterprise. In analytics application development there's every other attitude: that of the statistics. Without knowledge what the facts "has to mention" about any function, the product owner can't do a very good process. The information's opinion should always be blanketed in product discussions, which means that that they have to be grounded in visualization through exploratory records analysis inside the inner utility that turns into the focus of our efforts.

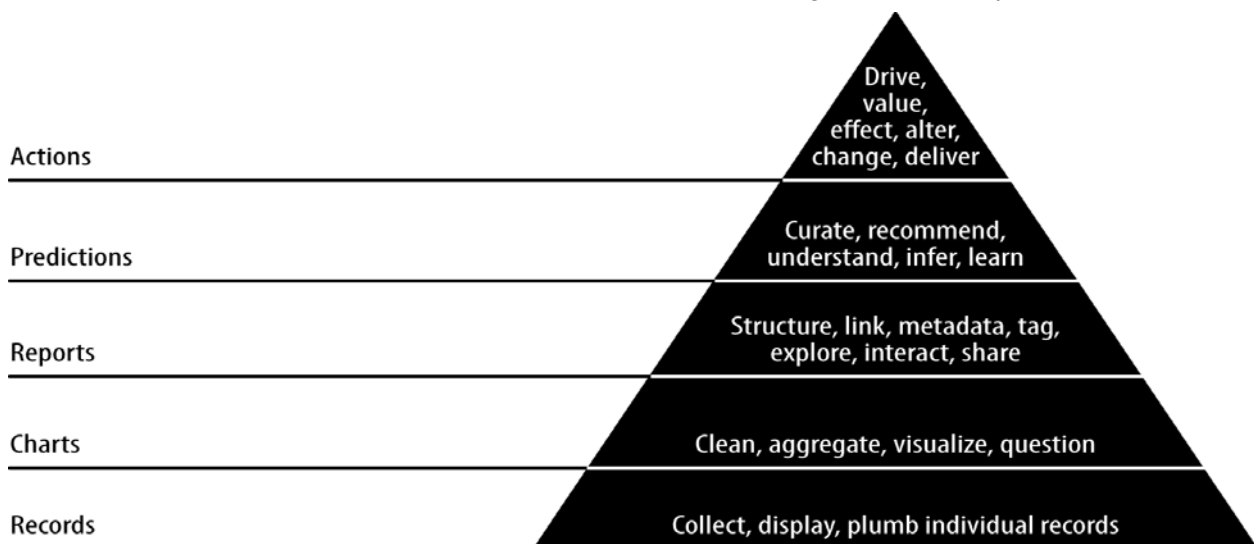


Figure 1-1: The Data-Value Pyramid

The data-cost pyramid gives structure to our paintings. The pyramid is something to maintain in mind, not a rule to be observed. On occasion you skip steps, every now and then you figure backward. If you pull a new dataset at once into a predictive model as a function, you incur technical debt in case you don't make this dataset transparent and reachable by using including it in your utility information model inside the decrease ranges. You have to preserve this in thoughts, and pay off the debt as you're able.

VIII. CLIMB UP AND DOWN THE FACTS-FEE PYRAMID

The information-value pyramid (discern 1-2) is a five-degree pyramid modeled after Maslow's hierarchy of needs. It expresses the increasing quantity of price created when refining raw statistics into tables and charts, followed by means of reports, then predictions, all of that's supposed to allow new actions or enhance existing ones:

- The first degree of the facts-fee pyramid (facts) is about plumbing; creating a dataset go with the flow from where it's miles amassed to in which it appears in an utility.
- The charts and tables layer is the level in which refinement and evaluation starts off evolved.
- The reports layer enables immersive exploration of facts, in which we can sincerely motive about it and get to comprehend it.
- The predictions layer is in which more fee is created, however growing top predictions method characteristic engineering, which the decrease degrees embody and facilitate.
- The final level, actions, is in which the AI (artificial intelligence) craze is taking location. In case your perception doesn't enable a new motion or improve an existing one, it isn't very valuable.

IX. FIND OUT AND PURSUE THE VITAL DIRECTION TO A KILLER PRODUCT

To maximize our odds of fulfillment, we should awareness most of our time on that issue of our software this is most critical to its success. But which factor is that? This need to be observed through experimentation. Analytics product improvement is the search for and pursuit of a shifting aim.

Once an intention is determined, as an instance a prediction to be made, then we should discover the critical course to its implementation and, if it proves valuable, to its improvement. Facts is refined grade by grade because it flows from assignment to undertaking. Analytics merchandise regularly require more than one tiers of refinement, the employment of good sized ETL (extract, rework, load) processes, techniques from records, information get entry to, system mastering, synthetic intelligence, and graph analytics.

The interplay of those stages can shape complicated webs of dependencies. The group chief holds this internet in his head. It's far his process to make certain that the team discovers the crucial route and then to organize the team round finishing it. A product supervisor cannot manipulate this procedure from the top down; rather, a product scientist must find out it from the lowest up.

X. GET META

If we will't without problems deliver precise product belongings on a time table akin to growing a ordinary application, what is going to we ship? If we don't deliver, we aren't agile. To remedy this problem, in Agile records science, we "get meta." The focal point is on documenting the analytics procedure in preference to the end state or product we're searching for. This shall we us be agile and ship intermediate content as we iteratively climb the information-fee pyramid to pursue the important direction to a killer product. So where does the product come from? From the palette we create by means of documenting our exploratory statistics evaluation.

XI. AMALGAMATION

These seven ideas work collectively to drive the Agile facts technology methodology. They serve to structure and file the manner of exploratory records evaluation and transform it into analytics applications. So that is the middle of the technique. However why? How did we get right here? Permit's check a waterfall challenge to understand the issues these forms of initiatives create.

XII. THE DELINQUENT WITH THE WATERFALL

I should provide an explanation for and get out of the way the truth that career Explorer was the first recommender machine or certainly predictive model that I had ever built. Lots of its failure changed into due to my inexperience. My experience was in iterative and agile interactive visualization, which appeared a good match for the dreams of the venture, but simply the advice mission changed into extra difficult than have been anticipated within the prototype—because it turned out, a good deal more paintings became wished

on the entity decision of activity titles than become foreseen.

On the identical time, issues with the method hired at the product concealed the real country of the product from management, who had been quite pleased with static mock-America handiest days earlier than launch. Remaining-minute integration revealed bugs within the interfaces between components that had been exposed to the consumer. A tough closing date created a crisis while the product proved unshippable with best days to move. In the end, I stayed up for the better a part of a week resubmitting Hadoop jobs every 5 minutes to debug final-minute fixes and adjustments, and the product was simply barely correct enough to exit. This grew to become out now not to count number an awful lot, as customers weren't in reality interested by the product idea. In the end, plenty of work become thrown away handiest months after launch.

The important thing problems with the mission have been to do with the waterfall method hired:

- The utility concept changed into simplest examined in consumer consciousness corporations and managerial opinions, and it did not honestly interact user interest.
- The prediction presentation turned into designed up front, with the actual version and its behavior being an afterthought. Things went something like this:

"We made a super layout! Your job is to expect the future for it."

"What is taking see you later to reliably are expecting the destiny?"

"The customers don't recognize what 86% real means."

Plane → Mountain.

- Charts had been detailed via product/layout and failed to gain real insights.
- A tough deadline was laid out in a contract with a purchaser.
- Integration trying out took place at the stop of development, which induced a cut-off date crisis.
- Mock-u.s.a. without actual records were used during the assignment to provide the software to focus organizations and to management.

This is all pretty standard for a waterfall mission. The end result changed into that management concept the product turned into on target with only weeks to move whilst integration subsequently found out problems. Word that Scrum became used in the course of the venture; however the give up product become in no way able to be examined with cease customers, consequently negating the complete factor of the agile technique hired. To sum it up, the plane hit the mountain. By contrast, there has been some other

assignment at LinkedIn called In Maps that I led development on and product managed. It proceeded a good deal more easily due to the fact we iteratively posted the utility the usage of real records, exposing the “broken” nation of the software to inner customers and getting remarks across many release cycles. It was the evaluation among those tasks that helped formalize agile records technological know-how in my thoughts.

But if the method hired on career Explorer changed into definitely Scrum, why became it a waterfall project? It turns out that analytics products constructed through information technology teams will be predisposed to “pull” towards the waterfall. I might later discover the cause for this tendency.

XIII. RESEARCH AS OPPOSED TO SOFTWARE DEVELOPMENT

It seems that there is a primary war in shipping analytics products, and this is the conflict between the studies and the utility development timeline. This warfare has a tendency to make every analytics product a waterfall project, even people who set out to use a software engineering technique like Scrum.

Research, even implemented research, is technological know-how. It entails iterative experiments, in which the studying from one experiment informs the following experiment. Science excels at discovery, but it differs from engineering in that there is no specific endpoint (see figure 1-2).

The Scientific Method as an Ongoing Process

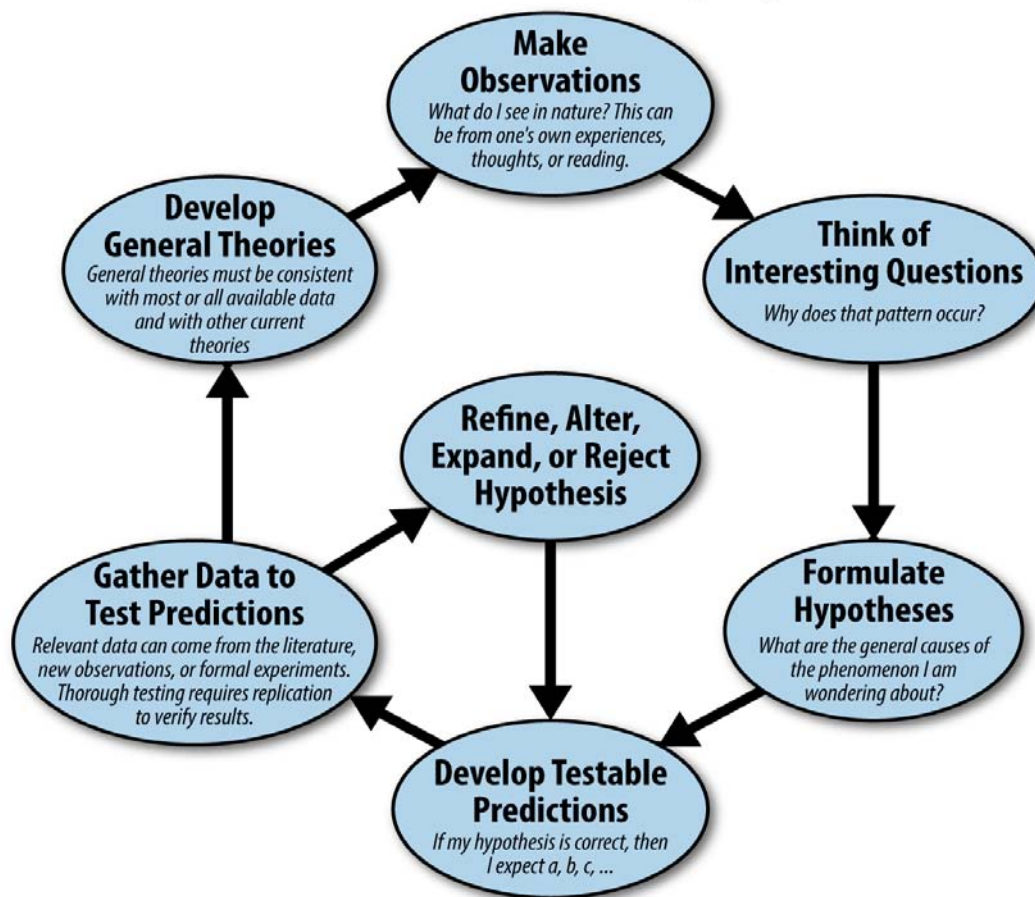


Figure 1-2: The Scientific Method

Engineering employs known science and engineering techniques to build things on a linear schedule. Engineering looks like the Gantt chart in Figure 1-3. Tasks can be specified, monitored, and completed.

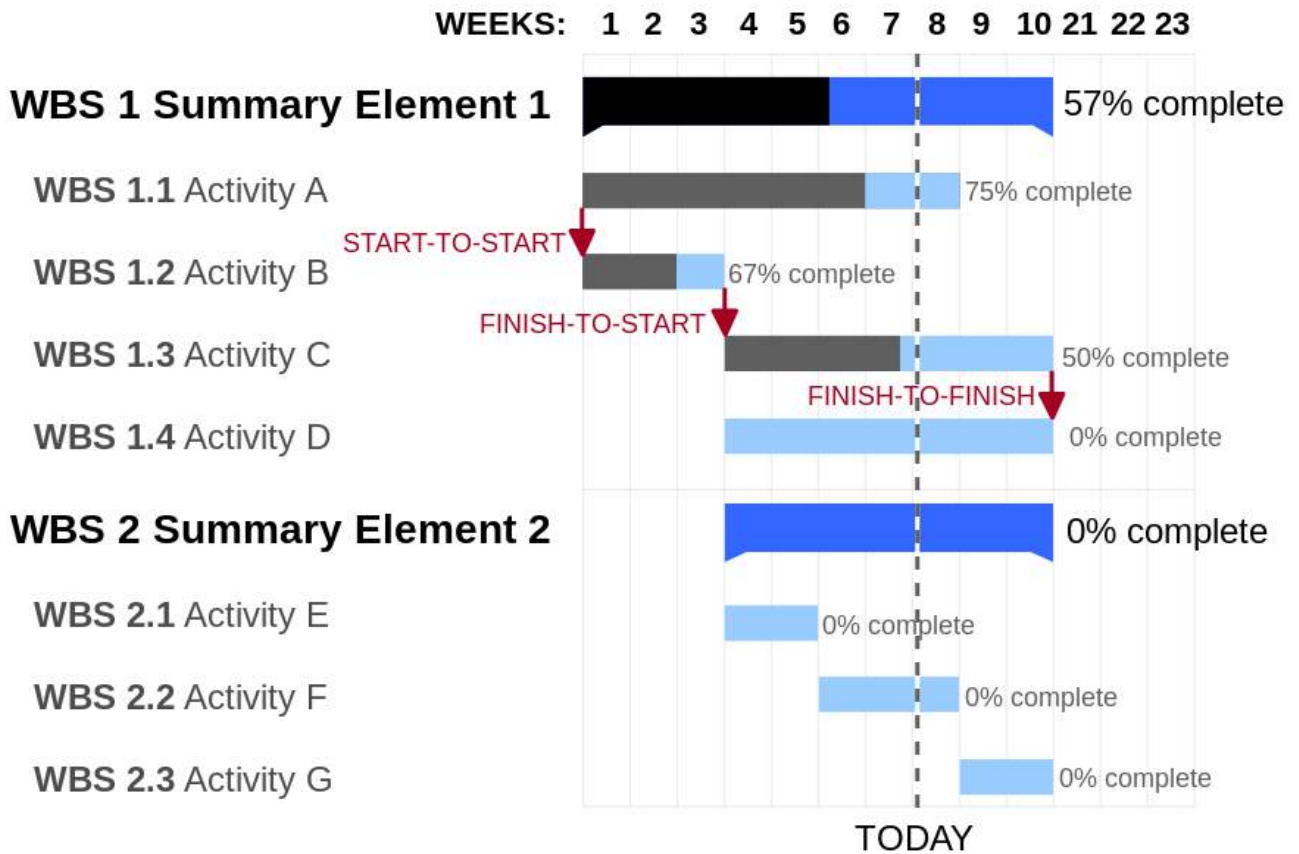


Figure 1-3: Gantt Chart

A improved prototypical of an engineering scheme looks like the PERT chart in Figure 1-5, which can model complex enslavements with nonlinear relationships. Note that even in this more advanced model, the points are known. The work is done during the lines.

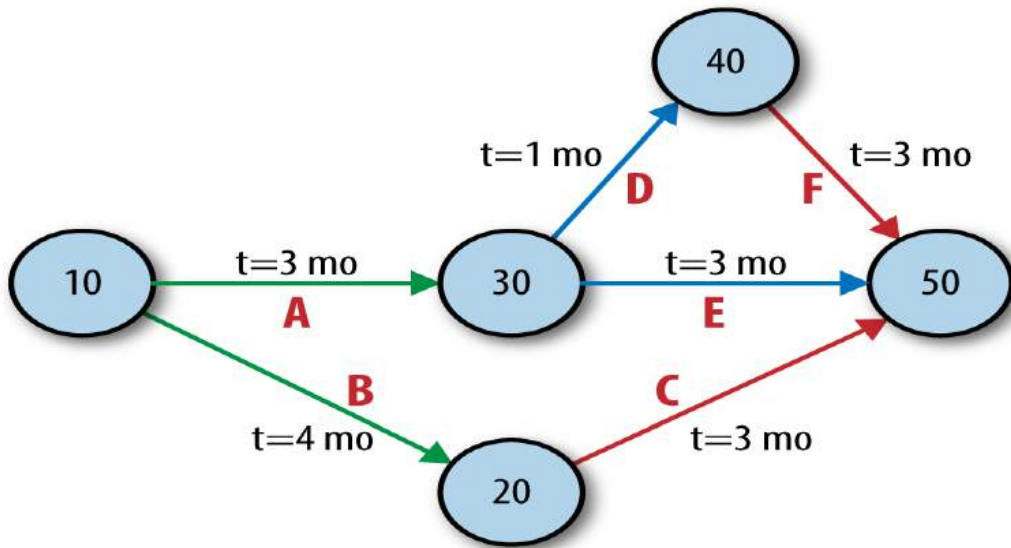


Figure 1-4: PERT Chart, from Wikipedia

In other phrases: engineering is unique, and technological know-how is uncertain. Even incredibly new fields such as software program engineering, wherein estimates are frequently off through 100% or more, are greater sure than the medical technique. This is the impedance mismatch that creates the hassle.

In records science, the technological know-how element usually takes a lot longer than the engineering component, and to make matters worse, the quantity of time a given test will take is uncertain. Uncertainty in duration of time to make operating analytics assets—tables, charts, and predictions—tends to purpose stand-ins for use in location of the real component. These outcomes in feedback on a mock-up using the improvement system, which aborts agility. That is a venture killer.

The answer is to get agile... but how? How do agile software program methodologies map to statistics technological know-how, and in which do they fall short?

XIV. THE TROUBLE WITH AGILE SOFTWARE PROGRAM

Agile software isn't Agile data technological know-how. In this segment we'll have a look at the troubles with mapping something like Scrum without delay into the facts technological know-how technique.

XV. SUBSEQUENT QUALITY: SPONSORING TECHNICAL OBLIGATION

Technical obligation is defined by way of Techopedia as "a idea in programming that reflects the more improvement paintings that arises whilst code that is easy to enforce in the quick run is used in place of making use of the first-rate typical answer." Understanding technical debt is crucial with regards to handling software utility improvement, because deadline stress can bring about the creation of massive amounts of technical debt. This technical debt can cripple the team's potential to hit future cut-off dates.

Technical debt is distinctive in facts technology than in software program engineering. In software engineering you retain all code, so first-class is paramount. In records technology you generally tend to discard most code, so this is much less the case. In information technology we have to take a look at in the whole lot to supply control but have to tolerate a better diploma of ugliness until something has proved useful enough to preserve and reuse. In any other case, applying software engineering requirements to records technological know-how code would reduce productiveness a splendid deal. On the equal time, a splendid deal of quality can be imparted to code through forcing a few software engineering knowledge and habits onto teachers, statisticians, researchers, and facts scientists.

In facts technological know-how, via comparison to software engineering, code shouldn't continually be excellent; it must be sooner or later desirable. Because of this a few technical debt up the front is appropriate, goodbye as it isn't always immoderate. Code that becomes critical should be able to be cleaned up with minimum effort. It doesn't have to be top at any second; however as soon as it becomes important, it ought to turn out to be top. Technical debt bureaucracy part of the internet of dependencies in dealing with an agile facts technology project. This is a fairly technical venture, necessitating technical skills within the group leader or a process that surfaces technical debt from different individuals of the group.

Prototypes are financed on technical obligation, which is paid off simplest if a prototype proves beneficial. Maximum prototypes can be discarded or minimally used, so the technical debt is never repaid. This allows an awful lot more experimentation for fewer sources. This also takes place within the form of Jupyter and Zeppelin notebooks, which vicinity the emphasis on direct expression rather than code reuse or manufacturing deployment.

XVI. THE TWITCH OF THE WATERFALL

The heap of present day "big data" software is a whole lot greater complex than that of regular software. Additionally, there may be a very wide skillset required to construct analytics programs at scale the usage of those structures. This wide pipeline in phrases of people and era can bring about a "pull" closer to the waterfall even for groups determined to be agile.

Parent 1-5 suggests that if responsibilities are completed in sprints, the thickness of the stack and group the combine to force a return to the waterfall model. On this example a chart is favored, so a records scientist uses Spark to calculate the statistics for one and places it into the database. Subsequent, an API developer creates an API for these facts, observed by means of an internet developer growing a web page for the chart. A visualization engineer creates the real chart, which a fashion designer visually improves. Eventually, the product supervisor sees the chart and iteration is required. It takes an prolonged duration to make one leap forward. Progress could be very gradual, and the team is not agile.

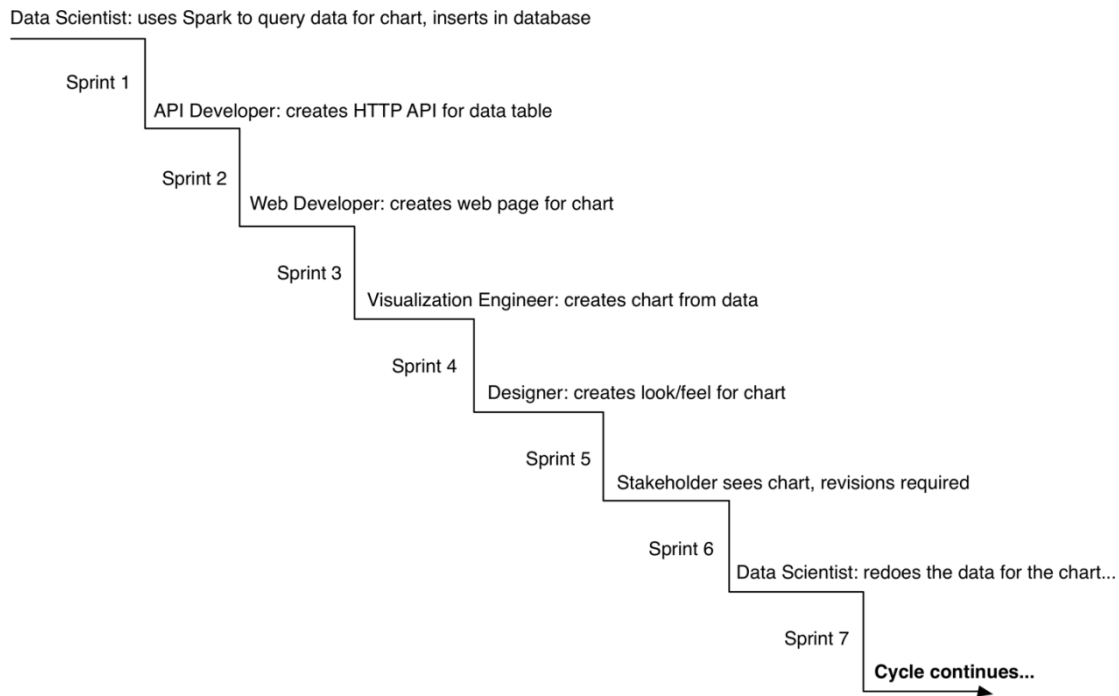


Figure 1-5: Sprint based Cooperation becoming anything but Agile

This exemplifies a few matters. The primary is the want for generalists who can accomplish multiple associated undertaking. But greater importantly, it indicates that it's miles vital to iterate within sprints in preference to iterating in cubicles among them. Otherwise, in case you wait a whole sprint for one team member to enforce the preceding team member's work, the method tends to become a type of stepped pyramid/waterfall.

XVII. THE STATISTICS SCIENCE TECHNIQUE

Having delivered the technique and described why its miles needed, now we're going to dive into the mechanics of an Agile facts science crew. We begin with putting expectations, then observe the jobs in a data technological know-how team, and sooner or later describe how the process works in exercise. While i hope this serves as an creation for readers new to records technological know-how groups or new to Agile records science, this isn't an exhaustive description of ways agile techniques work in well-known. Readers new to agile and new to information technology are advocated to consult a e-book on Scrum earlier than ingesting this chapter.

Now permits communicate approximately setting expectancies of information technological know-how groups, and how they interact with the rest of the employer.

XVIII. SETTING ANTICIPATIONS

Before we have a look at the way to compose information technology groups and run them to provide actionable insights, we first need to discuss how a records technology group fits into an organization. As the focus of data science shifts in agile information technological know-how from a pre-decided outcome to a description of the carried out studies technique, so need to the expectancies for the crew alternate. Similarly, the manner records technology teams relate to different groups is impacted.

"While can we deliver?" is the query control desires to recognize the answer to which will set expectations with the purchaser and coordinate sales, marketing, recruiting, and other efforts. With an Agile statistics science group, you don't get a directly answer to that query. There is no particular date X while prediction Y may be shippable as an internet product or API. That metric, the ship date of a predetermined artifact, is something you sacrifice while you undertake an Agile data technological know-how system. What you get in go back is proper visibility into the paintings of the crew in the direction of your enterprise dreams in the form of working software that describes in element what the team is certainly doing. With these facts in hand, other business tactics can be aligned with the actual fact of records technological know-how, in preference to the fiction of a recognized shipping date for a predetermined artifact. With a variable intention, any other query turns into just as vital: "what's going to we

deliver?” or, more likely, “what will we deliver, while?” to answer those questions, any stakeholder can take a look at the utility because it exists nowadays in addition to the plans for the subsequent dash and get a feel of wherein things are and where they're moving.

With those two questions addressed, the business enterprise can paintings with a statistics technological know-how group as the artifacts of their paintings evolve into actionable insights. A facts technology group have to be tasked with discovering price to cope with a fixed of business issues. The form the output in their work takes is determined via exploratory studies. The date whilst the “final” artifacts will be ready may be estimated by careful inspection of the contemporary nation in their work. With these facts in hand, even though it is extra nuanced than a “deliver date,” managers positioned around a records science crew can sync their work and schedules with the crew. In other words, we are able to't let you know precisely what we will ship, while. However in trade for accepting

this truth, you get a steady, shippable progress record, in order that by using taking part inside the truth of doing facts technology you may use these records to coordinate other efforts. That is the trade-off of Agile facts technological know-how. For the reason that schedules with pre-exact artifacts and deliver dates generally include the incorrect artifacts and unrealistic dates, we sense this change-off is a great one. In reality, it is the handiest one we will make if we face the truth of doing facts technological know-how.

XIX. DATA KNOWLEDGE TEAM ROLES

Merchandise is built by groups of human beings, and agile methods focus on people over method. Data knowledge is a large area, spanning evaluation, design, development, business, and research. The roles of Agile statistics technology group participants, defined in a spectrum from patron to operations, look something like discern 1-6.

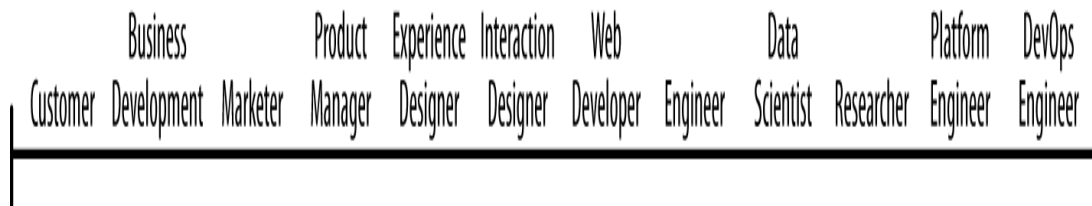


Figure 1-6: The Roles in an Agile Data Science Team

These roles can be described as follows:

- Clients use your product, click on your buttons and hyperlinks, or forget about you absolutely. Your process is to create fee for them repeatedly. Their hobby determines the fulfillment of your product.
- Enterprise development symptoms early customers, either firsthand or thru the creation of landing pages and promoting, and grants traction inside the marketplace with the product.
- Entrepreneurs talk to clients to determine which markets to pursue. They decide the starting angle from which an Agile facts technological know-how product starts off evolved.
- Product managers take in the views of each function, synthesizing them to build consensus approximately the imaginative and prescient and route of the product.
- Consumer enjoy designers are liable for becoming the design around the facts to in shape the angle of the customer. This function is crucial, as the output of statistical fashions may be difficult to interpret by using “regular” customers who have no concept of the semantics of the version's output (i.e., how can something be 75% true?).
- Interplay designers design interactions around information fashions so users discover their cost.
- Net developers create the net programs that deliver facts to an internet browser.
- Engineers build the structures that supply statistics to packages.
- Records scientists explore and transform statistics in novel approaches to create and put up new capabilities and integrate statistics from numerous assets to create new value. They make visualizations with researchers, engineers, net builders, and designers, exposing raw, intermediate, and delicate statistics early and frequently.
- Implemented researchers clear up the heavy troubles that records scientists uncover and that stand in the manner of turning in fee. those issues take excessive recognition and time and require novel techniques from statistics and machine studying.
- Platform or data engineers solve troubles in the distributed infrastructure that enable agile data technological know-how at scale to continue without undue ache. Platform engineers take care of work tickets for fast blocking off insects and enforce long-time period plans and initiatives to hold and improve usability for researchers, facts scientists, and engineers.
- Fine assurance engineers automate checking out of predictive structures from stop to cease to make

sure accurate and dependable predictions are made.

- Operations/DevOps engineers make sure clean setup and operation of production information infrastructure. They automate deployment and take pages whilst matters pass wrong.

Spotting the opportunity and the problem

The vast skillset had to construct records products affords both an possibility and a trouble. If these competencies may be introduced to undergo by professionals in every position working as a team on a wealthy dataset, issues can be decomposed into components and directly attacked. Facts technological know-how is then an efficient meeting line, as illustrated in determine 1-7.

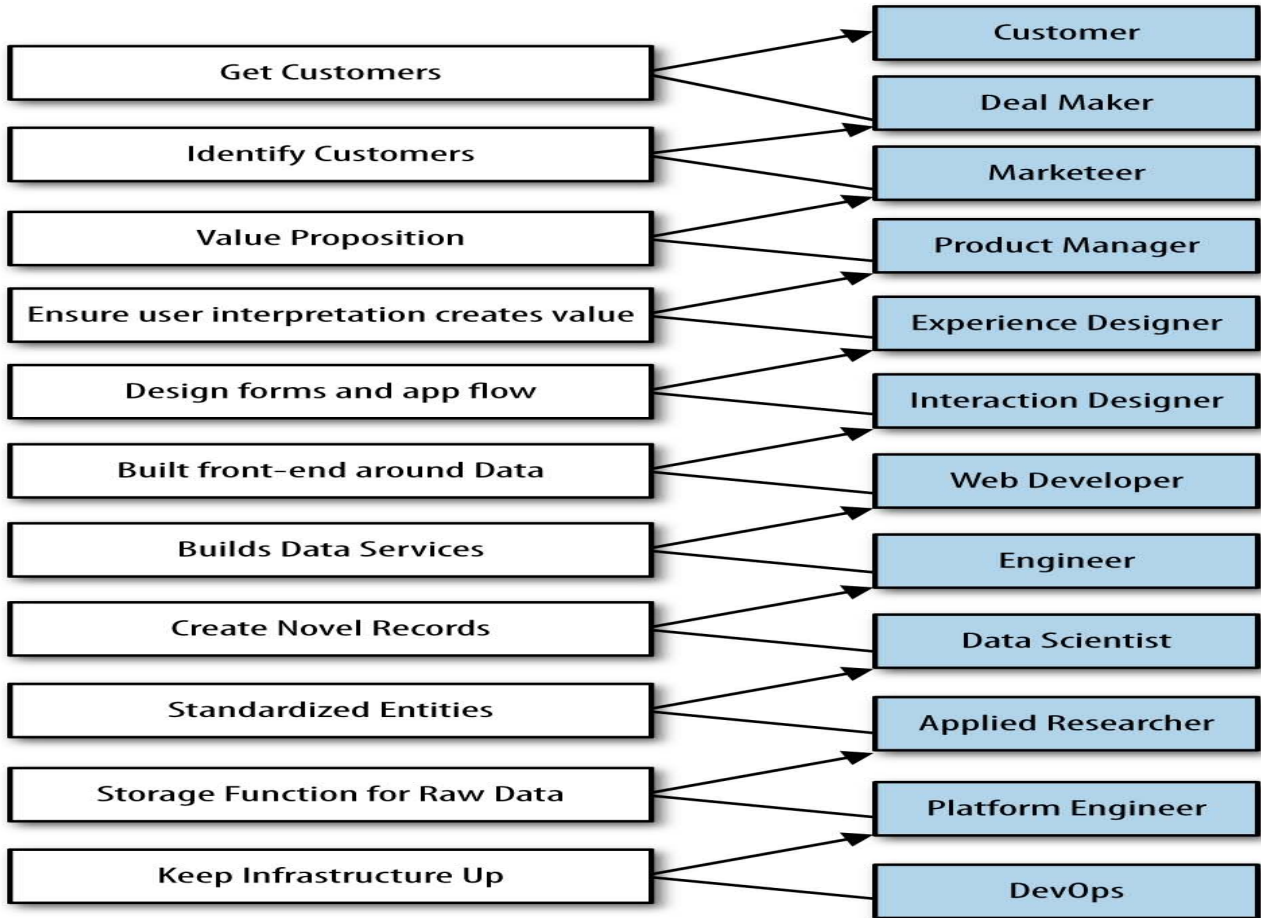


Figure 1-7: Expert Contributor Workflow

But, as crew length increases to satisfy the need for know-how in those diverse areas, conversation overhead fast dominates. A researcher who is 8 folks faraway from clients is unlikely to resolve relevant issues and much more likely to remedy arcane problems. Likewise, team conferences of a dozen people are not going to be efficient. We'd break up this crew into more than one department and set up contracts of shipping among them, however then we lose both agility and concord. Ready on the output of research, we invent specifications, and shortly we discover ourselves lower back in the waterfall approach.

And yet we know that agility and a cohesive imaginative and prescient and consensus approximately a product are crucial to our fulfillment in building merchandise. The worst product-improvement hassle is one team operating on more than one imaginative and

prescient. How are we to reconcile the extended span of understanding and the disjoint timelines of carried out studies, statistics technological know-how, software development, and design?

a) *Adapting to Change*

To remain agile, we ought to include and adapt to those new situations. We have to undertake adjustments in line with lean methodologies to stay productive.

Numerous modifications especially make a return to agility viable:

- Deciding on generalists over professionals
- Preferring small teams over large groups
- The use of high-degree tools and systems: cloud computing, distributed systems, and platforms as a provider (PaaS)

- Non-stop and iterative sharing of intermediate work, even if that work may be incomplete

In Agile information science, a small group of generalists makes use of scalable, excessive-stage tools and systems to iteratively refine facts into increasingly better states of price. We embody a software stack leveraging cloud computing, distributed systems, and structures as a carrier. Then we use this stack to iteratively publish the intermediate

consequences of even our maximum in-depth research to snowball value from simple statistics to predictions and movements that create price and let us capture some of it to turn information into dollars.

Allow's take a look at every object in element.

Harnessing the energy of generalists.

In Agile information science, we value generalists over experts, as proven in figure 1-8.

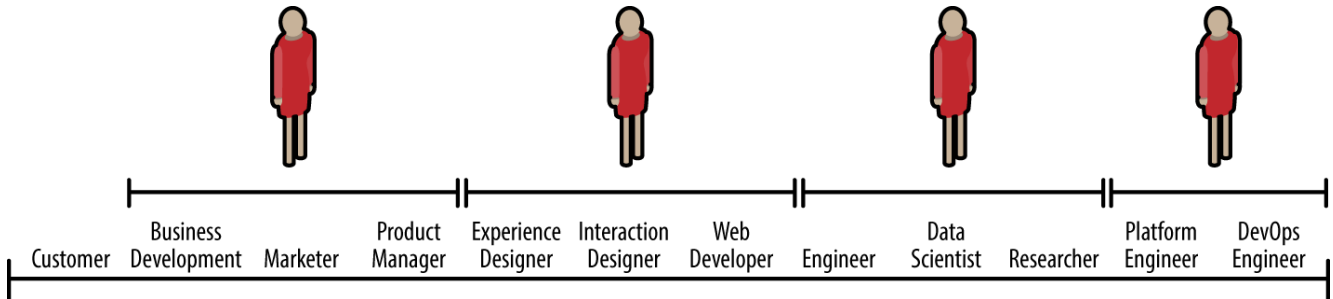


Figure 1-8: Broad Roles in An Agile Data Science Team

In different words, we degree the breadth of teammates' capabilities as a great deal because the intensity of their know-how and their expertise in any person area. Examples of precise agile data technology group participants encompass:

- Designers who deliver operating CSS
- Internet builders who construct entire packages and apprehend the person interface and consumer experience
- Facts scientists capable of both studies and building web services and applications
- Researchers who take a look at in working supply code, explain outcomes, and proportion intermediate facts
- Product managers capable of apprehend the nuances in all regions

Design particularly is a vital position in the agile records technological know-how group. Layout does now not cease with look or experience. Design encompasses all aspects of the product, from architecture, distribution, and person experience to work environment.





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Blockchain and Blackboard Technology for Database Systems

By Poli Venkats Subba Reddy

Sri Venkateswara University

Abstract- Blockchain is transaction processes which minimize transaction and data items of data sets that are encrypted transferred data items with secure data. It is peer to peer technology. The Blockchain is transaction flow or series of transactions. Blackboard technology is used transaction to store and retrieve independently. In This paper, Blockchain and blackboard technology is combined for transaction processing. The communication cost and retrial cost will be reduced using Blockchain and Blackboard technology.

Keywords: *mapreduce, steiner trees, blockchain technology, blackboard systems.*

GJCST-C Classification: *DDC Code: 332.178 LCC Code: HG1710*



Strictly as per the compliance and regulations of:



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I. INTRODUCTION

Blockchain made valid chain of transactions using decryption codes. It made transaction between two nodes by introducing intermediate node or Steiner node.

Steiner tree is optimal tree by introducing intermediate node or Steiner node.

The Blockchain technology may be studied using strainer trees.

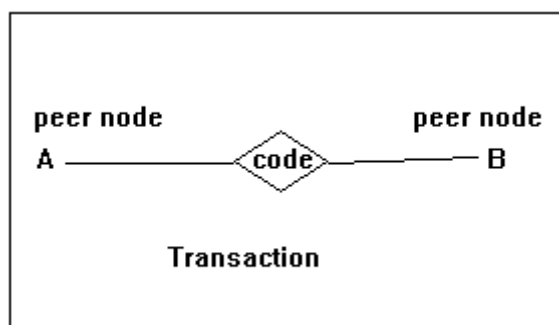


Figure 1: Blockchain

Where A is peer node and T is transaction

II. MAPREDUCE ALGORITHMS

The Relational Data set is representation with domains and tuples [14]. Map is reading data sets and Reduce is writing datasets

Definition: A relational database or data set is defined as collection of attributes A_1, A_2, \dots, A_m and is represented as

$$R = A_1 \times A_2 \times \dots \times A_m^{***}$$

$$t_i = a_{i1} \times a_{i2} \times \dots \times a_{im}, \quad i=1, \dots, n \text{ are tuples}$$

or

$$R(A_1, A_2, \dots, A_n), \quad R \text{ is relation.}$$

$$R(t_i) = (a_{i1}, a_{i2}, \dots, a_{im}), \quad i=1, \dots, n \text{ are tuples}$$

For instance, consider cluster data set for Account are given by

Ac.No.	Ac.Name	Ac.Bal.
8347102	Rama	10000
8347103	Sita	15000
8347104	Jhon	20000
8347105	Khan	15000
8347106	Marry	18000
8347107	Krishna	25000

Figure 2: Account

For instance, consider cluster data set for Bank are given by

Ac.No	Ac.Name	Bank
8347102	Rama	SBI
8347103	Sita	ANZ
8347104	Jhon	ICCI
8347105	Khan	AB
8347106	Marry	SBI
8347107	Krishna	AB

Figure 3: Bank

In the following some of the data mining methods are discussed for MapReduce algorithms. Consider the data set Account-Address of figure 3.

a) *Frequency*

Frequency is the repeatedly accrued Data.

Find the frequently customers purchase more than one Item.

Bank	Frequency
SBI	2
ANZ	1
ICCI	1
AB	2

Figure 4: Frequency

b) *Association Rule*

Association is of the $\langle \text{Ac.No} \Leftrightarrow \text{Bank} \rangle$ is given by

Ac.No	Bank
831	SBI
832	ANZ
833	ICCI
834	AB

Figure 5: Association

i. *Clustering*

Clustering is grouping the particular data.

Group the customers who are account in Bank.

Ac.No	Ac.Name	Ac. Bal	Bank
8347102	Rama	10000	SSBI
8347106	Marry	18000	
8347103	Sita	15000	A
8347104	Jhon	20000	ICCI
8347105	Khan	15000	AAB
8347107	Krishna	25000	

Figure 6: Clustering



III. MAPREDUCE ALGORITHMS FOR LOGICAL DESIGN USING BLOCKCHAIN TECHNOLOGY

Steiner tree is tree by b introducing intermediate node to made minimum Steiner tree.

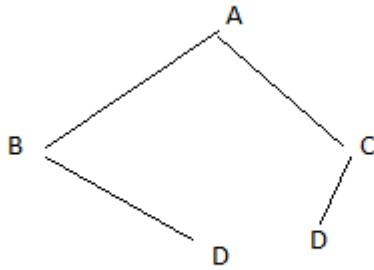


Figure 7: Tree

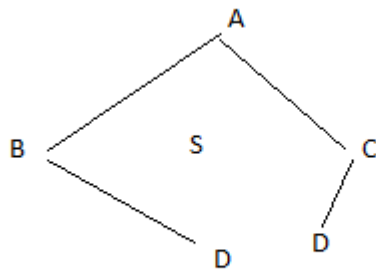


Figure 8: Steiner Node

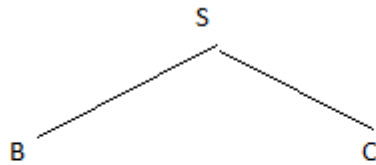


Figure 9: Steiner Tree

Blockchain is direct transactions from source to destination; For instance, the amount for account to another account shall be transferred with 'OTP number (Steiner nod).

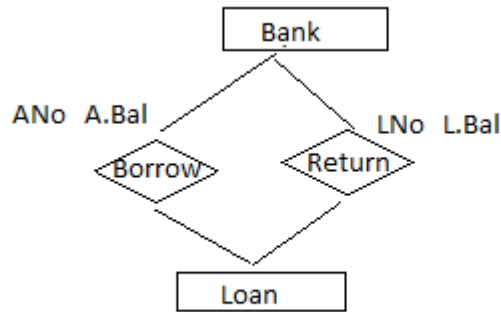


Figure 10: Bank Loan

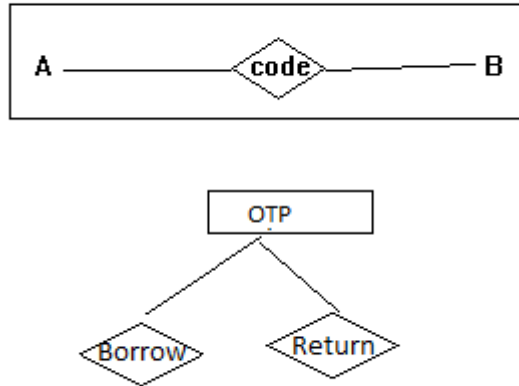


Figure 11: Blockchain

Here OTP is FOT number

The logical design Blockchain technology does not change logical independence. The transaction shall be made with or without Blockchain technology but Blockchain technology is minimize the series of transactions.

For instance, logical query is given by

Q1: Update loan return amount paid by borrower.

IV. MAPREDUCE ALGORITHM FOR CONCURRENCY USING BLACKBOARD SYSTEM

Usually in database systems, the entire data has to taken into main memory for operation. There is no need to take entire data in main memory in Blackboard Architecture, Blackboard Architecture used to store and retrieve knowledge sources [3]. Data mining is a knowledge discovery process. Blackboard Architecture may used to store and retrieve data sources. Parallel, distributed and concurrent retrieval of data items shall be achieved through the Blackboard architecture.

The blackboard systems may construct with the creation of data item sources in Oracle. Here is algorithm is given to create blackboard architecture, store and retrieve for data item sources.

For instance, each account is a table for banking information systems.

Algorithm:

Begin

Create table with account number

Insert data item into account number table

Retrieve data item from account number table

End

Each data item is data source which is created by h(x) account number table.

The blackboard structure is created with each account.

SQL> create table ab8347102 (acno int, acname varchar (10), acbal real);

SQL> create table ab8347103 (acno int, acname varchar (10), acbal real);

SQL> create table ab8347104 (acno int, acname varchar (10), acbal real);

SQL> create table ab8347105 (acno int, acname varchar (10), acbal real);

SQL> create table ab8347106(acno int, acname varchar(10), acbal real);

SQL> create table ab8347107(acno int, acname varchar(10), acbal real);

Inserted accounts into blackboard structure.

SQL> insert into ab8347102 values (8347102, 'Rama', 10000);

SQL> insert into ab8347103 values (8347103, 'Sita', 16000);

SQL> insert into ab8347104 values (8347104, 'John', 20000);

SQL> insert into 8347105 values (8347105, 'Khan', 15000);

SQL> insert into ab8347106 values (8347106, 'Marry', 18000);

SQL> insert into ab8347107 values (8347107, 'Krishna', 25000);

Select each account number from blackboard structure.

SQL> select * from ab8347102 where acno=8347102;

ACNO	ACNAME	ACBAL
8347102	Rama	10000

ACNO	ACNAME	ACBAL
8347103	Sita	16000

SQL> select * from ab8347103 where acno=8347103;

ACNO	ACNAME	ACBAL
8347103	Sita	16000

ACNO	ACNAME	ACBAL
8347103	Sita	16000

Suppose, all tuples shall be brought in to single database by creating views

```
CREATE VIEW view-name AS
SELECT *
FROM table_name, table-name2,
WHERE condition;
```

Here is an example

```
CREATE VIEW account AS
SELECT *
FROM ab8347101, ab8347102, ..., ab834710.
```

The transaction may be defined using SQL as

```
UPDATE ab8347107
SET balance = balance + 1000
WHERE account no = ; ab8347107.
```

These data items are stored in blackboard structure.

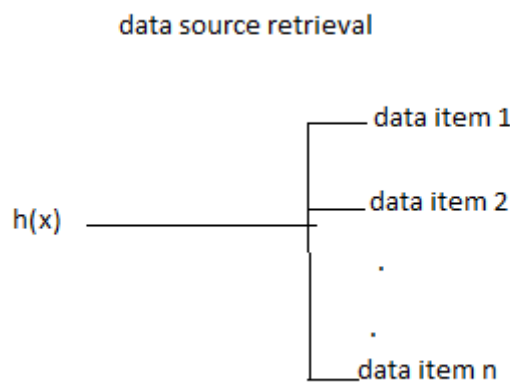


Figure 28: Blackboard System

$h(x)$ is create, store and retrieval of data sources. When transaction being possessing, there is no need to take entire database into main memory. Just it is sufficient to retrieval of particular data item of particular transaction from the blackboard system.

The advantage of blackboard architecture is directly operated on data sources.

The Blockchain technology is also operates on data sources or data items to direct transactions.

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A Model of an Automated System for Evaluating the Quality of Startups in the Field of Software Engineering

By Amirali Kerimovs

Annotation- This article introduces an automated system for evaluating startups in the field of Software Engineering. It outlines the system's components, including database management, expert assessments, and project viability estimation. The article also presents a conceptual database model and discusses the user interface for assessment calculations. The system is designed to enhance the evaluation of Software Engineering startups and holds potential applications in various scenarios.

Keywords: software engineering, startup evaluation, automated system, database management, conceptual database model, user interface, project viability estimation.

GJCST-C Classification: LCC Code: QA76



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I. INTRODUCTION

In the context of the IT industry, operating within the dynamic and ever-changing external environment, the demands placed on specialist competencies have heightened. Innovating processes has become crucial to navigate the intensifying competition. Adapting the training paradigm for IT specialists is essential to meet these evolving requirements [8].

To streamline and expedite the startup evaluation procedure, the development of software to compute assessments through a defined methodology is imperative. This software should encompass several pivotal processes.

Firstly, the establishment and management of database records are paramount. The software should furnish administrators with the capability to input essential information such as startup author names, startup titles, and the like. Moreover, the system should facilitate the addition of new users and offer other related functionalities [1].

Furthermore, the system should accommodate experts responsible for evaluating startups, enabling them to input assessments based on diverse criteria into the database. This functionality should also extend to the modification or potential deletion of entered data when necessary.

Secondly, the system should incorporate a mechanism for estimating project viability using pertinent formulas derived from the developed

methodology. Data requisite for these calculations, notably evaluations corresponding to the established criteria, should be extracted from the database.

Upon calculation, the system should display the outcome in a dedicated interface and record the result within the database. In scenarios where multiple experts assess a single startup, the system must calculate the arithmetic mean of the evaluations and subsequently incorporate this average into the database.

II. LITERATURE REVIEW

The concept of a startup is defined as a nascent company, possibly not yet officially registered but with serious intentions to achieve official status. These companies build their foundations on innovation or innovative technologies, with a predominant focus on IT projects. In simpler terms, a startup is a transformative process that converts an idea into a flourishing business.

The significance of developing an automated system for assessing startups within the realm of Software Engineering stems from the challenge of evaluating various startup initiatives in the Software Engineering domain. A comprehensive analysis revealed the absence of a unified methodology for appraising Software Engineering startups. Subsequent to scrutinizing existing methods, the primary criteria and parameters for evaluating Software Engineering startup projects were identified [2].

This methodology amalgamates key evaluation indicators specific to Software Engineering startups and incorporates the consideration of criteria weights.

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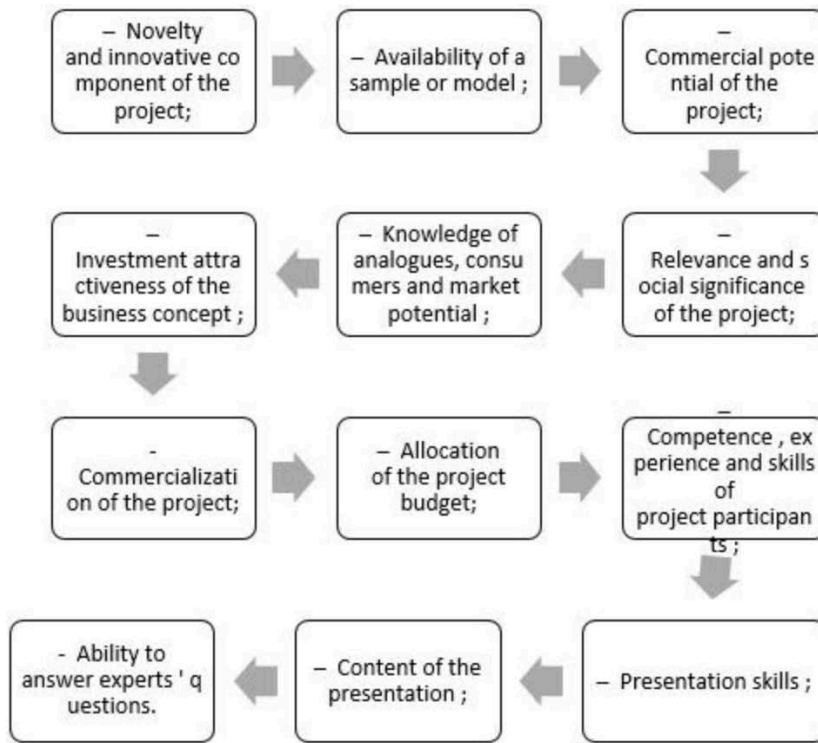


Fig. 1: Evaluation criteria [4]

III. THE PURPOSE OF THE ARTICLE

The aim of this study is to analyze existing methods for evaluating startups in the realm of Software Engineering and to develop an automated system that assesses the quality of startups specifically within Software Engineering projects. The focus will be on utilizing software product quality assessment techniques to enhance the evaluation process.

We consider the following assumptions:

- "x" represents a criterion.
- "a" signifies the evaluation of the criterion on a five-point scale.
- "b" denotes the weight of the criterion, falling within the range [0.1; 1].
- "i" represents the criterion number, ranging from [1; 12].

For each criterion with an assigned weight, experts, including admins, entrepreneurs, and specialists from various domains, provide corresponding scores on a five-point scale. The formula for project evaluation is as follows:

$$x_i = \sum a_i * b_i \quad (1)$$

The resultant evaluation of a startup's Software Engineering projects and developments, according to this method, spans from a minimum of 12 to a maximum of 60. The criteria weights enable the distribution of significance across these evaluations concerning projects, thereby emphasizing the most promising ones.

$$\sum x_i = \frac{a_1*b_1+a_2*b_2+a_3*b_3+\dots+a_{12}*b_{12}}{\sum b_i} \quad (2)$$

Each of the aforementioned criteria will now be examined in greater detail, as depicted in Fig. 2.

Novelty and innovative component of the project
A criterion that allows you to assess how promising and unique this development is .
Availability of a sample or model
Criterion thanks to which you can evaluate the quality and thoughtfulness of this development .
Commercial potential of the project
A criterion that allows you to assess the potential profit of a startup.
Actuality and social significance of the project
A criterion by which the social contribution of the project or its potential benefit to humanity can be assessed .
Knowledge of analogues, consumers and market potential
A criterion by which it is possible to evaluate the results of marketing research and the determination of the end consumer .
Investment attractiveness business concept
A criterion that reflects the amount of necessary investments and the payback period of the project
Commercialization of the project
Criterion reflecting the potential success of commercialization of the project.
Allocation of the project budget
A criterion that allows you to assess the quality of the created project estimate , i.e how professionally the team manages the budget
Competence , experience and skills of project participants
A criterion that reflects the team's motivation for the project and their importance in the implementation of this project
Presentation skills
A criterion by which it is possible to assess how qualitatively and professionally the team of authors is able to convey their thoughts and ideas to the audience .
Content of the presentation
Criterion that reflects the availability and quality of the visual component of the project presentation
Ability to answer experts ' questions
The most significant criterion of all , which assesses the awareness of the team in its own project and the areas in which it can be involved .

Fig. 2: Criterion Values

The extensive array of diverse criteria enables an objective assessment of the user project from multifaceted perspectives. This approach undoubtedly facilitates a comprehensive and detailed depiction of the evaluated startup.

IV. PRESENTATION OF THE MAIN MATERIAL

In the context of startups in the field of Software Engineering, the selection of appropriate and dependable software development tools often proves pivotal in achieving a successful end product.

For the purpose of program development, the integrated environment of Visual Studio 2017, provided by Microsoft, was chosen. The program itself was authored in the modern, object-oriented programming language, C#. Windows Forms technology was employed to craft the graphical user interface.

The database operations were facilitated through various technologies. The widely utilized SQL programming language was employed for database creation and manipulation. InnoDB was selected as the storage mechanism due to its renowned reliability and high performance. To enhance database management and data processing, MySQL Workbench, a graphical tool, was utilized. The connection between the program

and the database was established using the freely available and user-friendly MySQL Connector driver.

This software solution offers the functionality of user authorization and registration. Upon successful authorization, users are directed to their respective personalized accounts, where their available actions are contingent upon their assigned role.

A user assigned the role of "User" is restricted to viewing data related to received startup grades. On the other hand, a user designated as a "Admin" possesses the privilege to both view assessments for startups and input new evaluation data. Meanwhile, a user endowed with the "Administrator" role holds comprehensive control. They have the authority to add, edit, or delete data within the system, along with the capability to access any pre-existing data. Additionally, it is the administrator who grants admins access to add and modify assessments.

Conceptual Database Model for Software Engineering Startups

The "User" table serves as the repository for data pertaining to registered users within the system. The table's structure is outlined in the following format (Table 1):

Table 1: Structure of the user table

Name	Field type	Description
id	int	Unique user ID
login	varchar	Unique user login
password	varchar	User password
name	varchar	Username _
surname	varchar	Username _

The "Admin" table is designed to house information pertinent to system administrators. The structure of this table is elucidated as follows (Table 2):

Table 2: Structure of the Admin Table

Name	Field type	Description
id	int	The unique identifier of the system administrator
name	varchar	Administrator login
password	varchar	Administrator password

In potential future iterations, additional fields such as "Author's Name," "Startup Name," and "Expert's Name" could be incorporated to enhance the data model. Presently, however, the focus is on the streamlined dataset for simplification.

This "Startup" table establishes relationships with the "Admin" and "User" tables. It is linked to the "Admin" table through the "admin_id" field and to the "User" table through the "user_id" field, respectively. This relational structure enhances the representation and management of startup assessment data within the Software Engineering context.

Conceptual Database Model for Software Engineering Startups

1. The "User" and "Admin" Tables: The "User" and "Admin" tables function independently and are not interlinked with each other or with any other tables. Their sole purpose is to meticulously store essential data concerning registered users and administrators of the system.
2. The "Startup" Table: The "Startup" table serves as a repository for data pertaining to startups that have been assessed by admins. The table's structure is illustrated as follows (Table 3):

Table 3: The Structure of the Startup Table

Name	Field type	Description
id_startup	int	The unique identifier of the startup
startup_name	varchar	The name of the startup
user_id	int	Unique user ID
name_user	varchar	Name of the user. It is updated from the user table
admin_id	int	Unique identifier of the admin
name_admin	varchar	Admin's name. Updated from the admin table
rating	double	Final assessment

The "Rating" table is designed to house data concerning the ratings provided by admins for each criterion. The table's structure is outlined below (Table 4):



Table 4: Structure of the Rating Table

Name	Field type	Description
id_rating	int	The unique identifier of the assessment for the startup
startup id	int	The unique identifier of the startup
name_startup	varchar	The name of the startup. Updated from the Startup table .
Novelty	double	Assessments by criteria
sample	double	
potential	double	
knowledge_analogs	double	
relevance	double	
answers	double	
investments	double	
commercial	double	
budget	double	
experience_skills	double	
presentation	double	
meaning	double	
result	double	

The "Admin" table comprehensively stores data pertaining to administrators. The table's structure is detailed in the following format (Table 5):

Table 5: Structure of the Admin Table

Name	Field type	Description
id_admin	int	Unique identifier of the admin
admin_name	varchar	The admin's name
admin_email	varchar	E- mail address of the admin
unique_pass	varchar	Admin's unique password

The user table contains data about users. Table 6 shows the structure of this table.

Table 6: Structure of the Admin Table

Name	Field type	Description
id_user	int	Unique user ID
user_name	varchar	Name of the user
user_email	varchar	User email _

The subsequent stage involves elucidating the product, service, or technology that will address the customer's predicament and outline what they will be charged for. An illustrative depiction of the solution description is provided below. To assess the quality of this aspect, the "Novelty and Innovative Component of the Project" criterion comes into play. Within this software application, users input data through designated text fields. The determination of the final score follows the formula outlined in the earlier methodology. The program's output is presented in the form of a textual message, while data stored within the database is exhibited in tabular format.

Following successful authorization into the system, facilitated by a unique code provided by the administrator, either the admin or an invited expert responsible for startup evaluation gains access to a window for calculation based on the aforementioned method (Fig. 3). This interface provides a seamless means of conducting evaluations and reflecting our commitment to Software Engineering startup assessment.

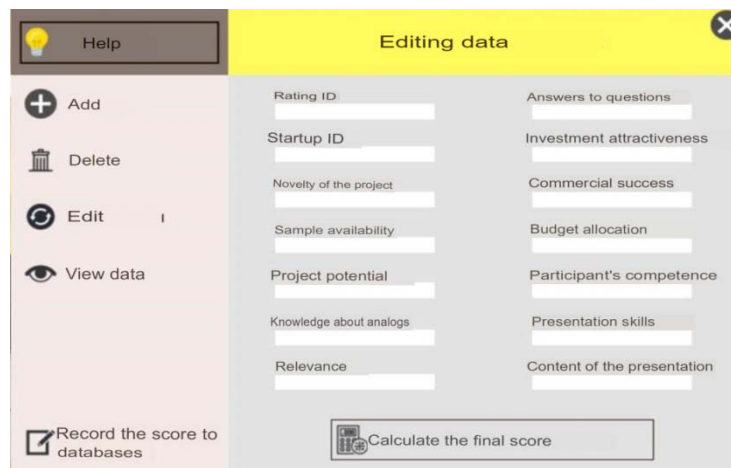


Fig. 3: The Main Window for Calculating the Score

Within this context, the user interface presents a side menu featuring buttons such as "Add Points," "Edit," "View Data," and "Enter Final Score to Database." The main panel encompasses fields for data input, along with a prominent button labeled "Calculate the Final Grade."

For reviewing the program's output, clicking the "View Data" button is essential. This action prompts the

opening of a dedicated "View Data" window, displaying all previously input or edited data in tabular format (Fig. 4). It is worth noting that future program enhancements could potentially incorporate features for sorting and filtering the displayed data, thereby enhancing user experience and data analysis capabilities. This user interface design aligns with our commitment to effectively evaluate Software Engineering startups.

Rating ID	Startup ID	Name startup	Novelty	Availability sample	Potential	Knowledge about analogs
1	1	Homeless	5	5	5	5
2	2	Hunter	5	5	5	5
3	2	Hunter	5	5	5	3
4	1	Homeless	5	5	5	5
5	2	Hunter	5	5	5	4
6	1	Homeless	5	5	5	5
7	1	Homeless	5	5	5	5
8	1	Homeless	4	4	4	5
9	1	Homeless	5	5	5	5
10	2	Hunter	5	5	5	5
11	1	Homeless	5	5	5	5
12	2	Hunter	5	5	5	5

Fig. 4: Data View Window

To access all entered values within the table, utilizing the scroll located at the screen's bottom is necessary. To compute the final assessment, the user is required to input all relevant data (Fig. 6.2). During the assessment calculation process, the system conducts the same data entry correctness checks as during editing. Upon successful data input, clicking the "Calculate the Final Estimate" button triggers the computation process. The outcome is then displayed on the screen as a message. The calculation adheres to the formula outlined in the previous method. According to this formula, the highest attainable score for a user's startup is 60 points, while the minimum score achievable

is 12 points. This calculation mechanism underscores our commitment to rigorously evaluating Software Engineering startups.

The ultimate assessment is additionally logged within the database. To review the outcome within the table, it necessitates a subsequent click on the "View Data" button, directing the user to the data viewing window (Fig. 5). The calculated result is observable within the "Final Assessment" column.

Clicking the "View Rating" button leads to the unveiling of a data viewing window. Within this window, the final rating is juxtaposed with the startup's name. The calculation of the final grade follows this procedure: an

arithmetic mean is computed from the evaluations furnished by multiple experts, and the resultant average is showcased within the table (Fig. 6). This methodology

ensures a comprehensive evaluation approach, aligning with our focus on Software Engineering startup assessment.

ID	startup	Name	Final report (evaluation)
1	Homeless	Homeless	59,1428571...
2	Hunter	Hunter	55,32

Fig. 5: Viewing the Final Result

V. CONCLUSION

In the process of software development, an in-depth investigation and analysis were undertaken to address challenges encountered during the evaluation of startups within the realm of Software Engineering.

A meticulous examination of methods for assessing Software Engineering startup projects was conducted. The following key achievements were attained:

1. The creation of an automated system for evaluating startups in the Software Engineering domain.
2. The development of a comprehensive database to house information pertaining to registered users and assessments issued by experts.
3. The implementation of a user interface featuring the following functionalities.
 1. Authorization and user registration.
 2. Data editing capabilities for the system administrator.
 3. Assessment calculation according to the prescribed methodology and subsequent presentation of the final outcome.
 4. Viewing the final grade for student projects.

Furthermore, this bachelor's work was successfully presented at the conference "Modern Problems of Scientific Energy Supply." The report's topic centered around the "Automated System for Evaluating Startups in the Field of Software Engineering."

The proposed comprehensive evaluation method for startup projects within the department holds the potential to guide participants in refining their projects and focusing on critical aspects. Moreover, it facilitates project assessment by customers, aids in entrepreneurial competitions, and supports potential investors. The software was developed as a desktop application, offering utility for teachers in conducting various forms of startup competitions and projects within the realm of Software Engineering.

This system's utility extends to a diverse range of scenarios, contributing to the advancement of Software Engineering startup initiatives.

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Exclusive

Reputation



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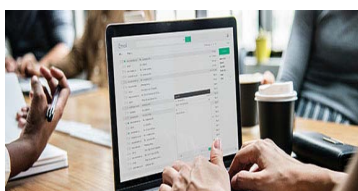
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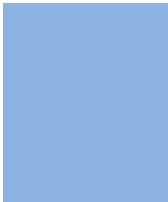
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2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

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Acknowledgments

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Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.



Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

- a) A title which should be relevant to the theme of the paper.
- b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
- c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
- d) An introduction, giving fundamental background objectives.
- e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
- f) Results which should be presented concisely by well-designed tables and figures.
- g) Suitable statistical data should also be given.
- h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

- i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
- j) There should be brief acknowledgments.
- k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



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It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.



Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

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Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

TIPS FOR WRITING A GOOD QUALITY COMPUTER SCIENCE RESEARCH PAPER

Techniques for writing a good quality computer science research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of computer science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.



20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

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Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



Mistakes to avoid:

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- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.



The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

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As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

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When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

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- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

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Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

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Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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