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Strategies in Abstract Writing

Presentation · February 2022

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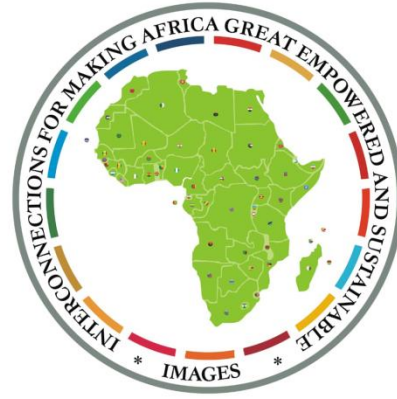
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Strategies in Abstract Writing

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Abstract

WHAT?

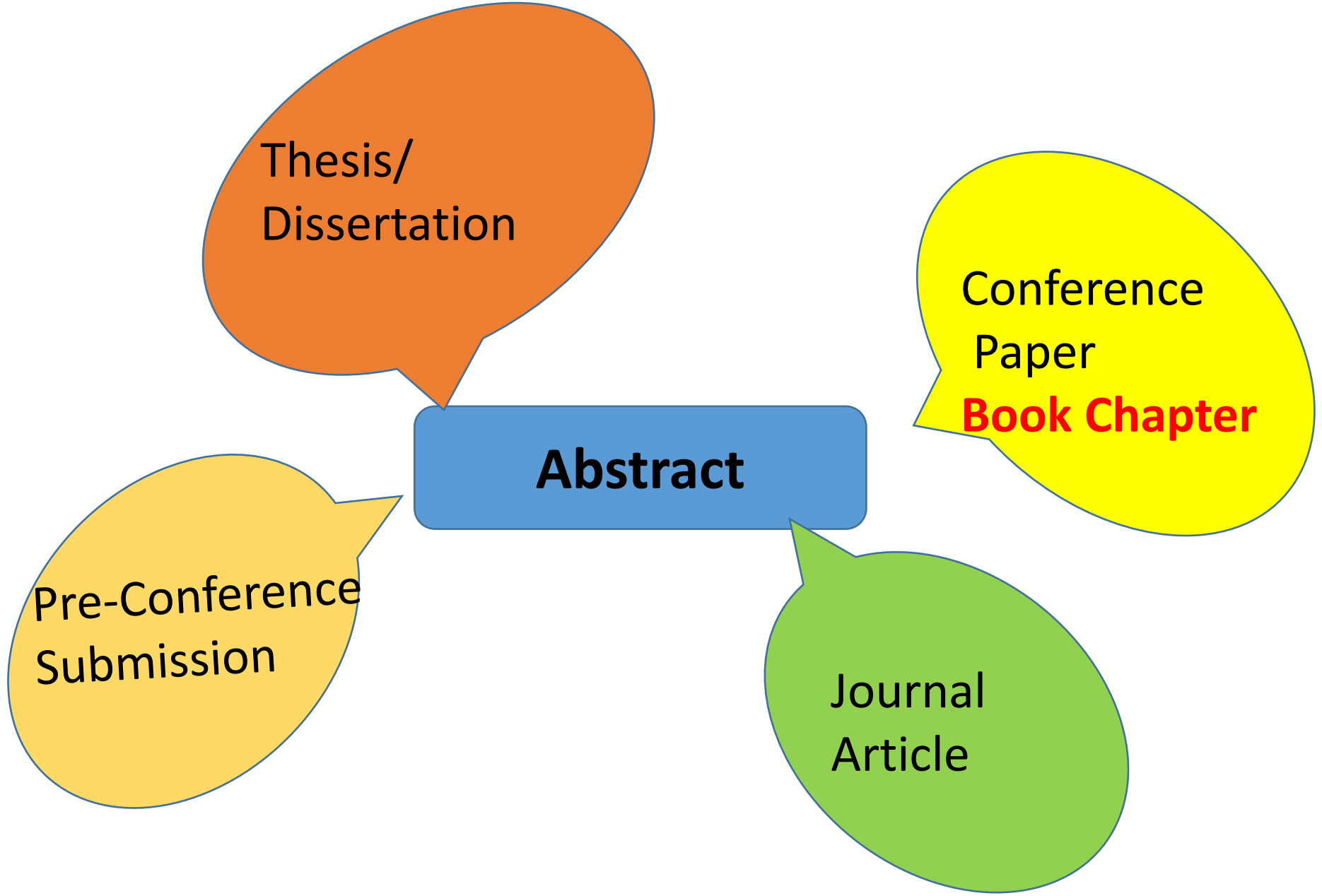
- The summary of the research paper
- the brief explanation of larger work,
- Reading research paper is a time consuming task.
- Reading an abstract of research paper saves time to decide whether to read full research paper or not

WHY?

- It makes the selection easy for readers/ authors
- They are used for indexing purpose by the online databases

WHEN?

It is suggested that **it should be written last** after the rough draft of the research paper is completed.



Thesis/
Dissertation

Abstract

Conference
Paper
Book Chapter

Journal
Article

Pre-Conference
Submission

**Types
of
Abstract**

Informative

Critical

Descriptive/Indicative

Highlight

Graphical

How is the abstract written

Structured

- ❑ Consists of **one paragraph with multiple headings.**

Unstructured

- ❑ Consists of **one paragraph with no heading.**

Informative abstracts

- Informative abstracts are the most common type and are used by most research articles. They provide a formalised overview of the study, **with distinct sections** for each part of the study. As such, informative abstracts should be able to act as a surrogate for the study itself.
- Informative abstracts are used by most scientific journals and conferences

Informative abstract Contd.

- The main sections are:
 - **I**ntroduction or background;
 - **M**aterials and methods;
 - **R**esults
 - **a**nd
 - **D**iscussion or conclusions.

This is commonly abbreviated to the 'IMRaD' structure

Critical abstracts

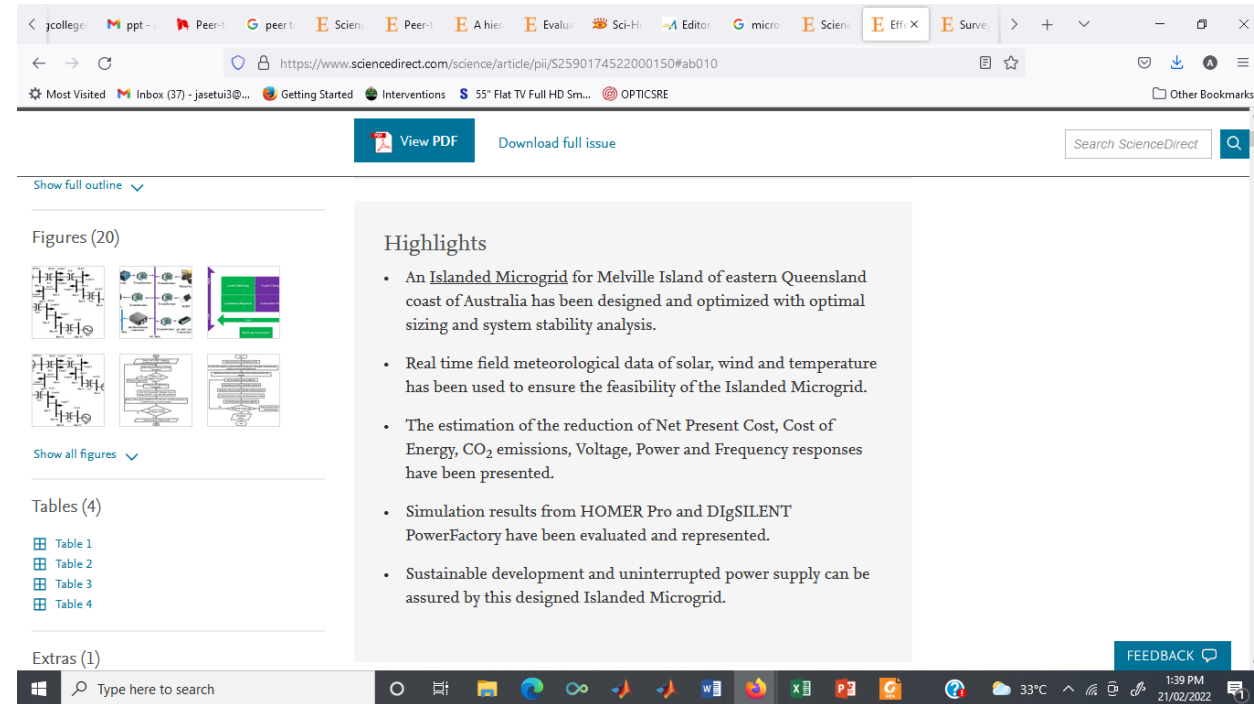
- In addition to the study description that is provided in informative abstracts, **critical abstracts** provide an evaluation of the research and its relevance, validity and reliability.
- The researcher evaluates the paper and often compares it with other works on the same subject and provides additional interpretive commentary.
- Consequently, they are usually longer than informative abstracts
- They are designed to aid readers in deciding on whether or not to read the particular piece of work the abstract is critiquing,
- They are not commonly used

Descriptive or indicative

- Descriptive or indicative abstracts provide an overview of the scope and method of the research, but do not include results, evaluation, or discussion of the research.
- They are usually very short, and are rarely used in scientific papers.
- Could use the IM of the IMRaD
- Descriptive abstracts can be considered an overview of the work, and may act as a substitute for a contents list
- Alternatively, descriptive abstracts can be used for reviewing books or films in an academic setting

Highlights

- Introduced and commonly make submission to most Scimedirect Journals
- Highlights are three to five bullet points that help increase the discoverability of your article via search engines.
- These bullet points should capture the novel results of your research as well as new methods that were used during the study (if any).
- Highlights are meant to be short: 85 characters or fewer, including spaces



The screenshot shows a web browser displaying a ScienceDirect article page. The URL is <https://www.sciencedirect.com/science/article/pii/S2590174522000150#ab010>. The page features a navigation bar with 'View PDF' and 'Download full issue' buttons. Below the navigation bar, there are sections for 'Figures (20)', 'Tables (4)', and 'Extras (1)'. The 'Highlights' section is prominently displayed, containing five bullet points:

- An **Islanded Microgrid** for Melville Island of eastern Queensland coast of Australia has been designed and optimized with optimal sizing and system stability analysis.
- Real time field meteorological data of solar, wind and temperature has been used to ensure the feasibility of the Islanded Microgrid.
- The estimation of the reduction of Net Present Cost, Cost of Energy, CO₂ emissions, Voltage, Power and Frequency responses have been presented.
- Simulation results from HOMER Pro and DIGSILENT PowerFactory have been evaluated and represented.
- Sustainable development and uninterrupted power supply can be assured by this designed Islanded Microgrid.

The Windows taskbar at the bottom shows the system clock as 1:39 PM on 21/02/2022, with a temperature of 33°C.

Graphical

- In the last couple of years, the number of journals that request a graphical abstract to submit a paper has increased, which is expected because communicating science through a visual way has become each day more essential, for better understanding and comprehension
- This is a **single, concise, pictorial and visual summary of the main findings of the article**. It could either be the concluding figure from the article or better still a figure that is specially designed for the purpose, which captures the content of the article for readers at a single glance.

- What do we expect?
- Showcase the research not so much of writing **skills**
- Avoid complex sentence structure and jargons.
- Good language, clarity, concise, detailed, logical and original

Brilliant writing cannot mask poor research

Expectations

- Here, I will focus on the most commonly used (informative abstract) following the IMRaD approach.
- It has four major sections
- Varying for different journals
 - The section may be distinctly labelled or otherwise
 - Sections may be created using paragraphing for Thesis/Dissertation and even some journals

Tenses within your Abstract

- This could raise a lot of argument, but I believe **it should be written in a mix of tenses**
- Past tense to describe what has been done and research other authors have conducted the methods they have followed, and what they have found.
- Present tense to describe the rationale/justification/method for your research (what remains to be done),
- Present tense to explain the significance of their study

Introduction

- This is the first section of an abstract
- It should be a brief overview: explaining the **background to your study**, the **general topic** under study; the **specific topic** of your research
- the **central questions** or **statement of the problem** your research addresses
- Open up the **research gap for your study**: i.e **what research has already been done in this field and why your research is important**, **what's already known** about this question, what **previous research** has done or shown
- Aim and objectives of the study: **You should include the aim and hypotheses of your study**
- Let us check up the three abstracts in the next few slides and let us critique the first paragraph as presented.

Example

- This paper presents a novel Hierarchical and Decentralized Energy Management System which facilitates the Peer to Peer energy trading between prosumers in the community by coordinating the operation of distributed Home Battery Storage Systems and shiftable home appliances in a decentralized way to achieve a further reduction in the household energy costs for each house, compared to being operated individually (i.e. not being a part of the community). The hierarchical system consists of three levels: Selection level, Peer to Peer Management level, and Home Management level. First, the daily energy cost of each household is optimized individually using the lower layer. Then, the results are further improved through a peer to peer energy sharing algorithm in which house pairs are selected if they can achieve better reductions in operating cost through a joint optimization process. Finally, the optimal settings for the selected couples are obtained. An effective sensitivity analysis for the proposed management system is also introduced to study the effect of the size and the efficiency of the Home Battery Storage, the size of the [PV](#) generation, and the average annual household consumption on the economic performance of the householders in the community. The results obtained are based on real historic data for several prosumers in a real community system. The results show that the proposed energy management system guarantees a further reduction in the annual household energy costs for each house (up to 8.96%) when being operated as a part of a community, compared to being operated individually.
- ***Mahmoud Elkazaz, Mark Sumner, David Thomas, (2021) A hierarchical and decentralized energy management system for peer-to-peer energy trading, Applied Energy, Volume 291, 116766***

- The rapid decentralization of energy generation and storage facilitates an opportunity to redesign existing energy systems. Here, peer-to-peer energy trading in local markets offers advantages for demand response and flexibility of energy delivery, yet it still faces problems of customer acceptance, namely, concerns over sharing control of batteries and the degradation impacts of increased cycles. To help overcome these hurdles, this research develops a techno-economic model that optimizes the interplay between peer-to-peer trading and energy management systems in a community. The model distinguishes between two decision making approaches in a local electricity market: decentral, where the household retains full control over its storages, and central, where the flexibilities are fully leveraged to maximize the community benefit. Both approaches demonstrate the significant monetary benefit of peer-to-peer trading, with the central approach reaching the greatest profitability potential. Negative effects on the battery lifetime only occur in the central case with bidirectional vehicles, and the degradation is comparatively slight.

- Stefan Englberger, Archie C. Chapman, Wayes Tushar, Tariq Almomani, Stephen Snow, Rolf Witzmann, Andreas Jossen, Holger Hesse (2021), Evaluating the interdependency between peer-to-peer networks and energy storages: A techno-economic proof for prosumers, Advances in Applied Energy, Volume 3, 100059

- Peer-to-peer (P2P) energy sharing allows the surplus energy from distributed energy resources (DERs) to trade between prosumers in a community Microgrid. P2P energy sharing is becoming more attractive than the conventional peer-to-grid (P2G) trading. However, intensive sensing and communication infrastructures are required either for information flows in a local market or for building a central control system. Moreover, the existing pricing mechanisms for P2P energy sharing could not ensure all the P2P participants gain economic benefits. This work proposed a two-stage aggregated control to realize P2P energy sharing in community Microgrids, where only the measurement at the point of common coupling (PCC) and one-way communication are required. This method allows individual prosumers to control their DERs via a third party entity, so called energy sharing coordinator (ESC). In the first stage, a constrained non linear programming (CNLP) optimization with a rolling horizon was used to minimize the energy costs of the community. In the second stage, a rule based control was carried out updating the control set-points according to the real-time measurement. The benefits of P2P energy sharing were assessed from the community's as well as individual customers' perspective. The proposed method was applied to residential community Microgrids with photovoltaic (PV) battery systems. It was revealed that P2P energy sharing is able to reduce the energy cost of the community by 30% compared to the conventional P2G energy trading. The modified supply demand ratio based pricing mechanism ensures every individual customer be better off, and can be used as a benchmark for any P2P energy sharing model. For consumers, the electricity bill is reduced by ~12.4%, and for prosumers, the annual income is increased by ~£57 per premises.
- Chao Long, Jianzhong Wu*, Yue Zhou, Nick Jenkins, Peer-to-peer energy sharing through a two-stage aggregated battery control in a community Microgrid, Applied Energy . Vol. 226. pp 261-276

Materials & Method

- The materials and methods section describes how the author has conducted the study; for example,
 - the sample size involved in a study
 - the type of study carried out
 - the type(s) of experiments performed
 - In the case of experimental research, this would include description of the equipment and methods used,
 - for a data or patient project, this would include a brief description of inclusion or exclusion criteria, and
 - the statistical tests used in analysing the data

Materials & Method: Example

- Herzberg's Motivation Theory guided the study. The survey design of the correlational type was adopted. Twenty-one private universities out of the 27 approved between 1999 and 2012 were purposively selected based on availability of functional electronic databases. Proportional to size and stratified random sampling techniques were used to select 30% of academic staff across the various ranks in the selected universities, making a total of 657. The instruments used were Awareness of Electronic Databases ($r=0.75$), Knowledge of Electronic Databases ($r=0.87$), Utilisation of Electronic Databases ($r=0.85$) and Research Productivity ($r=0.74$) scales. Data were subjected to descriptive statistics, Spearman's rank correlation and Multiple regression at 0.05 level of significance
- **ADE TOMIWA, BASIRU (2020)** AWARENESS, KNOWLEDGE AND UTILISATION OF ELECTRONIC DATABASES AS PREDICTORS OF RESEARCH PRODUCTIVITY OF ACADEMIC STAFF IN PRIVATE UNIVERSITIES IN SOUTHWESTERN NIGERIA (UI Thesis)

Example contd.

- Three hundred mature IT (124 Toms and 176 Hens) comprising 82 black, 114 spotted and 104 white strains were randomly sampled across southwestern states. Blood (2 mL) was collected from the IT to detect polymorphisms at Insulin-like Growth Factors 1 and 2 (IGF1, IGF2), Growth Hormone (GH), GH Receptor (GHR) and myostatin genes using standard procedures. Poult hatchlings (n=300) from randomly purchased IT eggs were sorted (70 black, 140 spotted and 90 white strains) and managed for 21 weeks. Weekly Bodyweight (WB) was monitored for association of polymorphic variants and growth using standard method. At week 10, blood (2 mL) was sampled from each strain (n=60). The DNA was extracted, amplified, electrophoresed, sequenced and genotyped with restriction fragment length polymorphism. The WB and carcass traits at week 21 were associated with each of IGF1, IGF2, GH, and myostatin genes. Allele and genotype frequencies, F-statistics, and test of Hardy-Weinberg's Equilibrium (HWE) were computed and phylogenetic tree constructed across genotypes. Parameter estimates were obtained from four non-linear growth models (Brody, Gompertz, Logistic and Von-Bertalanffy) that differ in goodness of fit, biological interpretation and ease of computation. The WB and carcass traits data were analysed using ANOVA at $\alpha 0.05$
- **EWUOLA, KAYODE MUSLIM (2021)** MOLECULAR DIVERSITY IN SELECTED GROWTH-INFLUENCING GENES ASSOCIATED WITH GROWTH AND CARCASS TRAITS OF INDIGENOUS TURKEY IN SOUTHWESTERN NIGERIA (UI Thesis).

- Optimum rice processing conditions [soaking temperature (65-75°C), soaking time (10-16 h), steaming time (20-30 min) and paddy moisture content (12-16%)] were obtained using Response Surface Methodology (RSM). Paddies of NERICA 8, FARO 52, FARO 61, FARO 61 and FARO 44 varieties were processed to white and parboiled rice using standard procedures. The milling recovery, head milled rice, chalkiness, brown rice recovery, head brown rice, colour, lightness, cooking time and water uptake ratio of each variety were determined using IRRI standard methods. Energy consumptions in the cleaning, soaking, steaming, drying, dehusking, polishing and grading operations were estimated by fitting data on labour, fuel and electricity consumption, time and machine efficiency into standard equations to determine total energy consumption. The quality attributes and energy consumptions were separately modelled using Taguchi, RSM and Artificial Neural Network (ANN) techniques for each rice variety. Accuracy of models was determined using coefficient of determination (R^2) and Mean Square Error (MSE). Multi-objectives function optimizer was used to optimize desirable quality attributes and energy consumptions. Data were analyzed using ANOVA at $\alpha 0.05$.

SANUSI, MAYOWA SAHEED (2021) IMPACTS OF PROCESSING PARAMETERS ON THE QUALITY ATTRIBUTES AND ENERGY CONSUMPTION OF RICE (*Oryza sativa* LINNAEUS) PhD Thesis (UI)

Results

- The results section of the abstract should highlight the main findings in the research. It should include the number of individuals involved in the study and their demographic details (if these were not predefined as part of the methods, as well as the most pertinent findings).
- These findings can be presented in a number of ways,
 - for quantitative research
 - this can be as raw numbers or percentages,
 - with p or α values or power calculations included if relevant
 - For qualitative, descriptive analysis can be included instead
- Presentation of the result should follow the patterns as rendered in the materials and method

Conclusion

- The conclusion is often regarded as a major part of the abstract
- Should summarise what the main findings of the research were
- Should provide recommendations either of how to apply this knowledge or what further research might be required.
- **Should state the study's implications for society, policy, or research**
- This should be no more than a few sentences

Molecular diversity is critical for improvement of Economic Traits (ET) in Indigenous Turkeys (IT). Poor productive performance constitutes one of the main constraints to improvement of ET of IT which can be ameliorated by application of knowledge of variation in growth-influencing genes. Information on the variability in genes influencing growth traits of IT in Nigeria are inadequate. Therefore, diversity in selected growth-influencing genes in associations with growth traits of IT in Southwestern Nigeria were investigated.

Three hundred mature IT (124 Toms and 176 Hens) comprising 82 black, 114 spotted and 104 white strains were randomly sampled across southwestern states. Blood (2 mL) was collected from the IT to detect polymorphisms at Insulin-like Growth Factors 1 and 2 (IGF1, IGF2), Growth Hormone (GH), GH Receptor (GHR) and myostatin genes using standard procedures. Poults hatched (n=300) from randomly purchased IT eggs were sorted (70 black, 140 spotted and 90 white strains) and managed for 21 weeks. Weekly Bodyweight (WB) was monitored for association of polymorphic variants and growth using standard method. At week 10, blood (2 mL) was sampled from each strain (n=60). The DNA was extracted, amplified, electrophoresed, sequenced and genotyped with restriction fragment length polymorphism. The WB and carcass traits at week 21 were associated with each of IGF1, IGF2, GH, and myostatin genes. Allele and genotype frequencies, F-statistics, and test of Hardy-Weinberg's Equilibrium (HWE) were computed and phylogenetic tree constructed across genotypes. Parameter estimates were obtained from four non-linear growth models (Brody, Gompertz, Logistic and Von-Bertalanffy) that differ in goodness of fit, biological interpretation and ease of computation. The WB and carcass traits data were analysed using ANOVA at $\alpha=0.05$

Co-dominant alleles A and B corresponding to genotypes AA, AB and BB were detected across each of the five loci tested. Allele frequencies were between 0.73 (A) and 0.26 (B). Heterozygosity excess (F_{st}) ranged from -0.007 (IGF1) to -0.003 (myostatin) within strains. The closest genetic distance (0.001) was between spotted and white strains while farthest (0.005) was between black and white strains. Spotted (GHR and myostatin), white (GH and myostatin) and black (IGF1, IGF2 and GH) strains conformed with HWE. Bodyweight at week 21 had significant association with BB genotype for black (2731.2 ± 44.7), spotted (2118.3 ± 289.6) and white (2280.6 ± 94.3) at myostatin locus. Genotype BB in IGF1 and GH loci were superior to AA and AB genotypes in breast weight for black and white strains. Genotype BB of toms and hens had significant association with wing weight at IGF1 (241.1 ± 12.3 and 190.7 ± 8.7) and myostatin (233.6 ± 14.1 and 190.2 ± 12.1 , respectively). Logistic and Brody models fitted best in black (AA), spotted (BB) and white (AB) at IGF1 locus. At IGF2 and GH loci, Von-Bertalanffy was the best on AB genotype across the strains while Gompertz fitted best in black (BB), spotted (AA) and white (BB) at myostatin locus. Growth-influencing genes examined were polymorphic.

Genotype BB was superior in growth at Insulin-like growth factors 1 and 2, growth hormone and myostatin loci and could be explored in marker-assisted selection for genetic improvement.

Abstract should not contain

- Lengthy background information,
- References to other literature [say something like, "current research shows that..." or "studies have indicated..."],
- Using ellipsicals [i.e., ending with "..."] or incomplete sentences,
- Abbreviations, jargon, or terms that may be confusing to the reader, and
- Any sort of image, illustration, figure, or table, or references to them.
- They should not provide any new information that is not already in the main body of text and hence no references should be used in this type of abstract.

General Summary

- Complete the writing of the research Paper
- Which outlet are you writing for?
- Draft the abstract from scratch.
- Write the most important and vital information
- Use simple and effective language.
- Rework the abstract within the limit of the approved/stated maximum and minimum count of words in abstract.
- Always check for grammatical and linguistic mistakes.

Thank you for your attention