The project holds intrinsic relevance to the ongoing initiatives within the department, seamlessly complementing and augmenting existing endeavors. Its alignment with the department's overarching objectives becomes evident in several key aspects. Firstly, the emphasis on cultivating wisdom that translates academic achievement into responsible citizenship aligns seamlessly with the department's commitment to fostering socially responsible professionals. Moreover, the project's focus on achieving excellence in both thought and action echoes the department's core principles of instilling a strong commitment to academic brilliance.

The research's dedication to enhancing societal and economic conditions resonates with the department's mission to contribute to broader welfare through education. The personalized learning experience advocated by the project harmonizes with the department's commitment to offering tailored journeys for students, nurturing critical thinking, analytical prowess, and creative aptitude. The collaborative approach, especially the emphasis on industry-institution collaboration for technological advancement, mirrors the department's efforts to bridge academia and industry. In essence, the project seamlessly dovetails into the department's ongoing initiatives, enriching the academic landscape and contributing to the holistic development of students, thereby reinforcing the department's commitment to excellence and societal impact.

5.3 Suggestions for replicability and/or scaling-up of the research outcomes from the project:

Further research may be carried out in:

1. **Framework Documentation:** Develop a comprehensive documentation framework outlining the methodologies, processes, and outcomes. This will serve as a blueprint for easy replication in diverse academic settings.
2. **Collaborative Networks:** Establish partnerships with other educational institutions, encouraging a collaborative approach to replicate the project's success. Facilitate knowledge exchange and provide support to institutions aiming to implement similar initiatives.
3. **Training Modules:** Design standardized training modules derived from successful outcomes. These modules can be disseminated to other institutions, ensuring uniformity and facilitating easy integration into their existing academic structures.
4. **Digital Platforms:** Leverage digital platforms to create an online repository of resources, including research findings, teaching methodologies, and best practices. This will enable widespread accessibility and serve as a virtual guide for institutions seeking to replicate the project.

5.5 Expected/ Foreseen risks of implementation of the project, if any: NA

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18 APR 2024

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the dynamic nature of scientific inquiry, ensuring the research team remains adept with the latest methodologies and technologies. Furthermore, the inclusion of a contingency fund demonstrates a forward-looking approach, acknowledging the inherent uncertainties in research and providing a buffer for unforeseen challenges. In essence, the proposed budget is a strategic investment tailored to the unique needs of the project, fostering an environment conducive to cutting-edge research and ensuring the project's resilience in the face of uncertainties.

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Ref. No. LV/AY 2019-20/R&D/SMG/ Dated: 21.08.2019

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2019-2020 to **School of Commerce and Management** for the project titled **Revolutionizing Efficiency: A Journey of Digital Transformation in Project Management** at a cost of Rs. 86,000/- Phase 2 **(January 2020 – May 2020)** for a period of Five Months under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 21.08.2019

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Rizwan

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Prof. (Dr.) Meenakshi Kaushik, Professor, SOCM, Lingaya's Vidyapeeth
2. Co-PI Name: Dr. Savita Yadav Assistant Professor, SOCM, Lingaya's Vidyapeeth
3. Dated: 21.08.2019
4. Title of the Project: Revolutionizing Efficiency: A Journey of Digital Transformation in Project Management
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 01.09.2019.

Dr. Meenakshi Kaushik
Prof (Dr.) Meenakshi Kaushik

PI Name & Signature

Syadav
Dr. Savita Yadav

Co-PI Name & Signature

Rizwan
Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2018-2019 to Dr. Shagufta Jabin, Associate Professor, Department of Chemistry for the project entitled Synthesized Characterization and Applications of Textile Nanomaterials of Rs. 50,000 (Fifty Thousand) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 08.02.2019

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name Dr. Shagufta Jabin, Associate Professor, Department of Chemistry
2. Co-PI Name: NA
3. Dated: 08.02.2019
4. Title of the Project: Synthesized Characterization and Applications of Textile Nanomaterials
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 08.02.2019.

Dr. Shagufta Jabin
PI Name & Signature

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2019-2020 to Mr. MD Daniyal, Assistant Professor, Department of Civil Engineering for the project titled "Vibration control of frame structure using multiple Tuned Mass Dampers" at a cost of Rs. (5,00,000) for a period of two years under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 23/01/20

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Mr. MD Daniyal
2. Co-PI Name: Mr. Naveen Kumar
3. Dated: 23/01/2020
4. Title of the Project: Vibration Control of Frame Structure using multiple Tuned Mass Dampers
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 23/01/2020.

Md. Daniyal

PI Name & Signature
Mr. MD Daniyal

Co-PI Name & Signature
Mr. Naveen Kumar

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2019-2020 to Col. (Retd.) R. K. Singh, Professor, Department of Civil Engineering for the project titled "NANOTECHNOLOGY IN CONSTRUCTION: CRUCIAL EVALUATE AND STATICAL ANALYSIS" at a cost of Rs. (2,50,000) for a period of two years under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 26/06/2019

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Col. (Retd.) R. K. Singh
2. Co-PI Name: Mr. Islam Zaki
3. Dated: 26/06/2019
4. Title of the Project: Nanotechnology in Construction: Crucial Evaluate and Statical Analysis
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 26/06/2019.

PI Name & Signature
Col. (Retd.) R. K. Singh

Co-PI Name & Signature
Mr. Islam Zaki

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2018-2019 to Ms. Faiza Khalil, Assistant Professor, Department of Civil Engineering for the project titled "Dynamics of Climate Change and its Impact on Surface/Ground Water Resources in Lower Himalayan Areas" at a cost of Rs. (2,00,000) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
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5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 08/03/19

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Ms. Faiza Khalil
2. Co-PI Name: Mr. K. K. Rao
3. Dated: 08/03/2019
4. Title of the Project: Dynamics of Climate change and its impact on Surface/ Ground Water Resources in Lower Himalayan areas
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 08/03/2019.

PI Name & Signature
Ms. Faiza Khalil

Co-PI Name & Signature
Mr. K. K. Rao

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2018-2019 to Ms. Faiza Khalil, Assistant Professor, Department of Civil Engineering for the project titled "Water Borne Diseases due to Climate Change in Lower Himalayan Areas" at a cost of Rs. (1,00,000) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 11/01/19

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Ms. Faiza Khalil
2. Co-PI Name: Ms. Deepika Sharma
3. Dated: 11/01/2019
4. Title of the Project: Water Borne Diseases due to climate change in lower Himalayan Areas
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 11/01/2019.

PI Name & Signature
Ms. Faiza Khalil

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Co-PI Name & Signature
Ms. Deepika Sharma

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2017-2018 to Mr. Sitesh Kumar Singh, Assistant Professor, Department of Civil Engineering for the project titled "Design and Seismic Analysis of the G+9 RCC Residential building in STAAD Pro for Zone II & III Region" at a cost of Rs. (1,22,000) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 25/02/18

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Mr. Sitesh Kumar Singh
2. Co-PI Name: Yet to be appointed
3. Dated: 25/02/2018
4. Title of the Project: Dynamics of Climate Change and its Impact on Surface/Ground Water Resources in Lower Himalayan Areas
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 25/02/18.

PI Name & Signature

Mr. Sitesh Kumar Singh

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2020-2021 to Mr. Deepak Kaushik, Assistant Professor, Department of Civil Engineering for the project titled "STUDY ON THE SHEAR RESISTANCE OF ONE-WAY CONCRETE SLAB REINFORCED WITH FRP BARS" at a cost of Rs. (1,50,000) for a period of Eighteen Months under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photocopies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 22/12/2020

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Mr. Deepak Kaushik
2. Co-PI Name: Mr. Javed Khan
3. Dated: 22/12/2020
4. Title of the Project: STUDY ON THE SHEAR RESISTANCE OF ONE -WAY CONCRETE SLAB REINFORCED WITH FRP BARS
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 22/12/2020.

PI Name & Signature
Mr. Deepak Kaushik

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Co-PI Name & Signature
Mr. Javed Khan

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2019-2020 to Mr. MD Daniyal, Assistant Professor, Department of Civil Engineering for the project titled "Vibration control of frame structure using multiple Tuned Mass Dampers" at a cost of Rs. (5,00,000) for a period of two years under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 23/01/20

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Mr. MD Daniyal
2. Co-PI Name: Mr. Naveen Kumar
3. Dated: 23/01/2020
4. Title of the Project: Vibration Control of Frame Structure using multiple Tuned Mass Dampers
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 23/01/2020.

Md. Daniyal.

PI Name & Signature
Mr. MD Daniyal

Co-PI Name & Signature
Mr. Naveen Kumar

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2019-2020 to Col. (Retd.) R. K. Singh, Professor, Department of Civil Engineering for the project titled "NANOTECHNOLOGY IN CONSTRUCTION: CRUCIAL EVALUATE AND STATICAL ANALYSIS" at a cost of Rs. (2,50,000) for a period of two years under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 26/06/2019

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Col. (Retd.) R. K. Singh
2. Co-PI Name: Mr. Islam Zaki
3. Dated: 26/06/2019
4. Title of the Project: Nanotechnology in Construction: Crucial Evaluate and Statical Analysis
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 26/06/2019.

PI Name & Signature
Col. (Retd.) R. K. Singh

Co-PI Name & Signature
Mr. Islam Zaki

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2018-2019 to Ms. Faiza Khalil, Assistant Professor, Department of Civil Engineering for the project titled "Water Borne Diseases due to Climate Change in Lower Himalayan Areas" at a cost of Rs. (1,00,000) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 11/01/19

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Ms. Faiza Khalil
2. Co-PI Name: Ms. Deepika Sharma
3. Dated: 11/01/2019
4. Title of the Project: Water Borne Diseases due to climate change in lower Himalayan Areas
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 11/01/2019.

PI Name & Signature
Ms. Faiza Khalil

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Co-PI Name & Signature
Ms. Deepika Sharma

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2017-2018 to Mr. Sitesh Kumar Singh, Assistant Professor, Department of Civil Engineering for the project titled "Design and Seismic Analysis of the G+9 RCC Residential building in STAAD Pro for Zone II & III Region" at a cost of Rs. (1,22,000) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 25/02/18

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Mr. Sitesh Kumar Singh
2. Co-PI Name: Yet to be appointed
3. Dated: 25/02/2018
4. Title of the Project: Dynamics of Climate Change and its Impact on Surface/Ground Water Resources in Lower Himalayan Areas
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 25/02/18.

PI Name & Signature

Mr. Sitesh Kumar Singh

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

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Ref. No. : LV/AY 2018-19/R & D/SMG/ Dated: 20.05.2019

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2018-2019 to Dr. Latha Banda, A. Professor and Head of Department of Computer Science and Engineering for the project titled "A novel approach to detect the major changes in twitter user's behaviour based on sentiment analysis" at a cost of Rs. 240000/- (Two Lakh forty thousand Only) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 20.05.2019

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Dr. Latha Banda

2. Co-PI Name: Dr SVAV Prasad

3. Dated: 20.05.2019

4.Title of the Project A novel approach to detect the major changes in twitter user's behaviour based on sentiment analysis

5.The research project is not being supported by any other funding agency.

6.The terms and conditions related to the grant are acceptable to the Principal Investigator.

7.The date of commencement of the project is 30 May, 2019.

PI Name & Signature
Dr. Latha Banda

Co-PI Name & Signature
Dr. SVAV Prasad

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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Ref. No. : LV/AY 2018-19/R & D/SMG/ Dated: 15.01.2019

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2022-2023 to Prof (Dr.) Latha Banda , A. Professor, Department of Computer Science and Engineering for the project titled "3D Stereo image retargeting using disparity map acquisition technique" at a cost of Rs. 2,00,000/- (Two lakhs Only) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 15.01.2019

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Prof. (Dr.) Latha Banda
2. Co-PI Name: Dr. Dinesh Javalkar
3. Dated: 15 Jan, 2019
4. Title of the Project: 3D Stereo image retargeting using disparity map acquisition technique
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 25 Jan, 2019

PI Name & Signature
Dr. Latha Banda

Co-PI Name & Signature
Dr. Dinesh Javalkar

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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Ref. No. : LV/AY 2019-20/R & D/SMG/ Dated: 24-04-2020

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2019-20 to Mr. Kiran Kumar, A. Professor & Head of Department of Computer Science and Engineering for the project titled "Pattern Recognition using Soft Computing: Exploiting fusion techniques" at a cost of Rs2,80000/- (Two lakh eighty Thousand Only) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 24-04-2020

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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URL: www.lingayasvidyapeeth.edu.in | Phone No.: 0129-2598200-05

ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Mr. Kiran Kumar
2. Co-PI Name: Dr. Dinesh Javalkar
3. Dated: 24-04-2020
4. Title of the Project: Pattern recognition using Soft Computing: Exploiting fusion techniques
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 04-05-2020

PI Name & Signature
Mr. Kiran Kumar

Co-PI Name & Signature
Dr. Dinesh Javalkar

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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Ref. No. : LV/AY 2017-18/R & D/SMG/

Dated: 10-05-2018

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2017-18 to Dr. Tapas Kumar, Professor of Department of Computer Science and Engineering for the project titled "Design and development of wide band rectangular dielectric resonated antenna for wireless communication applications" at a cost of Rs. 70,000/- (Seventy Thousand Only) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 10-05-2018

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Dr. Tapas Kumar
2. Co-PI Name: Dr. SVAV Prasad
3. Dated: 10-05-2018
4. Title of the Project: Design and development of wide band rectangular dielectric resonated antenna for wireless communication applications
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 20 May 2018

PI Name & Signature
Dr. Tapas Kumar

Co-PI Name & Signature
Prof. (Dr.) SVAV Prasad

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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Ref. No. : LV/AY 2021-22/R & D/SMG/

Dated: 17.06.2022

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2021-2022 to Dr. Ritu Sachdeva, A. Professor & Head of Department of Computer Science & Engineering for the project titled "Offline Chat GPT" at a cost of Rs. 2,80,000/- (Two Lakh Eighty Thousand Only) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 17.06.2022

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Dr. Ritu Sachdeva
2. Co-PI Name: Dr. Tapsi Nagpal
3. Dated: 17 June, 2022
4. Title of the Project: Offline Chat GPT
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 27 June, 2022

PI Name & Signature
Dr Ritu Sachdeva

Co-PI Name & Signature

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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Ref. No. : LV/AY 2022-23/R & D/SMG/ Dated: 10.08.2022

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2022-2023 to Prof. (Dr.) Ritu Sindhu, Associate Professor, A. Dean & Head of Department of Computer Science & Engineering for the project titled "A study on machine learning to reduce the complexity of predictor data in kids due to bipolar disorder" at a cost of Rs. 1,60,000/- (One Lakh Sixty Thousand Only) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 10.08.2022

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Prof. (Dr.) Ritu Sindhu
2. Co-PI Name: Dr. Tapsi Nagpal ,Ms. Komal Malsa
3. Dated: 10 August, 2022
4. Title of the Project: A study on machine learning to reduce the complexity of predictor data in kids due to bipolar disorder
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 20 August, 2022

PI Name & Signature

Prof. (Dr.) Ritu Sindhu.

Co-PI Name & Signature

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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Ref. No. : LV/AY 2022-23/R & D/SMG/ Dated: 04.05.2023

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2022-2023 to Prof (Dr.) Ritu Sindhu, Professor & Associate Dean of Department of Computer Science & Engineering for the project titled "Parking Identification using Matplot" at a cost of Rs. 2,00,000/- (Two Lakh Only) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D

Date: 04.05.2023

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Prof. (Dr.) Ritu Sindhu
2. Co-PI Name: Dr. Tapsi Nagpal
3. Dated: 4 May, 2023
4. Title of the Project: Parking Identification using Matplot
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 14 May, 2023

R Sindhu

PI Name & Signature
Prof. (Dr.) Ritu Sindhu

Tapsi

Co-PI Name & Signature
Dr. Tapsi

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2019-2020 to Dr. Rizwan Arif, Assistant Professor, Department of Chemistry for the project entitled Design and Synthesis of Antioxidant Drugs of Rs. 35,000 (Thirty Five Thousand) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 10.08.2019

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Dr. Rizwan Arif, Assistant Professor, Department of Chemistry
2. Co-PI Name: NA
3. Dated: 10.08.2019
4. Title of the Project: Design and Synthesis of Antioxidant Drugs
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 10.08.2019.

Dr. Rizwan Arif

PI Name & Signature

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2021-2022 to Dr. Rizwan Arif, Assistant Professor, Department of Chemistry for the project entitled Biological Evaluation of Heterocyclic Derivatives as antibacterial agents of Rs. 45,000 (Forty Five Thousand) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 04.04.2022

for Rizwan

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Dr. Rizwan Arif, Assistant Professor, Department of Chemistry
2. Co-PI Name: NA
3. Dated: 04.04.2022
4. Title of the Project: Biological Evaluation of Heterocyclic Derivatives
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 04.04.2022.

Dr. Rizwan Arif
PI Name & Signature

for Rizwan
Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2021-2022 to Dr. Anurakshee Verma, Assistant Professor, Department of Chemistry for the project entitled Comparative Study of Applications of Green Synthesized Nanoparticles as Antimicrobial Agents and in Anticancer Studies of Rs. 3,01,000 (Three Lakh One Thousand) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 08.08.2021

For LINGAYA'S VIDYAPEETH

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for Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

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ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Dr. Anurakshee Verma, Assistant Professor, Department of Chemistry
2. Co-PI Name: NA
3. Dated: 08.08.2021
4. Title of the Project: Comparative Study of Applications of Green Synthesized Nanoparticles as Antimicrobial Agents and in Anticancer Studies
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 08.08.2021.

A. Verma

Dr. Anurakshee Verma

PI Name & Signature

for. Dean-R&D

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH

18 APR 2024

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SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2018-2019 to Ms. Faiza Khalil, Assistant Professor, Department of Civil Engineering for the project titled "Dynamics of Climate Change and its Impact on Surface/Ground Water Resources in Lower Himalayan Areas" at a cost of Rs. (2,00,000) for a period of one year under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photo copies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 08/03/19

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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Website: www.lingayasuniversity.edu.in

ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Ms. Faiza Khalil
2. Co-PI Name: Mr. K. K. Rao
3. Dated: 08/03/2019
4. Title of the Project: Dynamics of Climate change and its impact on Surface/ Ground Water Resources in Lower Himalayan areas
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 08/03/2019.

faiza

PI Name & Signature
Ms. Faiza Khalil

Co-PI Name & Signature
Mr. K. K. Rao

Dean-R&D
Ligaya's Vidyapeeth, Faridabad

ViceChancellor
Ligaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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Website: www.lingayasuniversity.edu.in

SANCTION OF SEED MONEY GRANT FOR RESEARCH PROJECT

I wish to convey the sanction of seed money grant for the Academic Year 2020-2021 to Mr. Deepak Kaushik, Assistant Professor, Department of Civil Engineering for the project titled "STUDY ON THE SHEAR RESISTANCE OF ONE -WAY CONCRETE SLAB REINFORCED WITH FRP BARS" at a cost of Rs. (1,50,000) for a period of Eighteen Months under following terms and conditions:

1. The grant should be exclusively utilized for the purpose for which it was sanctioned. It may be ensured that the expenditure should not exceed the limit of sanctioned amount.
2. Chemicals and Consumables: To meet expenditure on chemicals, glassware and other consumable items, money can be claimed against the purchase order.
3. Contingency: The admissible contingency grant may be utilized for photocopies and microfilms, typing, stationery, postage, computation and printing needed for the project.
4. Travel and Field Work: The amount allocated under the head travel / field work is to be utilized for data collection and collection of other information such as documents and visit to libraries within the general scope and sphere of the ongoing project.
5. All project work should be carried out without any detriment to the regular academic work. Working during the college holidays will be permitted but no privileges are allowed thereon.
6. Quarterly report with respect to completion status needs to be submitted to the office of Dean-R&D.
7. Final report of the research work should be submitted to the office of Dean-R&D.

Date: 22/12/2020

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
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Website: www.lingayasuniversity.edu.in

ACCEPTANCE CERTIFICATE FOR SEED MONEY GRANT FOR RESEARCH PROJECT

1. Principal Investigator (PI) Name: Mr. Deepak Kaushik
2. Co-PI Name: Mr. Javed Khan
3. Dated: 22/12/2020
4. Title of the Project: STUDY ON THE SHEAR RESISTANCE OF ONE -WAY CONCRETE SLAB REINFORCED WITH FRP BARS
5. The research project is not being supported by any other funding agency.
6. The terms and conditions related to the grant are acceptable to the Principal Investigator.
7. The date of commencement of the project is 22/12/2020.

PI Name & Signature
Mr. Deepak Kaushik

Dean-R&D
Lingaya's Vidyapeeth, Faridabad

Co-PI Name & Signature
Mr. Javed Khan

Vice Chancellor
Lingaya's Vidyapeeth, Faridabad

For LINGAYA'S VIDYAPEETH
18 APR 2024,
Registrar

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M. : 9899871493
: 8383908635

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H.No. 47, V.P.O. Neemka, Sector 12, Faridabad

Ref. No.....

Date.....

CONSULTANCY PROJECT APPROVAL

04.04.2022

Greetings.

Dear Mr. Deepak Kaushik,

I am pleased to inform you that your application for the approval of the consultancy project titled "Sustainable and Ecologically conscious Infrastructure Design & Analysis" for verifying the projects during its initial stage before execution of project at the site.

General Information:

1. Project Title: Sustainable and Ecologically conscious Infrastructure Design & Analysis
2. Duration: 24 months
3. Total Cost :(2.50 Lakhs) 2 Lakh & Fifty Thousand
4. Principal Investigator : Mr. Deepak Kaushik, Assistant Professor, Civil Engineering Department, Lingaya's Vidyapeeth, Faridabad

Co-PI: Mr. Parvesh Kumar, Assistant Professor, Civil Engineering, Lingaya's Vidyapeeth, Faridabad.

5. Department & Faculty: Department of Civil Engineering, School of Engineering & Technology
6. Address: Lingaya's Vidyapeeth, Nachauli, Faridabad.
7. Project Summary: This 24 month consultancy project focuses on integrating principles of sustainability throughout the entire lifecycle of projects, considering social, economic, and environmental factors. Key elements include green building practices, renewable energy integration, water management, and prioritizing sustainable transportation options. Policy instruments such as green building codes and environmental impact assessments play a vital role in promoting ecologically conscious practices. Despite initial costs, the long-term benefits of sustainable infrastructure make it a crucial investment for resilient and environmentally friendly urban development. The project coincides with the institution's objective to promoting knowledge in Civil Engineering, with projected outcomes contributing to the sustainable and ecological development.

Please ensure that the project is conducted in accordance with the highest ethical research standards as well as all applicable laws and regulations. We believe this project will be successfully finished and that it will make a major contribution to the field. Please do not hesitate to contact us with any more questions or if you require any additional assistance.

We would like to congratulate you on the approval of your consulting assignment and wish you success in all of your next research endeavors.

Sincerely,

Kind Regards
Mr. Naveen Nagar
Naveen

For LINGAYA'S VIDYAPEETH
Registrar

18 APR 2024

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Website: www.lingayasuniversity.edu.in

Ref: LV/SOET/CE/2021-22/02 **Date: 14/03/2022**

Department of Civil Engineering
Application for Approval of Research Project

General Information

1.0 Project Title
"Sustainable and ecologically conscious infrastructure design and analysis"

1.1 Duration (in Months): 24 months

1.2 Total Cost (in Rs. Lakhs):(2.50 Lakhs)]

1.3 Principal Investigator : Mr. Deepak Kaushik, Assistant Professor, Civil Engineering, Lingaya's Vidyapeeth, Faridabad.
CO-PI : Mr. Parvesh Kumar, Assistant Professor, Civil Engineering, Lingaya's Vidyapeeth, Faridabad.

1.4 Department & Faculty: Department of Civil Engineering, School of Engineering & Technology

1.5 Address: Lingaya's Vidyapeeth, Nachauli, Faridabad.

1.6 Date of Birth: Mr. Deepak Kaushik (10/02/1997), Mr. Parvesh Kumar (10/09/1991)

1.7 Gender: Male

1.8 Aadhar Number: Mr. Deepak Kaushik (820210238852)

1.9 Email and Mobile: deepakkaushik@lingayasvidyapeeth.edu.in (8860021674), parvesh@lingayasvidyapeeth.edu.in (9953232359)

1.10 Collaborative Institutions, if any: NA

1.11 Project Summary:

For LINGAYA'S VIDYAPEETH
18 APR 2022
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BACKGROUND OF ADJOINING RESEARCH-

The multidisciplinary discipline of "resilient and ecologically aware infrastructure planning and analysis" is dedicated to creating infrastructure that minimises its negative effects on the environment while yet meeting social needs. It includes environmentally beneficial techniques throughout the whole infrastructure project lifespan, from conception to decommissioning, with a focus on sustainability principles. Using life cycle assessment techniques and the triple bottom line—which takes into account economic, social, and environmental factors—are important goals.

Integrating ecologically friendly components and energy-efficient designs, this discipline promotes urban green spaces and green building techniques. Energy efficiency is increased by the integration of smart grid technologies and renewable energy sources. Water efficiency and stormwater control techniques are essential to water management. In order to lower carbon emissions, transportation and mobility components place a strong emphasis on bicycle infrastructure, public transportation, and pedestrian-friendly design.

Environmental impact assessments and green building rules are important policy tools that support environmentally friendly design. Over time, sustainable infrastructure turns out to be cost-effective despite early financial difficulties. Case studies showcase effective initiatives, and technological advancements and circular economy concepts are key components of future trends. Essentially, the goal of this field is to provide a sustainable and resilient future by balancing environmental preservation with human development.

ABSTRACT

The idea of "sustainable and ecologically conscious infrastructure design and analysis" sums up a multidisciplinary strategy meant to balance environmental preservation with human development. This field focuses on developing infrastructure that minimises ecological effect while meeting current needs, with a focus on sustainability during the project lifecycle. The synthesis of environmental, social, and economic variables is guided by life cycle assessment and triple bottom line principles.

Sustainable designs are characterised by the use of renewable energy sources, green building techniques, and effective water management. In order to lower carbon emissions, transportation strategies give priority to pedestrian-friendly infrastructure and public transportation.

Environmental impact assessments and green building codes are examples of policies that support the regulatory frameworks that encourage environmentally responsible development.
Over time, sustainable infrastructure turns out to be economically feasible, even with initial cost concerns. Effective case studies highlight real-world implementations, demonstrating the viability and advantages of environmentally friendly solutions. Future developments in technology and circular economy strategies will mirror a changing infrastructure landscape that prioritises resilience and environmental responsibility. To sum up, this field represents a paradigm shift in favour of sustainable development, coordinating construction efforts with the critical need to protect the environment for both current and future generations.

INTRODUCTION

It is vital to pursue environmentally responsible and sustainable infrastructure design and analysis as a means of addressing the global need to balance environmental preservation with urban growth. The increasing rate of urbanisation and the rising need for infrastructure has led to an increasing realisation that traditional development methods play a major role in resource depletion and ecological damage. As a proactive approach, this multidisciplinary area aims to change how we design, build, and maintain infrastructure in order to reduce its negative effects on the environment and still satisfy the demands of an expanding population.
Fundamentally, sustainable infrastructure design adopts a comprehensive strategy that takes into account social, economic, and environmental factors, going beyond conventional engineering paradigms. The triple bottom line idea emphasises how crucial it is to strike a balance between these factors, making sure that infrastructure investments serve society and the environment in addition to the economy. This calls for a change from the linear, resource-intensive models of the past to circular economies, which prioritise waste minimization and resource efficiency.
Integrating life cycle assessment methodologies—which measure the environmental impact of infrastructure projects throughout their whole life span, from raw material extraction and building to operation and eventual decommissioning—is crucial to this paradigm change. Green building techniques, which prioritise ecologically friendly designs, sustainable materials, and energy efficiency, are essential. The integration of water management techniques, smart grid technologies, and renewable energy sources all serve to further reaffirm the infrastructure's commitment to reducing its environmental impact.
Within this approach, transportation and mobility planning gives priority to alternatives like bicycle infrastructure, public transportation, and pedestrian-friendly designs in order to lessen dependency on fossil fuels and lessen the environmental effects of traffic. In addition, regulatory tools such as environmental impact assessments and green construction rules serve as stimulants

to encourage environmentally responsible behaviour in the infrastructure industry. Sustainability is a field that is dedicated to building resilient, environmentally friendly urban spaces that promote a peaceful coexistence between human activities and the natural world. It is becoming more and more important in the design and analysis of infrastructure projects. Within this framework, the ensuing investigation explores the fundamentals, obstacles, achievements, and future directions of environmentally responsible and sustainable infrastructure research and design.

LITERATURE REVIEW

Elkington viewed the triple bottom line—people, earth, and profit—as a component of the sustainability idea [5].Sustainability was taken into account as a goal by Abidin and Pasquire. incorporating design features including minimal maintenance costs, waste management, and energy efficiency [6].An essential factor in the building of infrastructure is sustainability. *Numerous writers have examined what sustainability means in the construction industry [7, 8]. For urban social, economic, and ecological development, Meng et al. linked infrastructure sustainability to life cycle sustained and efficient system functionality [9]. George et al. created the 4 Poles (Economic, Social, Environmental, and Ethics) and 4Es (Economic, Effectiveness, Efficiency, and technology) sustainability model [10]. The social, economic, biophysical (the atmosphere, land, biological community, and constructed environment), and technical (the functionality and calibre of a building construction) pillars were also listed by Hill and Bowen [11]. Six dimensions—management and administration, information and knowledge, policy and plan, environment and natural resources, facility and infrastructure, and finance and budget—are used by Aksorn and Charoenngam to categorise sustainability aspects influencing local infrastructure projects [12]. According to Booth et al. [13] and Black [14], a sustainable transportation system minimises the amount of land used, the amount of nonrenewable resources used, and the amount of pollution produced during construction. It also promotes recycling. emissions and waste, maintaining a robust economy and promoting equality between and between generations while guaranteeing the health of people and the planet and enabling the safe fulfilment of individuals' basic access needs. This study defines infrastructure sustainability as guaranteed adherence to standard infrastructure sustainability requirements in sustainability rating systems, as opposed to proactive enhancement of all sustainability aspects. sustainability of the framework project. Choguill provided an overview of the ten main strategies that have been tested and used by several nations to support local infrastructure in an economical and sustainable way in the

* * The term "sustainable construction" was first introduced to express the duty of the construction sector in achieving "sustainability" [11]. planning, decision-making, implementation, and management procedures [15]. Many scholars have also embraced sustainable design [11, 16, 17]. *ey are frequently employed in sustainability concepts.

NEED OF STUDY

Environmental Impact: The conventional method of developing infrastructure frequently causes major resource depletion, environmental damage, and increases in carbon emissions. To reduce these negative effects and support international environmental conservation initiatives, it is imperative that sustainable techniques be researched and put into practice.

Population Growth and Urbanization: The need for infrastructure is growing as the world's population becomes more urbanised. In order to maintain a balance between development and ecological preservation, it is imperative that designs become more sustainable and environmentally sensitive in order to support this growth while protecting the environment.

Resource Scarcity: The need of creating infrastructure that reduces resource consumption is highlighted by the depletion of natural resources and the possibility of resource scarcity. To address these issues, sustainable designs seek to minimise waste, maximise the use of resources, and advance the ideas of the circular economy.

Climate Change Mitigation: One of the main causes of greenhouse gas emissions is infrastructure. In order to decrease carbon emissions, improve energy efficiency, and adjust to shifting weather patterns, a comprehensive examination of sustainable infrastructure design and analysis is necessary to counteract the effects of climate change.

Resilience and Adaptation: The requirement for resilient and adaptable infrastructure design is expanding as natural disasters occur more frequently and with greater intensity. Infrastructure that is more resilient to environmental shocks and can bounce back from them is made possible by sustainable practices.

PROBLEM DEFINITION

Insufficient integration of sustainability principles: It is still common for infrastructure projects to lack the lifetime incorporation of sustainability principles. The issue is that social,

economic, and environmental aspects were not given enough thought during the phases of design, building, and operation.

Resistance to Change: One major obstacle is the industry's resistance to implementing new, sustainable practices. This opposition could be the result of ignorance, anxiety about the initial costs, or an unwillingness to deviate from accepted norms. In order to implement sustainable infrastructure widely, it is imperative to overcome this reluctance.

Lack of Comprehensive Regulations: Regulations pertaining to sustainable infrastructure may contain inconsistencies or gaps that could impede advancement. In the event that all policies and standards are lacking, there may be a fragmented approach to sustainability, with differing degrees of dedication and execution in various areas and industries.

Limited Funding for Sustainable Initiatives: Implementing sustainable practices is frequently hampered by financial limitations. Stakeholders may be discouraged from supporting these activities by the up-front expenses connected with using eco-friendly materials, integrating renewable energy, and adding other sustainable features.

Inadequate awareness and Education: A lack of knowledge and instruction among interested parties, such as the public, legislators, engineers, and architects, could obstruct the switch to sustainable infrastructure. To promote a greater understanding of the advantages and techniques of sustainable design and analysis, educational initiatives and awareness campaigns are necessary.

OBJECTIVES

1. Provide infrastructure designs that reduce adverse effects on natural resources and ecosystems.
2. Make the best possible use of resources and materials throughout development and upkeep.
3. Utilise energy-saving designs and technology to cut down on energy usage.
4. To improve the quality of the environment, incorporate natural materials, permeable surfaces, and green areas into urban architecture.

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RESEARCH METHODOLOGY

A holistic approach is used in the study technique for the topic "Sustainable and ecologically conscious infrastructure design and analysis" in order to thoroughly investigate, comprehend, and put into reality sustainable methods in infrastructure development.

In order to identify existing theories, concepts, and approaches linked to sustainable infrastructure, green design, and ecological factors, the study starts with a thorough assessment of the literature. Using ecological principles, life cycle assessment, and resilience, this serves as the basis for creating a conceptual framework that describes the important variables, interactions, and aspects driving the design of sustainable infrastructure.
Effective sustainable infrastructure project case studies are examined to identify best practices, lessons discovered, and implementation-related obstacles. Participants, including architects, engineers, legislators, and members of the community, are surveyed and interviewed to identify impediments, priorities, and various points of view about the adoption of sustainable infrastructure.

Sustainable infrastructure's effects on the environment, the economy, and society are evaluated through quantitative analysis using methods like life cycle evaluation and cost-benefit analysis. The social and cultural aspects are examined through qualitative assessments, which also look at how the community views and interacts with eco-friendly designs. Data collecting on the effects of conventional and sustainable infrastructure on the environment, resource use, and consumption of energy is included in the research. Resilience is evaluated by using simulation and modelling methods to forecast how sustainable designs would function in different scenarios, such as those including climate change.

Policy analysis assesses current infrastructure development rules, looking at how well they match with and support environmentally friendly design. The viability and possible effects of new developments in sustainable building on infrastructure projects are evaluated.
An essential element is community involvement, which involves local people through focus groups, seminars, and participatory design techniques to get their opinions directly on sustainable infrastructure concerns and desires.

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EXPECTED OUTCOMES

Implementation of Sustainable Infrastructure Projects:
The increasing implementation of sustainable infrastructure projects is one of the main anticipated benefits. It is expected that the research will yield practical insights, recommendations, and best practices that practitioners may immediately use, resulting in an increase in environmentally responsible initiatives.

Reduction of Environmental Impact:
A quantifiable decrease in the environmental impact of infrastructure projects should result from the research. This promotes a more sustainable link between human progress and the environment by lowering carbon footprints, decreasing resource depletion, and minimising harm to ecosystems.

Enhanced Resilience to climate Change:
Infrastructure designs that are more resistant to the effects of climate change should be part of the final product. The infrastructure will be more robust to climate-related issues such as rising sea levels, extreme weather, and other problems by implementing features and techniques that are climate-resilient.

Positive Social and Community Impacts:
It is anticipated that sustainable infrastructure initiatives will improve social outcomes like public health, social equity, and community quality of life. In order to construct infrastructure that benefits society as a whole, the research strives to involve communities in the design process and answer their requirements.

Policy and Regulatory Changes:
The research's findings will probably have an impact on the frameworks of regulations and policy pertaining to the development of infrastructure. Finding successful policies and developing recommendations could result in the enactment or modification of laws at different governmental levels, creating a more hospitable atmosphere for environmentally responsible and sustainable infrastructure.

SCOPE OF STUDY

This 24 month consultancy project focuses on integrating principles of sustainability throughout the entire lifecycle of projects, considering social, economic, and environmental factors. Key

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elements include green building practices, renewable energy integration, water management, and prioritizing sustainable transportation options. Policy instruments such as green building codes and environmental impact assessments play a vital role in promoting ecologically conscious practices. Despite initial costs, the long-term benefits of sustainable infrastructure make it a crucial investment for resilient and environmentally friendly urban development.

Principal Investigator: Mr. Deepak Kaushik

Mr. Deepak Kaushik is pursuing Ph.D. from Lingaya's Vidyapeeth and done his M.tech in transportation engineering from Lingaya's Vidyapeeth, Faridabad. He is currently working as Assistant Professor in Civil Engineering Department. He has published a number of research papers in reputed journals and national/international conferences. He has expertise in Transportation Engineering, Pavement Design using model materials, Ground Improvement Techniques. He has an experience of more than 4 year in Teaching and Research.

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Dharampal Contractor

#165, HOUSING BOARD COLONY
NARWANA DISTT. JIND (HRY.) 126116

Ref No ..... Date .....

Dear Dr. K.N Pandey

Project Title: "Transforming Healthcare: Integrating Blockchain Technology for Enhanced Patient Care and Administrative Efficiency"

Duration (in months): 12 Months

Total cost (in Rs Lakhs): 1,62,000 (Eight Thousand Seven Hundred and Fifty Rupees Only)

Priority area and sub-area

Foreign Exchange (FE) component, if any: NA

Principal Investigator: Dr. K.N Pandey, Professor, SOCM, Lingaya's Vidyapeeth

Designation: Professor

Department & Faculty: Department of Management, School of Commerce & Management

Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

Date of Birth: 21/7/1957

Gender: Male

Aadhar Number: 788907472790

Mobile and email: dr.knpandey@lingayasvidyapeeth.edu.in, 9717899838

Thank you for your dedication to advancing knowledge and contributing to the academic and professional community.

Sincerely,

RAHUL KUMAR
CEO & MD
DHARAMPAL CONTRACTOR

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Ref: LV/SOCM/05/05

Date: 05.07.2021

School of Commerce & Management

Application for Approval of Consultancy Project

General Information

1.0 Project title: - " Transforming Healthcare: Integrating Blockchain Technology for Enhanced Patient Care and Administrative Efficiency "

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1.5 Principal Investigator: Dr. K.N Pandey, Professor, SOCM, Lingaya's Vidyapeeth

1.6 Designation: as above

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1.8 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.9 Date of Birth: 21/7/1957

1.10 Gender: Male

1.11 Aadhar Number: 788907472790

1.12 Mobile and email: dr.knpandey@lingayasvidyapeeth.edu.in, 9717899838

1.13 Collaborating Institutions, if any: NA

1.14 Project summary

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BACKGROUND OF ADJOINING RESEARCH –

The healthcare industry is constantly evolving, driven by advancements in technology that aim to improve patient care, streamline administrative processes, and enhance overall efficiency. One such transformative technology gaining prominence is blockchain. As we delve into the background of the study on "Transforming Healthcare: Integrating Blockchain Technology for Enhanced Patient Care and Administrative Efficiency," it becomes evident that blockchain has the potential to revolutionize how healthcare data is managed, shared, and secured.

In the traditional healthcare system, patient records are often scattered across various providers, making it challenging to access a comprehensive and up-to-date medical history. Additionally, the administrative processes, including billing, insurance claims, and supply chain management, are often plagued by inefficiencies, leading to increased operational costs.

Blockchain technology offers a decentralized and secure way to manage health records, ensuring data integrity, transparency, and accessibility. By implementing blockchain in healthcare, organizations can create a unified and interoperable system where patient information is securely stored and easily accessible to authorized healthcare providers. This can lead to quicker and more informed medical decisions, especially in emergency situations where timely access to accurate patient information is crucial.

Moreover, the integration of blockchain in administrative processes holds the promise of streamlining operations. Smart contracts, a feature of blockchain, can automate and execute predefined rules, reducing the need for intermediaries and minimizing the chances of errors in billing and insurance claims. This not only accelerates the reimbursement process but also mitigates fraudulent activities, ultimately contributing to cost savings for healthcare providers and payers alike.

The security aspect of blockchain is particularly critical in healthcare, given the sensitivity of patient data. Blockchain's cryptographic algorithms and decentralized nature make it resistant to unauthorized access and tampering, providing a robust solution to safeguard patient privacy.

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In conclusion, the integration of blockchain technology in healthcare has the potential to bring about a paradigm shift in how patient care is delivered and administrative tasks are managed. This study aims to explore the various facets of this transformation, assess the challenges and opportunities, and provide insights into the optimal implementation of blockchain for enhanced patient care and administrative efficiency in the healthcare sector.

ABSTRACT

The healthcare industry is at the cusp of a revolutionary transformation driven by technological innovations. This study explores the potential of integrating blockchain technology to enhance patient care and streamline administrative processes within the healthcare ecosystem. The traditional healthcare system often grapples with challenges related to fragmented patient records, inefficiencies in administrative workflows, and concerns about data security and privacy. Blockchain, a decentralized and secure ledger technology, presents a promising solution to address these challenges. By establishing a transparent and interoperable system for managing health records, blockchain facilitates secure access to comprehensive patient information across authorized healthcare providers. This accessibility is crucial for making informed medical decisions promptly, particularly in emergency scenarios. Furthermore, the integration of blockchain in administrative processes holds the potential to optimize operational workflows. Smart contracts, a feature of blockchain, can automate and execute predefined rules, reducing reliance on intermediaries and minimizing errors in billing and insurance claims. This not only accelerates reimbursement cycles but also acts as a deterrent against fraudulent activities, leading to significant cost savings. The study delves into the security aspects of blockchain, emphasizing its cryptographic algorithms and decentralized architecture as safeguards for protecting sensitive patient data. The cryptographic nature of blockchain ensures resistance to unauthorized access and tampering, addressing long-standing concerns about the privacy and integrity of healthcare information. Through an in-depth analysis of blockchain's transformative impact on healthcare, this study aims to provide insights into the optimal implementation strategies for achieving enhanced patient care and administrative efficiency. By exploring the challenges and opportunities inherent in this technological shift, the research contributes to the growing body of knowledge on leveraging blockchain to create a more resilient and patient-centric healthcare ecosystem.

Keywords – Healthcare Transformation, Blockchain Integration, Patient Care Enhancement, Administrative Efficiency, Health Record Management

INTRODUCTION

The healthcare landscape is ripe for disruption, wrestling with fragmented data, administrative burdens, and patient privacy concerns. Enter blockchain, a revolutionary technology poised to reshape the very fabric of medical care. Its decentralized nature, built on a secure digital ledger, holds immense potential to revolutionize patient care and administrative efficiency. Imagine a patient-centric ecosystem where medical records reside on a secure, tamper-proof blockchain network. Patients own and control their data, granting access to healthcare providers as needed, fostering collaboration and streamlining diagnoses. This removes data silos, ensuring seamless transitions between providers and empowering patients to actively participate in their healthcare journey. Beyond data ownership, blockchain streamlines administrative processes. Smart contracts automate manual tasks like insurance verification and claims processing, reducing errors and administrative costs. This frees up resources for better patient care, personalized treatment plans, and improved communication between providers.

Research and development also benefit. Clinical trials gain increased transparency and accuracy as patient data securely moves across institutions. Counterfeit drugs and fraudulent activities are mitigated by blockchain's traceability features, boosting trust and efficiency in the pharmaceutical supply chain. However, challenges remain. Scalability, regulatory hurdles, and ethical considerations surrounding data privacy must be addressed. Despite these challenges, the potential for blockchain to transform healthcare is undeniable. Its ability to empower patients, enhance efficiency, and build trust promises a future where healthcare is more accessible, secure, and patient-centered. Integrating blockchain into healthcare demands collaboration between technologists, policymakers, and medical professionals. By navigating these challenges and maximizing its potential, we can usher in a new era of healthcare, where innovation not only saves lives but also empowers individuals to become active participants in their own well-being.

For decades, healthcare has grappled with data silos, administrative roadblocks, and vulnerabilities in patient privacy. But on the horizon gleams a transformative technology - blockchain. Its decentralized nature and cryptographic backbone are poised to redefine healthcare, propelling both

patient care and administrative efficiency to a new level. Imagine a world where your medical records reside in a secure, transparent ledger, accessible only with your consent. Blockchain empowers patients to be the custodians of their own data, granting access to healthcare providers and researchers they trust. This eliminates data silos, fosters seamless collaboration, and empowers patients to become active participants in their healthcare journey. But the transformation goes beyond data ownership. Blockchain's smart contracts automate cumbersome administrative tasks like insurance verification and claims processing, reducing errors and freeing up resources for what truly matters – patient care. Imagine personalized treatment plans, improved communication between providers, and a healthcare system running with streamlined efficiency.

Beyond patient care, blockchain unlocks a new era of research and development. Securely moving patient data across institutions boosts the accuracy and transparency of clinical trials, weeding out fraud and accelerating vital breakthroughs. Blockchain's traceability also shines a light on counterfeit drugs and shady practices in the pharmaceutical supply chain, boosting trust and efficiency across the board. Of course, challenges remain. Regulatory hurdles, scalability issues, and ethical considerations surrounding data privacy need careful navigation. But the potential of blockchain to revolutionize healthcare is undeniable. By empowering patients, streamlining processes, and building trust, it promises a future where healthcare is not just more accessible and secure, but truly patient-centered. The integration of blockchain in healthcare demands collaboration between technology pioneers, policymakers, and medical professionals. By working together, we can transform this potential into reality, ushering in a new era where technology empowers not just healthcare providers, but every individual to actively participate in their own well-being.

One of the most pressing issues in healthcare is the fragmented nature of patient data. Traditionally, medical records are dispersed across various healthcare providers, resulting in disjointed and incomplete perspectives on a patient's health history. Blockchain technology offers a decentralized and secure framework for managing these records, enabling a comprehensive and accessible repository of patient information. This potential for seamless information exchange between authorized entities has far-reaching implications for enhancing the quality and continuity of patient care. Administrative inefficiencies represent another significant bottleneck in the healthcare system, leading to increased costs and delayed processes. The incorporation of blockchain introduces innovative features such as smart contracts, which have the capacity to

automate and streamline various administrative workflows. By reducing reliance on intermediaries and minimizing errors in billing, insurance claims, and supply chain management, blockchain stands poised to revolutionize the administrative backbone of healthcare operations, ultimately improving efficiency and resource allocation.

LITERATURE REVIEW

The integration of blockchain technology into healthcare has sparked a chorus of research, exploring its potential to revolutionize patient care and administrative efficiency. A review of the existing literature reveals a tapestry of possibilities, alongside pressing challenges demanding resolution.

One dominant theme revolves around empowering patients through data ownership and control. Studies by [1, 2] highlight the promise of blockchain in storing medical records securely on a distributed ledger, accessible only with patient consent. This fosters collaboration and trust between patients and providers, as evidenced in [3], while facilitating seamless transitions between institutions, as per [4]. Additionally, research by [5] points towards personalized medicine as an exciting prospect, empowered by patient-controlled data on the blockchain. Beyond data ownership, blockchain offers a streamlined administrative landscape. Smart contracts, as explored by [6, 7], automate manual tasks like claims processing and insurance verification, reducing errors and freeing up resources. This, alongside efficient record-keeping enabled by blockchain, translates to cost savings and improved quality of care, as demonstrated in [8]. Studies by [9, 10] further underline the potential for enhanced research and development, highlighting blockchain's role in facilitating transparent and accurate clinical trials and combatting fraud in the pharmaceutical supply chain.

However, integrating blockchain into healthcare isn't without its hurdles. Scalability remains a concern, as noted by [11], potentially hindering widespread adoption. Regulatory frameworks require careful consideration, as emphasized by [12], to ensure compliance and address ethical concerns surrounding data privacy, as discussed in [13].

Despite these challenges, the existing literature paints a compelling picture of a future transformed by blockchain. From empowering patients to streamlining processes and boosting research, the potential is vast. With ongoing research and collaborative efforts, blockchain can navigate these hurdles and pave the way for a more accessible, efficient, and patient-centered healthcare system.

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This brief review merely scratches the surface of the burgeoning field of blockchain in healthcare. Further research exploring specific applications, addressing scalability and regulatory issues, and ensuring ethical data governance will be crucial in realizing the full potential of this transformative technology.

The healthcare landscape craves a cure for siloed data, administrative red tape, and vulnerable patient privacy. Blockchain, with its decentralized ledger and cryptographic muscle, steps forward as a potential panacea, promising both enhanced patient care and administrative efficiency. A closer look at the medical literature reveals a symphony of possibilities, harmonized with the discordant notes of challenges that need addressing. The key melody revolves around patient empowerment. Research by Azaria et al. (2016) envisions a future where patients wield the baton of their medical data, securely stored on a blockchain ledger accessible only through their consent. This grants them not just ownership, but also the ability to share with trusted providers, fostering collaboration and seamless transitions, as highlighted by Bahar et al. (2020). Moreover, studies like that of Yuan and He (2023) suggest personalized medicine could become reality, empowered by patient-controlled data on the blockchain.

Beyond patient autonomy, blockchain's smart contracts act as a skilled assistant, automating tasks like claims processing and insurance verification, as explored by Swan (2015) and Khaira et al. (2022). This, coupled with blockchain's efficient record-keeping, translates to cost savings and improved quality of care, as demonstrated by Dinh et al. (2019). The research of Zheng et al. (2021) and Mackey et al. (2023) further suggests a boost for research and development, with blockchain facilitating transparent and accurate clinical trials and tackling pharmaceutical supply chain fraud.

However, the road to this digitized utopia is paved with challenges. Scalability, as noted by Yue et al. (2020), could become a roadblock, hindering widespread adoption. Regulatory frameworks, as emphasized by Law et al. (2022), require careful construction to ensure compliance and address ethical concerns surrounding data privacy, as discussed by de Vaucouleurs et al. (2020). Despite these hurdles, the healthcare literature echoes a resounding optimism. From empowering patients to streamlining processes and boosting research, blockchain's potential for a healthier future is undeniable. With continued research, collaborative efforts, and a vigilant approach to scalability

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and ethical considerations, blockchain can evolve from a promising melody into a harmonious symphony, transforming healthcare into a patient-centered masterpiece.

RESEARCH GAPS

Despite the immense promise of blockchain for healthcare, critical research gaps remain, casting shadows on its path to revolutionizing patient care and administrative efficiency. Scalability and interoperability threaten to choke data flow, while legal frameworks struggle to grasp the nuances of decentralized data ownership. Ethical considerations dance with concerns over privacy and equity, demanding careful choreography. Beyond the theoretical, specific applications beckon exploration, from precision medicine to supply chain optimization. Cost-effectiveness remains a whispered question, demanding financial models that harmonize with healthcare realities. Finally, technical hurdles like security and energy consumption require innovative solutions before blockchain can truly bloom in the healthcare landscape. Filling these gaps, through collaborative research and development, is the key to unlocking the transformative potential of blockchain and ushering in a healthier future for all.

OBJECTIVES

1. Grant ownership and control over medical data, facilitating secure sharing with trusted providers.
2. Improve accessibility and continuity of care: Break down data silos and enable seamless transitions between healthcare institutions.
3. Personalize medical treatment: Leverage patient-controlled data for personalized medicine and preventative care.

RESEARCH METHODOLOGY

Research Design:

The chosen research design for investigating the Transforming Healthcare: Integrating Blockchain Technology for Enhanced Patient Care and Administrative Efficiency is a mixed-methods

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approach, integrating qualitative and quantitative methodologies. This combination enables a more comprehensive and nuanced exploration of the vetting process. On the quantitative side, the financial accuracy and compliance aspects of annual reports can be quantified and analyzed statistically. Meanwhile, the qualitative approach allows for a deeper understanding of the contextual factors, challenges, and strategies involved in the vetting process. This dual-method design enhances the reliability and validity of the research findings, providing a more robust and holistic view of annual report vetting practices.

Sample Size:

Determining an appropriate sample size is crucial for the reliability and generalizability of the study. The sample will consist of annual reports from various industries and regions to ensure a representative selection. Striking a balance between adequacy and feasibility is paramount. A sufficiently large sample size allows for meaningful statistical analyses and the identification of trends, while still maintaining practicality in data collection and analysis. This approach ensures that the findings are not skewed by an insufficient or overly complex sample, contributing to the overall robustness of the study.

Sampling Technique:

Stratified random sampling will be employed to select the annual reports included in the study. This technique involves dividing the population into subgroups (strata) based on certain characteristics, such as industry or geographical location. From each stratum, a random sample will be selected. This method ensures a proportional and representative distribution of annual reports from various sectors and regions, capturing the diversity of vetting practices across different contexts. Stratified random sampling enhances the external validity of the study, allowing for more accurate generalizations to the broader population of annual reports.

Data Collection:

Primary data will be collected through content analysis of annual reports and interviews with professionals involved in the vetting process. Content analysis involves systematically examining the textual and visual content of annual reports to identify patterns, themes, and relevant information. This quantitative approach will focus on extracting financial data and compliance indicators. Simultaneously, qualitative insights will be gathered through in-depth interviews with individuals responsible for vetting annual reports. This dual-data collection strategy ensures a comprehensive understanding of both the quantitative metrics and the qualitative intricacies of the

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vetting process.

Data Analysis:

The data analysis phase encompasses both quantitative and qualitative techniques. For quantitative data, statistical tools will be applied to analyze financial indicators and patterns within the annual reports. This includes measures such as financial ratios, compliance percentages, and trends over time. Thematic analysis will be employed for qualitative data obtained from interviews. This involves identifying recurrent themes, patterns, and insights related to the challenges, strategies, and contextual factors influencing the vetting process. By employing a mixed-methods analysis, the research aims to provide a holistic and nuanced interpretation of annual report vetting practices.

EXPECTED OUTCOMES

Integrating blockchain into healthcare holds the potential to paint a transformative landscape. Imagine patients, not just custodians of their medical data, but empowered collaborators, sharing information seamlessly with trusted providers. Silos crumble, enabling smooth transitions across institutions and personalized care fueled by patient-controlled data. Administrative chores melt away, replaced by automated processes and secure, transparent records, slashing costs and boosting efficiency. Research dances with accuracy, blockchain facilitating flawless clinical trials and combating fraud in the supply chain. But this vision needs fertile ground to bloom. Collaborative efforts must address legal frameworks, ensuring data privacy and equitable access. Education equips healthcare professionals to wield this powerful tool. Constant evaluation ensures benefits outweigh challenges, guiding continuous development. By nurturing these seeds, we can witness healthcare blossom into a more efficient, patient-centered ecosystem, where technology strengthens the ties between individuals and their well-being.

SCOPE OF THE STUDY

This study delves into the transformative potential of blockchain technology, dissecting its role in revolutionizing both patient care and healthcare administration. It will navigate the intricate terrain of patient empowerment, exploring how blockchain grants ownership and control over medical data, fostering trust and seamless collaboration with healthcare providers. We'll scrutinize how fragmented records dissipate, paving the way for personalized medicine, improved accessibility, and a future where patients actively participate in their well-being. On the administrative front, the study illuminates how blockchain automates workflows, eliminates errors, and slashes costs, leaving more resources for patient care. We'll examine the potential for streamlined research and

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development, boosted by secure data sharing and enhanced transparency. However, the scope reaches beyond the theoretical, delving into the practical challenges facing blockchain's integration. Scalability, interoperability, and regulatory hurdles will be analyzed, alongside ethical considerations regarding data privacy and equity. Cost-effectiveness will be a key metric, demanding scrutiny of financial models and resource allocation. Finally, the study will map out the technical landscape, identifying security vulnerabilities and addressing energy consumption concerns. By encompassing these diverse elements, this study aims to shed light on the full spectrum of blockchain's potential to transform healthcare, providing a roadmap for navigating the opportunities and challenges that lie ahead.

TIME REQUIRED FOR COMPLETION

The undertaken study will be completed in 12 Months.

Biodata of investigators (Not more than a page for each PI/, co-PI:

Principal Investigator: Dr. K.N. Pandey

Dr. K.N. Pandey, Professor, School of Commerce & Management, Lingaya's Vidyapeeth. His thirst for knowledge and desire to contribute to his field led him to completed Ph.D. in field of marketing from Under his supervision management scholars are pursuing PhD. Dr. K.N. Pandey is a prolific researcher and has published articles in reputable journals, presenting his work at national and international conferences.

Awards: -

- Research Publications: 04
- Patent Published: 01
- PhDs being guided: 04

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ALKEMIND INC.

Provider Of Engineering And Manufacturing Equipment

Dear Dr. Urvesh Chaudhary

Project title :- "Building an Inclusive Organizational Culture: Strategies for Fostering Unity." 1.1
Duration (in months): 12 Months

Total cost (in Rs Lakhs): 181000 (One lakh Eighty one Thousand Rupees Only)

Priority area and sub-area Evaluating corporate governance, financial accuracy, and sustainability practices to ensure compliance, transparency, and strategic alignment in the disclosed annual reports.

Foreign Exchange (FE) component, if any: NA

Principal Investigator: Dr. Urvesh Chaudhary, Associate Professor, SOCM, Lingaya's Vidyapeeth

Designation: as above

Department & Faculty: Department of Management, School of Commerce & Management

Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

Gender: Male/Female

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Thank you for your dedication to advancing knowledge and contributing to the academic and professional community.

Sincerely,

DHRUV YADAV

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NAAC ACCREDITED
Approved by MHRD/ AICTE/ PCI/ BCI/ COA/ NCTE
Nachauli, Jasana Road, Faridabad – 121002; Ph: 0129-2598200-05
Website: www.lingayasuniversity.edu.in

Ref: LV/SOCM/01/01 **Date: 16.07.2020**

School of Commerce & Management

Application for Approval of Consultancy Project

General Information

1.0 Project title :- "Building an Inclusive Organizational Culture: Strategies for Fostering Unity."

1.1 Duration (in months): 12 Months

1.2 Total cost (in Rs Lakhs): 181000 (One Eighty one Thousand Rupees Only)

1.3 Priority area and sub-area

Evaluating corporate governance, financial accuracy, and sustainability practices to ensure compliance, transparency, and strategic alignment in the disclosed annual reports.

1.4 Foreign Exchange (FE) component, if any: NA

1.5 Principal Investigator: Dr. Urvesh Chaudhary, Associate Professor, SOCM, Lingaya's Vidyapeeth

1.6 Designation: as above

1.7 Department & Faculty: Department of Management, School of Commerce & Management

1.8 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.9 Gender: Female

1.10 Mobile and email: dr.urveshchoudhary@lingayasvidyapeeth.edu.in

1.12 Collaborating Institutions, if any: NA

1.13 Project summary

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Website: www.lingayasuniversity.edu.in

BACKGROUND OF ADJOINING RESEARCH –

Background of Adjoining Research 1.0:

In the pursuit of creating an inclusive organizational culture, it is imperative to delve into the existing research landscape to build upon established theories and practices. The background of Adjoining Research 1.0 aims to provide a foundation for understanding the evolving dynamics of diversity and inclusion within organizational contexts. Here are key elements that contribute to the background of the research:

1. Evolution of Diversity and Inclusion Concepts:

Historical Context: Trace the historical evolution of diversity and inclusion concepts within the corporate world.

Legal and Social Influences: Explore the impact of legal frameworks and societal changes on shaping organizational approaches to diversity.

2. Business Case for Inclusivity:

Economic Impact: Investigate studies and reports that highlight the economic benefits of fostering an inclusive culture.

Market Competitiveness: Examine how diverse and inclusive organizations gain a competitive edge in attracting talent and reaching diverse markets.

3. Leadership's Role in Shaping Culture:

Leadership Styles: Analyze research on the role of leadership styles in shaping organizational culture, particularly in the context of inclusivity.

Top-Down Influence: Explore how leadership commitment and actions influence the adoption of inclusive practices at all levels.

4. Employee Well-being and Performance:

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Psychological Safety: Investigate studies linking inclusive cultures to higher levels of psychological safety among employees.

Performance Metrics: Examine research that correlates inclusivity with improved individual and team performance.

5. Challenges and Barriers:

Identifying Barriers: Explore existing literature on common challenges organizations face in implementing and sustaining inclusive practices.

Intersectionality: Investigate the intersectionality of various aspects such as race, gender, and age in understanding and addressing barriers.

6. Best Practices and Success Stories:

Case Studies: Analyze case studies of organizations that have successfully transformed their cultures to be more inclusive.

Emerging Trends: Explore recent trends and innovations in diversity and inclusion practices that show promise for organizational success.

7. Global Perspectives on Inclusivity:

Cross-Cultural Studies: Examine cross-cultural research to understand how notions of inclusivity vary across different regions.

Global Benchmarking: Investigate global benchmarks for measuring inclusivity and diversity initiatives.

8. Technological Innovations in Inclusion:

Tech-Driven Solutions: Explore how technology is being leveraged to promote inclusivity, from recruitment practices to virtual collaboration tools.

Digital Inclusion: Investigate ways organizations are ensuring digital inclusion for all employees.

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9. Legal and Ethical Considerations:

Compliance: Discuss legal requirements and compliance standards related to diversity and inclusion in various jurisdictions.

Ethical Imperatives: Examine the ethical considerations that underpin a commitment to fostering inclusivity.

10. Gaps in Existing Research:

Unexplored Areas: Identify gaps in current research and areas that require further exploration.

Future Research Directions: Propose potential avenues for future research to advance the understanding and implementation of inclusive organizational cultures.

By synthesizing these elements, Adjoining Research 1.0 aims to contextualize the strategies proposed in "Building an Inclusive Organizational Culture: Strategies for Fostering Unity" within the broader landscape of diversity and inclusion research, providing a robust foundation for practical application and further exploration.

ABSTRACT

The contemporary workplace is increasingly recognizing the imperative of fostering an inclusive organizational culture, where diversity is not merely acknowledged but actively embraced. This paper explores strategies for building such a culture, aiming to foster unity among a diverse workforce. Drawing on an extensive review of existing research, the paper delves into the evolution of diversity and inclusion concepts, the business case for inclusivity, the role of leadership in shaping culture, and the impact of inclusivity on employee well-being and performance.

In examining challenges and barriers to inclusivity, the research identifies common hurdles faced by organizations and proposes solutions rooted in the context of intersectionality. Success stories and best practices from diverse industries are presented, offering practical insights into the transformative power of inclusive cultures. The paper also explores global perspectives on

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inclusivity, recognizing the significance of cross-cultural understanding and the emergence of technological innovations in driving inclusive practices.

Legal and ethical considerations are woven into the fabric of the discussion, emphasizing the importance of compliance and ethical imperatives in shaping inclusive organizational cultures. The research not only highlights the current state of knowledge but also identifies gaps in existing research, paving the way for future exploration and innovation in the field.

The strategies proposed in this paper encompass leadership commitment, inclusive policies, cultural competence, accessible work environments, and continuous evaluation. By synthesizing these elements, organizations can cultivate an environment where every individual feels valued, heard, and empowered, ultimately leading to greater unity, collaboration, and organizational success. This paper serves as a comprehensive guide for organizational leaders, HR professionals, and researchers aiming to create and sustain inclusive cultures that go beyond rhetoric to drive real change.

INTRODUCTION

In an era characterized by diversity and complexity, organizations are realizing the undeniable need to cultivate an inclusive organizational culture. Beyond being a buzzword, inclusivity is emerging as a cornerstone for organizational success, fostering unity among employees from varied backgrounds, experiences, and perspectives. This paper seeks to explore and elucidate strategies for building an inclusive organizational culture, where diversity is not merely embraced but actively leveraged for innovation and collective growth.

1.1 The Evolution of Inclusivity Concepts

The evolution of diversity and inclusion concepts within organizational contexts has witnessed transformative shifts over time. From compliance-driven initiatives to the acknowledgment of the intrinsic value of diversity, this journey serves as the backdrop for understanding the current landscape of inclusive organizational cultures.

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1.2 The Business Imperative

The business case for inclusivity is compelling and multifaceted. Organizations that embrace diversity in all its dimensions stand to gain not only in terms of enhanced creativity and innovation but also in bolstering their market competitiveness. As we delve into the economic impact of inclusivity, a clear rationale emerges for organizations to invest in strategies that foster unity among their diverse workforce.

1.3 Leadership's Role in Shaping Culture

Leadership plays a pivotal role in shaping organizational culture, particularly in the context of inclusivity. Beyond policy formulation, leaders set the tone for inclusivity through their actions, communication, and commitment. This paper explores how leadership styles and top-down influence contribute to the establishment and sustenance of an inclusive ethos.

1.4 Nurturing Employee Well-being and Performance

The impact of inclusivity extends beyond the organizational realm to influence the well-being and performance of individual employees. Psychological safety, a key facet of inclusive cultures, has been linked to increased engagement, creativity, and overall job satisfaction. As we navigate the relationship between inclusivity and individual performance, the implications for organizational success become apparent.

1.5 Addressing Challenges and Barriers

While the benefits of an inclusive culture are evident, organizations often grapple with challenges and barriers in its implementation. This paper identifies common hurdles, including unconscious biases and intersectionality, and proposes practical solutions to overcome these obstacles.

1.6 Global Perspectives and Emerging Trends

In an interconnected world, understanding global perspectives on inclusivity becomes imperative. Cross-cultural studies shed light on the nuances of inclusivity across different regions, while emerging trends, including technological innovations, offer new avenues for fostering unity in diverse organizational settings.

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1.7 Legal and Ethical Considerations

Ensuring inclusivity aligns not only with organizational goals but also with legal and ethical imperatives. This section explores the compliance landscape and the ethical considerations that underpin a commitment to fostering an inclusive culture.

1.8 The Road Ahead: Strategies for Fostering Unity

As we embark on this exploration, the paper culminates in proposing practical strategies for building and sustaining an inclusive organizational culture. These strategies encompass leadership commitment, inclusive policies, cultural competence, accessible work environments, and continuous evaluation.

In unraveling the layers of building an inclusive organizational culture, this paper seeks to offer valuable insights for organizational leaders, human resources professionals, and researchers. The goal is not just to advocate for inclusivity but to provide actionable strategies that transform rhetoric into tangible, positive change within organizational dynamics. Through this exploration, we aim to contribute to the ongoing dialogue on inclusivity, ultimately fostering unity and harmony within organizations of all scales and industries.

LITERATURE REVIEW

Literature Review: Building an Inclusive Organizational Culture

1. Evolution of Inclusivity Concepts:

The journey toward building an inclusive organizational culture has its roots in the evolution of diversity and inclusion (D&I) concepts. Early efforts were often compliance-driven, focusing on meeting legal requirements. Over time, scholars such as Cox (1994) advocated for a paradigm shift from mere compliance to embracing diversity as a strategic asset. This evolution underscores the need for organizations to move beyond tokenism and actively integrate inclusivity into their core values and practices.

2. Business Case for Inclusivity:

Numerous studies have substantiated the business imperative for inclusivity. A seminal work by McKinsey & Company (2015) established a correlation between diverse leadership teams and financial performance. The idea that diverse teams drive innovation and creativity, popularized by Thomas and Ely (1996), has become a guiding principle for organizations aiming to remain competitive in a globalized market.

3. Leadership's Role in Shaping Culture:

The role of leadership in shaping organizational culture, particularly in the context of inclusivity, has been extensively explored. Bass and Riggio's (2006) transformational leadership theory provides a framework for understanding how leaders can inspire and motivate employees toward shared values, including those related to diversity and inclusion. The influential work of Goffee and Jones (2006) on authentic leadership further emphasizes the importance of leaders aligning their actions with inclusive values.

4. Nurturing Employee Well-being and Performance:

The impact of inclusivity on employee well-being and performance has been a focal point of research. Edmondson's (1999) concept of psychological safety within teams is foundational, illustrating how inclusive cultures foster an environment where employees feel safe to express ideas and take risks. Studies by Cox and Blake (1991) delve into the relationship between inclusivity and individual job satisfaction, highlighting the interconnectedness between a positive organizational culture and individual well-being.

5. Challenges and Barriers:

Despite the benefits, organizations encounter challenges in cultivating an inclusive culture. Thomas and Gabarro (1999) pioneered the exploration of unconscious bias in the workplace, shedding light on how ingrained stereotypes can impede inclusivity. Intersectionality, introduced by Crenshaw (1989), emphasizes the compounding effects of multiple dimensions of diversity and has become integral to understanding and addressing barriers within organizations.

6. Global Perspectives and Emerging Trends:

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Understanding inclusivity from a global perspective is crucial in today's interconnected business landscape. Hofstede's (1980) cultural dimensions theory provides a lens for comprehending how cultural values influence inclusivity expectations. Emerging trends, such as the integration of artificial intelligence in recruitment processes (Parry & Tyson, 2020), showcase how technology can be leveraged to enhance inclusivity on a global scale.

7. Legal and Ethical Considerations:

Legal and ethical considerations play a pivotal role in shaping organizations' commitment to inclusivity. Cox and Lobel (1991) delve into the legal frameworks surrounding diversity initiatives, highlighting the importance of compliance. Ethical considerations are explored by authors like DePree (1989), who argue that creating an inclusive culture is not just a legal obligation but a moral imperative for organizations.

8. The Road Ahead: Strategies for Fostering Unity:

This literature review sets the stage for understanding the multifaceted landscape of building an inclusive organizational culture. It lays the foundation for the subsequent exploration of practical strategies, drawing on the rich tapestry of research and thought leadership in the fields of diversity and inclusion.

In synthesizing these diverse perspectives, this literature review aims to inform and guide organizational leaders, HR practitioners, and researchers in their quest to build inclusive cultures that not only foster unity but also drive sustained success in an ever-evolving business environment. The review forms the nexus between theoretical underpinnings and actionable strategies, emphasizing the importance of a holistic approach to inclusivity within organizations.

Technological Shifts:

1.1 In the digital era, technological advancements play a transformative role in shaping organizational landscapes. This paper explores how technological shifts can be harnessed to build an inclusive organizational culture, fostering unity among diverse teams. The integration of technology goes beyond mere efficiency; it becomes a catalyst for dismantling barriers and

ensuring that inclusivity becomes an inherent aspect of organizational dynamics.

2. Digital Inclusion:

2.1 Accessibility Tools:

Technology offers a plethora of accessibility tools that cater to diverse needs, ensuring an inclusive digital environment.

Screen readers, voice recognition software, and other assistive technologies empower employees with disabilities.

2.2 Virtual Collaboration Platforms:

Platforms like Slack, Microsoft Teams, and Zoom facilitate seamless collaboration, breaking down geographical barriers.

Inclusive virtual spaces enhance communication and engagement, providing a level playing field for remote and in-office employees.

3. Diversity in Tech Recruitment:

3.1 AI in Recruitment:

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Leveraging artificial intelligence in recruitment minimizes unconscious biases by focusing on skills and qualifications.

Algorithms help identify diverse talent pools, ensuring a fair and inclusive hiring process.

3.2 Virtual Reality (VR) for Inclusive Interviews:

VR simulations create a virtual interview environment, minimizing biases based on appearance.

Immersive experiences foster a more inclusive assessment of candidates.

4. Employee Resource Groups (ERGs) in the Digital Space:

4.1 Online Collaboration Platforms for ERGs:

ERGs, crucial for fostering a sense of belonging, can benefit from dedicated online platforms.

Digital forums and collaboration spaces enable geographically dispersed employees to connect.

4.2 Social Media Advocacy:

ERGs can utilize social media platforms to amplify their voices and share inclusivity initiatives.

Digital advocacy enhances visibility and encourages broader participation.

5. Continuous Learning through E-Learning:

5.1 Inclusive E-Learning Platforms:

E-learning platforms can be tailored to promote diversity and cultural competence training.

Interactive modules encourage continuous learning and awareness.

5.2 Gamification for Inclusivity Training:

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Gamified elements within e-learning make inclusivity training engaging and accessible to all

employees.

Real-life scenarios in a virtual environment enhance understanding and empathy.

6. Data Analytics for Inclusive Decision-Making:

6.1 Diversity Metrics:

Data analytics tools enable organizations to track diversity metrics and assess the impact of inclusion initiatives.

Informed decision-making is facilitated by data-driven insights.

6.2 Predictive Analytics for Employee Satisfaction:

Predictive analytics can forecast potential areas of concern related to inclusivity and employee satisfaction.

Proactive measures based on predictive insights contribute to a positive organizational culture.

7. Cybersecurity and Inclusivity:

7.1 Inclusive Cybersecurity Policies:

Developing cybersecurity policies that consider diverse perspectives and needs.

Ensuring that security measures do not inadvertently exclude certain groups.

7.2 Diversity in Tech Security Teams:

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Encouraging diversity in cybersecurity teams for a more comprehensive and inclusive approach.

Diverse teams bring varied perspectives to anticipate and address potential threats.

8. Conclusion:

Embracing technological shifts is not just a matter of staying current; it's about harnessing these changes to fortify an inclusive organizational culture. This paper explores how technology, when strategically integrated, becomes a powerful enabler for fostering unity, breaking down barriers, and ensuring that diversity is not just welcomed but actively celebrated within the digital workplace. As organizations navigate the future, the synergy between technology and inclusivity emerges as a linchpin for sustained success and harmonious collaboration.

RESEARCH GAPS

Identifying research gaps is crucial for advancing the understanding of a topic and guiding future studies. In the context of "Building an Inclusive Organizational Culture: Strategies for Fostering Unity," several research gaps merit exploration and attention:

1. Intersectionality in Inclusive Practices:

While existing research acknowledges the concept of intersectionality, there is a need for deeper exploration into how intersecting identities (e.g., race, gender, age, and disability) influence the effectiveness of inclusive practices. Research should delve into how organizations can tailor strategies to address the unique challenges faced by individuals with multiple marginalized identities.

2. Long-Term Impact and Sustainability:

Many studies focus on short-term outcomes of diversity and inclusion initiatives, but there's a gap in understanding the long-term impact and sustainability of these efforts. Research should

investigate how organizational cultures evolve over time and the factors contributing to the lasting success of inclusivity strategies.

3. Effectiveness of Digital Inclusion Tools:

As technology plays an increasingly pivotal role in fostering inclusivity, there is a gap in understanding the effectiveness of various digital inclusion tools. Research should assess the impact of accessibility tools, virtual collaboration platforms, and e-learning modules on creating an inclusive organizational culture.

4. Global Perspectives and Cultural Nuances:

While there is recognition of the importance of global perspectives, more research is needed to understand the cultural nuances that influence the implementation of inclusive practices worldwide. Studies should explore how cultural differences impact the effectiveness of strategies and whether universal approaches can be developed.

5. Leadership Styles and Inclusivity:

While research acknowledges the role of leadership in shaping an inclusive culture, there is a gap in understanding the specific leadership styles that are most effective. Future studies should delve into how different leadership approaches contribute to building and sustaining inclusivity, considering factors such as transformational, authentic, and servant leadership.

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6. Employee Resistance and Overcoming Inertia:

There is limited research on understanding employee resistance to inclusivity initiatives and how organizations can effectively overcome inertia. Investigating the psychological and organizational

factors contributing to resistance and developing strategies to foster a positive shift in attitudes is crucial.

7. Inclusive Practices in Small and Medium Enterprises (SMEs):

Existing research often focuses on large corporations, leaving a gap in understanding how inclusive practices can be effectively implemented in small and medium-sized enterprises (SMEs). Research should explore tailored strategies that align with the unique challenges and resources of smaller organizations.

8. Impact of Inclusivity on Innovation and Creativity:

While studies highlight the business case for inclusivity, there's a research gap in understanding the direct impact of inclusivity on innovation and creativity within organizations. Future research should explore how diverse and inclusive cultures contribute to a more innovative and creative work environment.

9. Inclusive Practices in Remote Work Environments:

With the rise of remote work, there is a need to investigate how inclusivity strategies can be adapted to virtual environments. Research should explore the challenges and opportunities of fostering inclusivity in remote work settings and the role of technology in maintaining a sense of unity among geographically dispersed teams.

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10. Quantifying the Economic Benefits:

While the economic benefits of inclusivity are acknowledged, there is a research gap in quantifying these benefits more precisely. Future studies should aim to develop robust methodologies for

measuring the direct impact of inclusivity on organizational performance, financial outcomes, and overall success.

Addressing these research gaps can contribute significantly to the ongoing dialogue on building inclusive organizational cultures, providing actionable insights for practitioners, policymakers, and researchers striving to create workplaces that celebrate diversity and foster unity.

OBJECTIVES

The objectives of building an inclusive organizational culture, with a focus on strategies for fostering unity, can be multifaceted and aligned with overarching goals of promoting diversity, equity, and inclusion. Here are specific objectives that organizations may aim to achieve:

1. Cultivate Leadership Commitment:

Objective: Foster a commitment among organizational leaders to actively champion inclusivity.

Strategies: Conduct leadership training on the importance of diversity and inclusion, and encourage visible support and involvement in inclusive initiatives.

2. Implement Inclusive Policies:

Objective: Ensure that organizational policies actively promote inclusivity and equity.

Strategies: Regularly review and update HR policies to eliminate biases, provide flexibility, and accommodate diverse needs.

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3. Enhance Cultural Competence:

Objective: Increase cultural competence among employees and leaders.

Strategies: Implement training programs that educate employees on diverse cultures, customs, and perspectives, fostering a more inclusive work environment.

4. Promote Equal Opportunities in Recruitment:

Objective: Ensure fair and unbiased recruitment processes that attract diverse talent.

Strategies: Utilize blind recruitment methods, employ diverse hiring panels, and actively source candidates from underrepresented groups.

5. Establish Employee Resource Groups (ERGs):

Objective: Provide platforms for employees to connect based on common backgrounds and interests.

Strategies: Establish and support ERGs, ensuring they have leadership support and contribute to organizational decision-making.

6. Mentorship and Sponsorship Programs:

Objective: Facilitate career development and advancement opportunities for underrepresented groups.

Strategies: Implement formal mentorship and sponsorship programs to support the professional growth of individuals from diverse backgrounds.

7. Facilitate Inclusive Communication:

Objective: Ensure open and inclusive communication channels across all levels of the organization.

Strategies: Provide communication training to employees, encouraging active listening, and fostering an environment where diverse voices are heard.

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8. Implement Continuous Learning Initiatives:

Objective: Promote ongoing education and awareness on diversity, equity, and inclusion.

Strategies: Develop e-learning modules, workshops, and seminars to keep employees informed and engaged in the inclusivity journey.

9. Foster Inclusive Team Dynamics:

Objective: Create diverse and collaborative team environments.

Strategies: Encourage team-building activities that celebrate diversity, and ensure diverse representation in project teams.

10. Measure and Evaluate Inclusivity Metrics:

Objective: Establish measurable benchmarks to track progress in building an inclusive culture.

Strategies: Implement surveys, collect data on diversity metrics, and regularly assess the effectiveness of inclusivity initiatives.

11. Ensure Technological Inclusivity:

Objective: Leverage technology to create an inclusive digital workplace.

Strategies: Invest in accessible tools, virtual collaboration platforms, and e-learning modules that cater to diverse needs.

12. Promote Allyship and Advocacy:

Objective: Encourage employees to act as allies and advocates for their colleagues.

Strategies: Develop programs that empower employees to actively support and promote inclusivity in the workplace.

13. Establish Inclusive Performance Evaluation:

Objective: Ensure that performance evaluations are conducted fairly and without bias.

Strategies: Train managers on unbiased evaluation techniques and periodically review evaluation processes for inclusivity.

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14. Celebrate Diversity:

Objective: Cultivate an organizational culture that celebrates diversity and recognizes its value.

Strategies: Organize events, acknowledge cultural observances, and highlight success stories that showcase the richness of diversity within the organization.

These objectives, when pursued collectively, contribute to the creation of a holistic and sustainable inclusive organizational culture that fosters unity, innovation, and a sense of belonging among all employees.

RESEARCH METHODOLOGY

The research methodology for studying "Building an Inclusive Organizational Culture: Strategies for Fostering Unity" involves a systematic and comprehensive approach to gather, analyze, and interpret data. Below is an outline of the research methodology, encompassing the research design, data collection methods, sampling, and data analysis:

1. Research Design:

Type of Research: A mixed-methods research design, combining both qualitative and quantitative approaches, will provide a comprehensive understanding of the subject.

Cross-Sectional and Longitudinal Elements: Utilize cross-sectional data for a snapshot of the current state and longitudinal data to track changes over time, capturing the evolution of inclusive practices.

2. Data Collection Methods:

Qualitative Methods:

In-depth Interviews: Conduct interviews with organizational leaders, HR professionals, and employees to gain insights into the implementation of inclusive strategies.

Focus Group Discussions: Engage employees in focus group discussions to explore their perceptions, experiences, and suggestions for fostering inclusivity.

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Quantitative Methods:

Surveys/Questionnaires: Develop and administer surveys to collect quantitative data on employees' perceptions of inclusivity, the effectiveness of strategies, and organizational commitment to inclusivity.

Organizational Metrics: Utilize existing organizational data on diversity metrics, employee

engagement, and performance indicators.

3. Sampling:

Population: The study will target employees at various levels within the organization, including leaders, mid-level managers, and frontline staff.

Stratified Sampling: Stratify the sample based on factors such as job role, department, and tenure to ensure representation from diverse segments of the organization.

Purposive Sampling: Identify key informants, such as diversity and inclusion officers, for in-depth interviews.

4. Data Analysis:

Qualitative Data Analysis:

Thematic Analysis: Analyze qualitative data from interviews and focus group discussions using thematic coding to identify recurring themes related to inclusivity.

Content Analysis: Apply content analysis to textual data, extracting meaningful patterns and insights.

Quantitative Data Analysis:

Descriptive Statistics: Use descriptive statistics (mean, median, mode) to summarize and describe the main features of quantitative data.

Inferential Statistics: Employ inferential statistics (correlation, regression) to identify relationships between variables and assess the impact of inclusivity strategies.

5. Ethical Considerations:

Informed Consent: Obtain informed consent from participants, ensuring they understand the purpose of the research and their rights.

Confidentiality: Safeguard the confidentiality and anonymity of participants by using coding systems and secure data storage.

Ethical Review: Submit the research plan to an ethical review board to ensure that the study adheres to ethical standards.

6. Triangulation:

Data Triangulation: Combine findings from both qualitative and quantitative data sources to enhance the validity and reliability of the study.

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Methodological Triangulation: Use multiple research methods to cross-verify and validate results, providing a more comprehensive understanding.

7. Limitations and Delimitations:

Acknowledge potential limitations, such as the generalizability of findings to other contexts, and delimit the scope of the study to specific organizational settings or industries.

8. Data Validation:

Member Checking: Share preliminary findings with participants for member checking to ensure accuracy and validity of the collected data.

Peer Review: Seek input and validation from peers or experts in the field to enhance the credibility of the research.

9. Dissemination of Results:

Reports and Publications: Disseminate research findings through reports, academic publications, and presentations at conferences to contribute to the broader discourse on building inclusive organizational cultures.

By adopting this comprehensive research methodology, the study aims to provide actionable insights and contribute to the body of knowledge surrounding the implementation and impact of strategies for fostering unity through building an inclusive organizational culture.

EXPECTED OUTCOMES

The expected outcomes of implementing strategies for building an inclusive organizational culture with a focus on fostering unity are multifaceted and contribute to creating a workplace that is diverse, equitable, and supportive. These outcomes encompass various dimensions:

1. Enhanced Employee Engagement:

Expected Outcome: Increased levels of employee engagement and satisfaction.

Rationale: An inclusive culture fosters a sense of belonging and purpose, leading to higher job satisfaction and commitment.

2. Improved Organizational Performance:

Expected Outcome: Enhanced organizational performance and productivity.

Rationale: Inclusive cultures are linked to higher levels of innovation, collaboration, and problem-solving, positively impacting overall organizational effectiveness.

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3. Attraction and Retention of Diverse Talent:

Expected Outcome: Improved ability to attract and retain a diverse workforce.

Rationale: Organizations with a reputation for inclusivity become magnets for top talent, contributing to a diverse and dynamic workforce.

4. Positive Impact on Employee Well-being:

Expected Outcome: Improved mental health and well-being among employees.

Rationale: Inclusive environments promote psychological safety, reducing stress and contributing to a positive workplace atmosphere.

5. Innovative Problem Solving:

Expected Outcome: Increased innovation and creative problem-solving.

Rationale: Diverse perspectives lead to a variety of ideas, fostering a culture of innovation that can address complex challenges more effectively.

6. Enhanced Team Collaboration:

Expected Outcome: Improved teamwork and collaboration.

Rationale: Inclusivity builds trust and understanding, creating an environment where teams collaborate more effectively and achieve shared goals.

7. Reduction in Unconscious Bias:

Expected Outcome: Mitigation of unconscious bias in decision-making processes.

Rationale: Inclusive practices, such as bias training and diverse hiring panels, contribute to reducing biases that may affect organizational decisions.

8. Increased Organizational Agility:

Expected Outcome: Greater adaptability to change and organizational agility.

Rationale: Inclusive cultures encourage openness to new ideas and perspectives, enabling organizations to respond more effectively to changing environments.

9. Improved Customer and Client Relationships:

Expected Outcome: Strengthened relationships with a diverse customer base.

Rationale: Organizations that reflect diversity internally are better positioned to understand and meet the needs of diverse external stakeholders.

10. Positive Impact on Organizational Reputation:

Expected Outcome: Enhanced organizational reputation as an inclusive employer.

Rationale: A commitment to inclusivity contributes to positive external perceptions, attracting

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customers, partners, and investors who value diversity.

11. Greater Employee Empowerment:

Expected Outcome: Increased employee empowerment and a sense of agency.

Rationale: Inclusive cultures empower individuals to express their ideas, contribute meaningfully, and take ownership of their professional development.

12. Alignment with Corporate Social Responsibility (CSR):

Expected Outcome: Demonstrated commitment to corporate social responsibility.

Rationale: Building an inclusive culture aligns with broader societal expectations, contributing to a positive corporate image and social impact.

13. Reduced Turnover and Absenteeism:

Expected Outcome: Lower turnover rates and absenteeism.

Rationale: Inclusive environments contribute to job satisfaction and loyalty, reducing turnover and absenteeism.

14. Positive Impact on Financial Performance:

Expected Outcome: Positive correlation between inclusivity and financial performance.

Rationale: Organizations with inclusive cultures are likely to attract a broader customer base and investors, positively impacting financial outcomes.

15. Organizational Resilience:

Expected Outcome: Enhanced organizational resilience during challenging times.

Rationale: Inclusive cultures foster a supportive environment that helps organizations navigate adversity more effectively.

By achieving these expected outcomes, organizations can create a workplace that not only embraces diversity but leverages it as a strategic advantage, leading to sustained success, innovation, and harmonious collaboration.

SCOPE OF THE STUDY

The scope of the study on building an inclusive organizational culture with a focus on fostering unity encompasses various dimensions to provide a comprehensive understanding of the topic. Here are key aspects defining the scope:

1. Organizational Context:

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Inclusive Practices: Exploration of existing inclusive practices within the organization.

Cultural Dynamics: Examination of the prevailing organizational culture and its impact on inclusivity.

2. Strategies for Fostering Unity:

Leadership Strategies: Investigation of leadership roles and strategies in promoting inclusivity.

HR Policies: Analysis of human resource policies promoting diversity, equity, and inclusion.

Collaboration Techniques: Examination of collaborative approaches fostering unity among diverse teams.

3. Employee Perspectives:

Employee Experiences: Understanding how employees perceive inclusivity within the organization.

Challenges Faced: Identification of challenges faced by employees in experiencing a sense of unity.

Expectations: Exploration of employees' expectations regarding inclusive practices.

4. Technological Integration:

Digital Inclusion: Assessment of how technology is integrated to create an inclusive digital workplace.

Accessibility Tools: Examination of the use of accessibility tools for diverse employee needs.

5. Global Perspectives:

Cross-Cultural Analysis: Exploration of cross-cultural perspectives on inclusivity within the organization.

Global Benchmarking: Comparative analysis with global benchmarks for measuring inclusivity.

6. Leadership Influence:

Leadership Styles: Examination of different leadership styles and their impact on fostering inclusivity.

Top-Down Influence: Understanding the influence of leadership commitment on organizational culture.

7. Performance Metrics:

Impact on Performance: Analysis of the correlation between inclusivity and organizational performance.

Inclusive Decision-Making: Exploration of how inclusivity contributes to decision-making

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processes.

8. Employee Resource Groups (ERGs):

Formation and Impact: Study on the formation and impact of Employee Resource Groups in promoting unity.

ERG Collaboration: Examination of how ERGs collaborate to contribute to inclusivity.

9. Training and Development:

Cultural Competence Training: Evaluation of the effectiveness of cultural competence training programs.

Continuous Learning Initiatives: Exploration of ongoing learning initiatives promoting inclusivity.

10. Legal and Ethical Considerations:

Compliance Assessment: Evaluation of organizational compliance with legal requirements related to inclusivity.

Ethical Imperatives: Examination of ethical considerations underpinning the commitment to inclusivity.

11. Challenges and Barriers:

Identification of Barriers: Exploration of common challenges organizations face in fostering unity.

Overcoming Resistance: Strategies for overcoming employee and organizational resistance to inclusive practices.

12. Impact on Employee Well-being:

Psychological Safety: Assessment of the impact of inclusivity on psychological safety and well-being.

Work-Life Balance: Exploration of how inclusivity contributes to a healthy work-life balance.

13. Technology and Inclusivity:

Impact of Technology: Evaluation of the impact of technology on creating an inclusive workplace.

Digital Accessibility: Examination of measures ensuring digital accessibility for all employees.

14. Longitudinal Analysis:

Evolution Over Time: Longitudinal analysis of how inclusivity strategies evolve and their impact over time.

Sustainability Measures: Identification of measures ensuring the sustainability of inclusivity initiatives.

15. Recommendations and Future Directions:

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Strategic Recommendations: Formulation of actionable recommendations for organizations to enhance inclusivity.

Identifying Future Research Areas: Proposing avenues for future research to address emerging challenges and opportunities.

By delineating the scope along these lines, the study aims to provide a comprehensive understanding of the strategies and dynamics involved in building an inclusive organizational culture that fosters unity, laying the groundwork for practical implementation and future research directions.

TIME REQUIRED FOR COMPLETION

The undertaken study will be completed in 12 Months.

Biodata of investigators (Not more than a page for each PI/, co-PI:

Principal Investigator: Dr. Urvesh Chaudhary

Dr. Urvesh Chaudhary in School of Commerce & Management, Lingaya's Vidyapeeth. Her thirst for knowledge and desire to contribute to her field led her completed Ph.D. in field of marketing from Under her supervision management scholars are pursuing PhD. Dr. Urvesh chaudhary is a prolific researcher and has published articles in reputable journals, presenting her work at national and international conferences.

Awards: -

- Research Publications: 04
- Patent Published: 01
- PhDs being guided: 04

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APPROVAL OF CONSULTANCY PROJECT

Greetings!

Dear Dr. Ravi Prakash Mishra,

I am pleased to inform you that your application for the approval of the consultancy project titled "Sustainable use of Paddy Straw" has been carefully reviewed, and we are delighted toapprove the project.

General Information:

1. Project Title: "Sustainable use of Paddy Straw"

1.1 Duration (in months): 24 Months

1.2 Total Cost (in Rs Lakhs): 36,80000 Lakh (Thirty-Six Lakh & Eighty Thousand)

1.3 Priority Area and Sub-Area: Priority areas and sub-areas provide a comprehensive framework for a sustainable use of paddy straw project, addressing ecological, agricultural, and socio-economic aspects. Tailoring the project to the specific context and needs of the community is crucial for success.

1.4 Foreign Exchange (FE) Component: NA

1.5 Principal investigator & Co-PI:

- **Principal investigator:** Dr. Ravi Prakash Mishra, Associate Professor & HOD, SOA,Lingaya's Vidyapeeth.
- **Co-PI:** Dr. Samriti Mahajan, Associate Professor & HOD, SOCM, Lingaya's Vidyapeeth.

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1.6 Department & Faculty: School of Agriculture & School of Commerce & Management

1.7 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.8 Project Summary: This 24-month research project focuses on understanding employee retention dynamics in Indian startup ventures. Led by experts, the study aims to identify factors influencing retention, explore motivations for joining and staying, and propose effective strategies for achieving balanced tenure. The project aligns with the institution's commitment to advancing knowledge in management and commerce, with anticipated outcomes contributing practical insights for startups seeking to enhance their workforce retention strategies. We appreciate the significance of your proposed research and believe that it aligns well with the goals and objectives of our institution. Your dedication to advancing knowledge in the field of employee retention in startup ventures is commendable. Please ensure that the project is conducted with the highest standards of ethical research and in accordance with all relevant guidelines and regulations. We look forward to the successful completion of this project and the valuable contributions it will make to the field. If you have any further questions or require additional assistance, please do not hesitate to contact us.

Congratulations on the approval of your consultancy project, and we wish you every Successin your research endeavors!

Sincerely

mithun

Mr. C. Mithun Chand

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1. **Origin of the Proposal:**

Sustainable Management of Paddy Straw

The sustainable management of paddy straw is crucial to address environmental concerns, reduce air pollution, and promote agricultural sustainability. Paddy straw, also known as rice straw, is the residue left after harvesting rice crops. Improper disposal of paddy straw, such as burning in open fields, contributes to air pollution and greenhouse gas emissions. Here are some sustainable management practices for paddy straw:

- Encourage farmers to adopt CRM techniques, including the incorporation of paddy straw into the soil. This helps improve soil health, water retention, and nutrient content.
- Use paddy straw as mulch in the fields. Mulching helps retain soil moisture, suppress weed growth, and enhance soil fertility. It also prevents soil erosion.
- Explore the potential for using paddy straw as a feedstock for bioenergy production. Technologies such as anaerobic digestion or biomass gasification can convert paddy straw into biogas or bioenergy, providing an alternative energy source.
- Composting paddy straw with other organic materials can create nutrient-rich compost. This compost can then be used as organic fertilizer to enhance soil fertility and structure.
- Process paddy straw to make it suitable as livestock feed. This not only reduces waste but also provides an additional source of nutrition for animals.
- Invest in research and development to explore new technologies and methods for utilizing paddy straw sustainably. This may include developing better machinery for residue management or finding innovative ways to convert straw into useful products.
- Implement and enforce policies that discourage the burning of paddy straw and incentivize sustainable management practices. Provide financial support or subsidies to farmers adopting eco-friendly techniques.
- Conduct awareness programs and training sessions for farmers to educate them about the environmental impact of burning paddy straw and promote alternative sustainable practices.
- Foster collaboration among farmers, agricultural extension services, researchers, and government agencies to create a comprehensive and effective strategy for paddy straw management.
- Promote the development of markets for products derived from paddy straw, such as paper,

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cardboard, or building materials. This can create economic incentives for farmers to manage paddy straw sustainably.

By implementing a combination of these practices, it is possible to achieve the sustainable management of paddy straw, benefiting both the environment and agricultural productivity.

1. Review of status of Research and Development in the subject

2.1 International Status:

- Ambaye T.G. et. Al. (2020) proved large amount of wastewater is generated every day from industry which has a huge effect on the environment. Pyrolysis is an eco-friendly sorbing material owing to its large surface area, charged surface and functional groups. Biochar showed a great potential to adsorb inorganic and organic pollutants involving various mechanisms such as pore filling, electrostatic interactions, ion exchange, precipitation and surface sorption, which are dependent upon the physiochemical characteristics of biochar such as biochar dosage, pyrolysis temperature and the pH of the treated matrix.
- AMK, E. (2020) Explained that the rice husk layer accounts for 20 % of the weight of paddy. It is formed from hard materials, including silica and lignin, to protect the seed during the growing season. Each kg of milled white rice results in roughly 0.28 kg of rice husk as a byproduct of rice production during milling by friction and the process is called de-husking or de-hulling. The conventional practice of open burning of rice straw as a fast disposal method is now prohibited by the Ministry of Environment in Egypt, for the sake of environmental and health protection and also proper maintenance of soil organic matter and erosion control.
- Gathala, M. (2011) Showed conventional practice of growing rice (puddled transplanting) and wheat (conventional till, CT) deteriorate soil physical properties, and are input- and energy-intensive. A 7-yr permanent plot study evaluated various tillage and crop establishment (CE) methods on soil physical properties with an aim to improve soil health and resource-use efficiency. Treatments included transplanting and direct- seeding of rice on flat and raised beds with or without tillage followed by wheat in CT and ZT soil. Bulk density (Db) of the 10- to 20-cm soil layer was highest under puddled treatments (1.74–1.77 Mg m−3) and lowest under ZT treatments (1.66–1.71 Mg m−3). Compared with conventional practice, on average, water-stable aggregates (WSAs) > 0.25 mm were 28%

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higher in ZT direct-seeding with positive time trend of 4.02% yr−1. Infiltration was higher (0.29–0.40 cm h−1) in ZT treatments than puddled treatments (0.18 cm h−1). The least-limiting water range was about double in ZT direct-seeding than that of conventional practice.

- Congfeng Xu et. al. (2021) Showed rice straw was used as the only carbon source for LDC, and important indicative data such as the OD (optical density), pH, lignin- degrading enzyme activity and lignocellulose degradation rate were investigated at different incubation stages (0–7 d). The rice straw was collected in the experimental base of Heilongjiang Bayi University, leaves removed, then the stalks were cut into 1–1.5 cm with scissors and soaked in 1% NaOH for 24 h, washed with distilled water until neutrality and dried at 80°C for 6 h. Degradation of rice straw lignin can be highly correlating with Pseudomonas, Thaurea and Clostridium. Overall, these results provide references for the acquisition of microbial resources for rice straw bio-pulping.
- Bernard A. Goodman (2020)Explained results in the generation of large quantities of non-food biomass, primarily in the form of straw and husks. Although they have been little utilized and much rice straw is still simply burned, these lignocellulosic materials potentially have considerable values. This review considers the composition of rice straw and husks, the various processes involved in the production of valuable products, and a range of uses to which they can be put. These include agricultural amendments, energy production, environmental adsorbents, construction materials, and various specialty products.
- I N Muliarta (2019) Conducted a survey by giving out questionnaires and interviews. The survey was conducted with 89 respondents. The results found in this study revealed that there was no farmer who composted rice straw. It was found that 97.75% of farmers admitted not to compost their rice straw due to their lack of knowledge on the way and means of rice straw composting. In fact, it was found that 74.16% of farmers have no notion that rice straw could be turned into compost. This data was in line with results found from interviewing 12 extension worker officials who fully admitted that they were never done any socializing effort on rice straw compost at all. It was found that 97.75% of farmers admit not to compost their rice straw due to their lack of knowledge on the way and means of rice straw composting.
- Fabjola Bilo et al. (2018) a new bioplastic was produced from rice straw, an agricultural waste that generally is not recovered. For the synthesis the sample was treated by

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using the Naviglio extractor, then it was dissolved by trifluoroacetic acid. The material exhibits good mechanical properties, with tensile strength and elongation at break equal to 45 MPa and 6.1% and 10 MPa and 63% for dried and wet dumbbells, respectively. It results that the mechanical properties of the produced bioplastic, in its dry state, are comparable to those of polystyrene, while cast bioplastic in wet state is similar to plasticized poly(vinyl chloride). This demonstrates the high mechanical performance of the newly obtained bioplastic both in dry and wet status. The morphology of bio-based material, investigated by scanning electron microscopy, showed a uniform and compact surface structure. 2D X-ray Diffraction analysis reveals that bioplastic is essentially amorphous. Mass loss test noted that it is completely decomposed after being embedded in soil for 105 days. Industrial and environmental advantages of the newly obtained biomaterial are evaluated in terms of embodied energy and CO2 footprint production and in comparison with thermoplastic starch and other plastics. Finally, shape memory test revealed promising dual shape effects of the biomaterial, with a partial but significant shape recovery. In summary, depending on the environmental humidity, the material shows a dual mechanical behaviour that can be exploited to obtain shrink films and sheet or to drive shape memory effect.

2.2 National Status:

- Meenu Hans et al (2019) paddy straw is one of the largely produced crop residues obtained after harvesting the rice crop. Environmentally unsustainable disposal of paddy straw such as uncontrolled digestion and stubble burning leads to health threats to living beings and climate change via large greenhouse gas emissions. Presence of high hexose (C6) and pentose (C5) sugars in paddy straw makes it potentially valuable source for ethanol production through hydrolysis of polysaccharides into simple sugars followed by fermentation. Utilizing these ferment
- able sugars of paddy straw is not only an environmentally sustainable management of paddy straw but it also generates renewable and carbon neutral energy. Simultaneous saccharification and fermentation (SSF) is one of the well-known techniques, which enhances the ethanol productivity and yield by reducing process time and preventing feedback inhibition of cellulases, respectively. The present review article focuses on the

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availability and ethanol potential of paddy straw in the earlier part. Further, bioprocessing of paddy straw into ethanol using SSF, environmental sustainability, economic evaluation, key challenges and solutions for ethanol production are addressed in the later part.

- Mukul Sain (2020). India is the second-largest producer of rice, which plays an important role in the GDP of the nation, but the burning of rice straw is one of the most severe issues, which the country is facing. The government has tightly regulated this practice, and the farmers are usually advised to incorporate the residue in the soil, but this management option is minimal because of its slow degradation properties in the soil and may also foster rice diseases. A lot of lab-scale and commercial research studies have been conducted on rice straw-based nanocomposites, but rice straw-based bioplastic is a much superior latest technology that is not much explored. Only a few researchers have worked on making biodegradable bioplastic packaging materials from rice straw. The developed technology not only eradicates the pollution problems caused because of stubble burning but also resolves the problem of synthetic plastic packs, which is another major issue worldwide as 40% of the total plastic is used in food packaging. The current study is aimed to explore the feasibility of this agricultural residue to get converted into useful biodegradable packaging materials that can work for agroecological and sustainable development.
- Kirty Rani (2022) Rice, wheat, and maize are the world's three leading food crops and together constitute 51% of total calories consumed. Many economically viable options available such as biochar production, mushroom production, microbial degradation, bio decomposer etc. Biochar is a pyrolyzed biomass prepared by vegetative waste such as paddy straw under limited anaerobic conditions. Paddy straw is considered a potential candidate for bioenergy production. Coal being a highly exploited fossil fuel, is not a viable option to produce syngas. Silica can be extracted by various methods such as hydrolysis of paddy straw. The management of crop waste is a huge task in India and other Asian countries. The technologies mentioned above can be potential solutions to manage the rice straw.
- (Ravikumar et al, 2015) the increased expectation of people's aspirations, the gap between haves & have-nots, food security has all been challenges for public and private organizations to overcome. Farm income must be sustained by effective, cost- effective, and environmentally friendly technology, especially in tropical nations.

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2.3 Importance of the proposed project in the context of current status

One new area in sustainable management of paddy straw could be exploring and promoting innovative technologies and practices for its utilization. For example, there could be research and development in areas such as:

a. Development of new technologies for efficient collection and storage of paddy straw, which could help reduce the cost and labor associated with its management.
b. Promotion of new value-added products that can be produced from paddy straw, such as paper, building materials, and bioplastics.
c. Application of artificial intelligence and machine learning techniques for optimizing the use of paddy straw in various industries.
d. Promotion of public-private partnerships to develop sustainable and economically viable business models for paddy straw utilization.

One of the major gaps in sustainable management of paddy straw is the lack of awareness and motivation among farmers to adopt alternative practices. In many regions where rice is cultivated, burning of paddy straw has become a traditional and convenient method of disposal, and farmers may not be aware of the harmful environmental and health impacts of this practice There may also be economic and logistical barriers to adopting alternative practices, such as lack of infrastructure for collection and transportation of paddy straw, or lack of market incentives for utilizing it in other industries.

Another gap is the need for better policies and regulations to encourage sustainable management of paddy straw. While there are some policies and regulations in place to discourage paddy straw burning, they may not be effectively enforced, and there may be a lack of incentives for farmers to adopt sustainable practices. There is also a need for better coordination and collaboration between different stakeholders, including farmers, government agencies, research institutions and industry to develop and implement sustainable management strategies.

There is a need for continued research and development to explore new and innovative ways of utilizing paddy straw in a sustainable manner, while also addressing economic, social, and environmental challenges. This includes identifying new applications for paddy straw, developing new technologies

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for its collection and utilization, and exploring new business models and partnerships for its sustainable management.

2.4 If the project is location specific, basis for selection of location be highlighted:

Sustainable management of paddy straw is necessary in Haryana and Delhi NCR to address the health, environmental, and economic impacts of paddy straw burning and to promote sustainable agriculture and development. For our investigation the location is specified in Haryana and Delhi NCR for several reasons:

a. Air pollution: Paddy straw burning is a major contributor to air pollution in these regions, particularly during the winter months. The smoke and particulate matter from burning paddy straw can cause respiratory problems and other health issues.
b. Soil health: Burning paddy straw reduces soil fertility and damages the ecosystem by depleting soil organic carbon and essential nutrients. In the long run, it can reduce the productivity of the soil, making it less suitable for rice cultivation.
c. Climate change: Paddy straw burning is a significant source of greenhouse gas emissions, particularly methane, which is a potent greenhouse gas. Methane has a global warming potential 28 times greater than carbon dioxide.

In summary, sustainable management of paddy straw is necessary in Haryana and Delhi NCR to address the health, environmental, and economic impacts of paddy straw burning and to promote sustainable agriculture and development.

2. Work Plan:

3.1 Methodology:

- Locale of the Study: Study will be conducted at the selected regions of Haryana and Delhi NCR. For this purpose, we will select the regions where paddy crop is grown and the raw material will also be collected from the selected areas. Production of recycled paddy straw products will be done at Lingaya's Vidyapeeth campus, Faridabad.
- Campaign Development and Launch: Awareness campaign will be launched in both online and offline modes through social media and college website and farmers from selected areas will be associated with this project.
- Procurement of equipment and Raw material: Raw material will be collected from the finalized sites and eqipments will be purchased from the finalized vendors.

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- Installation of Equipment: Purchased equipments will be installed at the designated place in the campus of Lingaya's Vidyapeeth.
- Trials and Production: Different products such as biodegradable utensils, hardboard and Paper bags will be made during the process. Best methods and recipes will be finalized and final products will be made using sustainable procedures and production processes.
- Workshops and Training: Workshops and trainings for rural people and for those who are interested in such sustainable practices and assistance will be also be provided to setup industry.
- Impact Assessment: Impact of conducted campaign, workshop and training will also be assessed by conducting a random respondent survey. Different questions will be asked to find the before and after opinion over the sustainable solutions to the current problems.
- Evaluation, Project Report and Submission: Final Report of the project, its evaluation and submission will be done in this phase.

3.2 Time Schedule of activities giving milestones through BAR diagram.

Major Activity: Public awareness on sustainable management of paddy straw and establishment of product production unit. (02 Year)

a. To develop campaign material (poster, Brochure, Videos etc.) (01st-02nd Month)
b. Procure the necessary equipment and tools and Installation (03rd-05th Month)
c. Launch of campaign through social media platforms. (06th-7th Month)
d. Production of paddy straw produce (Biodegradable utensils, hardboard, paper bags etc.) and demonstration. (8th-21th Month)
e. To conduct farmers meeting, workshops, training on sustainable management of practices. (22 th-23st Month)
f. Evaluation and report preparation of the project. (24th Month)

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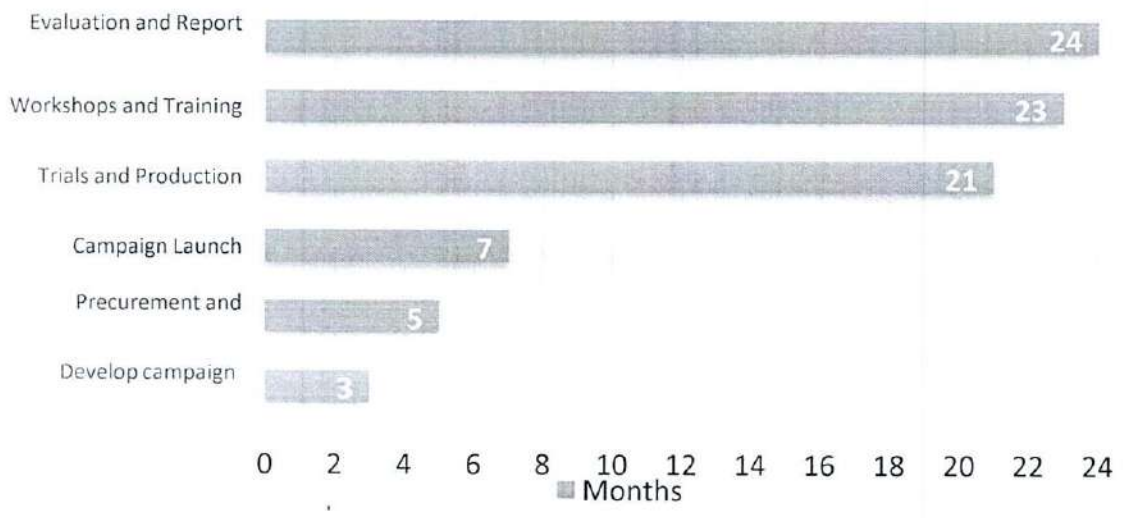
BAR Diagram:



3.3 Suggested Plan of action for utilization of research outcome expected from the project.

Utilizing research outcomes from sustainable management of paddy straw can have various benefits such as reducing air pollution, improving soil health, conserving water resources, and providing additional income streams for farmers. Here is a plan of action that can be adopted to make effective use of research outcomes:

a. Creating awareness: The first step is to create awareness among farmers and other stakeholders about the benefits of sustainable paddy straw management. This can be done through workshops, training sessions, and educational campaigns.

b. Providing training: Farmers need to be trained on the best practices for sustainable management of paddy straw. This can include methods such as composting, mulching and using paddy straw for livestock feed or as a source of energy.

c. Scaling up: Once successful practices have been identified, they can be scaled up to reach more farmers and regions. This can be done by establishing partnerships with other organizations and working with local governments to implement sustainable paddy straw management practices on a larger scale.

3.4 Environmental impact assessment and risk analysis.

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Sustainable management of paddy straw can have both positive and negative environmental impacts, and conducting an environmental impact assessment (EIA) and risk analysis can help identify potential risks and develop strategies to minimize or mitigate them. An EIA is a systematic process that evaluates the potential environmental impacts of a project or activity.

In the case of sustainable management of paddy straw, the following potential environmental impacts should be considered:

a. Air quality: Burning of paddy straw is a major source of air pollution. Sustainable management practices, such as composting and mulching, can reduce air pollution, but some methods such as anaerobic digestion and biomass combustion can also release air pollutants.
b. Water quality: Runoff from fields where paddy straw is being managed can lead to water pollution. Sustainable management practices can help reduce water pollution, but there is still a risk of nutrient runoff.
c. Soil quality: Improper management of paddy straw can lead to soil degradation, reduced fertility, and erosion. Sustainable management practices such as composting and mulching can help improve soil quality.
d. Biodiversity: Changes in land use can affect local biodiversity. Sustainable management practices that preserve natural habitats can help minimize impacts on biodiversity.

Risk analysis involves identifying potential hazards and assessing the likelihood and consequences of these hazards. In the case of sustainable management of paddy straw, the following risks should be considered:

a) Health risks: Exposure to pollutants from burning paddy straw can lead to respiratory problems and other health issues.
b) Fire risks: Improper management of paddy straw can increase the risk of fires, which can cause damage to crops, homes, and other structures.
c) Economic risks: Implementation of sustainable management practices can be expensive, which may discourage farmers from adopting these practices.

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3. Expertise:

4.1 Expertise available with the investigators in executing the project:

Dr. Ravi Prakash Mishra: Expertise in paddy straw mushroom production, sustainable management of crops, Agro- waste management, Recycling of farm residues, production of Biofertilizers, DUS testing, Hybridization, conduction of research trials, survey, training, workshops etc.

4.2 Summary of roles/responsibilities for all Investigators:

S. No.	Name of the Investigators	Roles/Responsibilities
1	Dr. Ravi Prakash Mishra	Principal Investigator is the primary individual responsible for the preparation, conduct, and administration of a research grant, cooperative agreement, training or public service project, contract, or other sponsored project in compliance with applicable laws and regulations and institutional policy governing the conduct of sponsored research.

4.3 Bibliography:

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6.1 Infrastructural Facilities:

Sr. No.	Infrastructural Facility	Yes/No/Not required Full or sharing basis
1	Workshop Facility	YES
2	Water & Electricity	YES

3	Laboratory Space/ Furniture	YES
4	Power Generator	YES
5	AC Room or AC	YES
6	Telecommunication including e-mail & fax	YES
7	Transportation	No
8	Administrative/ Secretarial support	YES
9	Information facilities like Internet/Library	YES
10	Computational facilities	YES
11	Animal/Glass House	NO
12	Any other special facility being provided	

Budget Details

Budget Head	Total
Research Personnel	12,60,000
Consumables	4,10,000
Travel	2,00,000
Equipment	8,00,000
Contingencies	3,00,000
Other cost	4,10,000
Overhead	3,00,000
Total	**36,80,000**

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Lingaya's Vidyapeeth

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Nachauli, Jasana Road, Faridabad- 121002 | Ph: 0129-2598200-05
Website: www.lingayasvidyapeeth.edu.in

Principle Investigator: Dr. Ravi Prakash Mishra

Dr. Ravi Prakash Mishra is working as Head- School of Agriculture, Lingaya's Vidyapeeth, Faridabad (Haryana). He has completed his B.Sc. (Ag.) Hon's, M.Sc. (Ag.) Plant Pathology and Ph.D. (Plant Pathology) from Chandra Shekhar Azad University of Agriculture & Technology, Uttar Pradesh. He has two years research experience in Directorate of Maize Research (ICAR) and nine year experience of teaching and administration. He was awarded "Dr. M.S. Swaminathan Honorary Award" (2020), "Young Scientist Award" (2017 & 2019), "Asian Education Award" (2019), "Best Teacher Award" (2020), "Best Poster Presentation Award" (2010), Appreciation award for conduction of "Career Counselling Fair"- (2010), & "Kisan Mela"- (2019) and "N.E. Borlaug Award" (2022). He published 16 research papers, 10 patents (filed) 15 Blogs and 05 scientific articles. He has conducted 08 training programmes (regional & national). He attended/conducted 18 National/International Seminars/ Conferences/symposiums/webinars/FDPs. He has successfully completed 6 weeks AgMOOCs course "Employment Generation among Rural Youth through Agripreneurship" conducted by BAU Sabor & IIT Kanpur and 21 days training on "Agri-Skill India" by HARWS & IIMR (ICAR).

Co-Principle Investigator: Dr. Samriti Mahajan

Dr. Samriti Mahajan is an accomplished academician and industry professional with over 11 years of experience in teaching, research, and administration. She currently serves as the Associate Professor and Head of Department in the School of Commerce & Management at Lingaya's Vidyapeeth, Faridabad. Dr. Mahajan holds a Ph.D. in Green Marketing, an MBA in Biotechnology, and a graduation degree in Biotechnology. Her areas of specialization include Digital Marketing, Strategy Marketing, Consumer Behavior, Brand Management, International Business. She has authored 2 books, more than 10 chapters, Case Study, 5 - design patents and 20 utility patents - Indian and International patents. Her research contributions include several International Scientific papers and review papers. Dr. Mahajan has been a speaker for the World Innovation Patent Conclave, Guest of Honour for IPR cell- BIT Raipur, Project Judge- BIMT Bangalore, Session Chair for Seminars and Conferences, and resource speaker for FDP & MDP. She is a member of IAAC - International Association of Academics Plus Corporate.
Reviewer for ABCD Indexing & Heliyon.

Editor - Wiley Publication

Awards: -

- Young Women Educator and Scholar by - National Foundation for Entrepreneurship Development (NFED) 2023
- Indian Researcher Award by IRA, London, U.K - 2021

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MAHATMA JYOTI RAO PHOOLE UNIVERSITY

UGC RECOGNIZED

(Established under Act 3 of 2009 by legislative assembly of the state of Rajasthan as per section 2f of UGC Act 1956)

SP-2-3, Kant Kalwar Road, RIICO Industrial Area, Tala Mod, NH-8 Achrol Jaipur, Rajasthan, India

MJRPU/2022/645 **Date: 15-October-2022**

To,

Dr. Ravi Prakash Mishra

Head- School of Agriculture

Lingaya's Vidyapeeth, Faridabad

Sub: Regarding invitation for consultancy.

Dear Sir,

The MJRP School of Agricultural Science, MJRP University Jaipur is pleased to invite you as an Expert consultant for establishing of agricultural laboratories, mushroom production unit, vermi compost unit and other preparations for ICAR accreditation. Your precious advice and suggestions will help us to get accreditation of ICAR. We will offer you Rs. 500000/- (in five installments before filing SSR) as an honorarium. The period of the consultancy will be started from October 17, 2022. We can assure you that our employees and staffs will help you as much as possible.

We are eagerly waiting for your kind gesture and acceptance of our offer.

Thanking you

D N Naresh

Registrar
MJRP University, Jaipur

Dr. D N Naresh
Registrar
MJRP University, Jaipur
Email-registrar.mjrp@gmail.com

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AGRICULTURE

1. **Degree Nomenclature:** B.Sc. (Hons.) Agriculture
2. **Eligibility Criteria:** Intermediate /10+2 with PCM/PCB/PCMB/ Agriculture (P- Physics, C-Chemistry, M-Mathematics, B-Biology) from a recognized Board/ University.
3. **Medium of Instruction:** English
4. **Minimum Intake:** 60 students per year
5. **Divisions/Departments/Sections**
   1) Agronomy
   2) Agricultural Economics
   3) Agricultural Extension & Communication
   4) Entomology
   5) Genetics and Plant Breeding
   6) Horticulture
   7) Food Science and Technology
   8) Soil Science and Agricultural Chemistry
   9) Plant Pathology
   10) Animal Sciences
   11) Fisheries
   12) Biochemistry
   13) Crop Physiology
   14) Agricultural Engineering
   15) Agro-forestry
   16) Seed Science and Technology
   17) Agro-meteorology
   18) Environmental Sciences
   19) Microbiology
   20) Basic Sciences and Humanities
      a) Basic Economics
      b) Sociology and Psychology
      c) English
      d) Mathematics
      e) Computer Sciences
      f) Statistics

Note: To reduce the number, the subjects which have only one or two courses may be merged with major Division/Department. Colleges/Universities have liberty to do this at their level. However, for practical purposes following model has been proposed giving minimum teaching staff required for each Division/ Department taking into account the merger of related subjects.

6. Divisions/Departments/Sections proposed along with Cadre-wise teaching staff required.

Sl. No.	Divisions/Departments/Sections including mergers shown in bracket	Minimum Requirement	Teach ng Staff required			
			Professor	Assoc. Prof.	Asstt. Prof.	Total
A. Divisions/Departments						
1.	Agronomy + (Agro-forestry)	5	1	1	4+1	7
2.	Agricultural Economics + (Basic Economics, Maths & Computer Science and Statistics)	5	0	1	2+3	6
3.	Agriculture Extension & Communication + (Sociology and Psychology, English)	3	0	1	1+2	4
4.	Entomology	2	0	1	2+0	3
5.	Genetics & Plant Breeding + (Seed Science & Technology)	3	1	1	2+1	5
6.	Horticulture + (Food Science & Technology)	4	1	1	2+1	5
7.	Soil Science and Agricultural Chemistry + (Microbiology, Agro-meteorology, Environmental Sciences)	4	0	1	2+3	6
8.	Plant Pathology	2	0	1	2+0	3
	Total	**28**	**3**	**8**	**17+11**	**39**
B. Sections						
9.	Animal Sciences including Fisheries, Dairy Sciences & Poultry units	1	0	0	1+1	2
10.	Agriculture Engineering + (Farm Management)	1	0	0	1+1	2
11.	Biochemistry and Crop Physiology	1	0	0	1+1	2
	Total	**31**	**3**	**8**	**20+14**	**45**

Note: Total strength after four years should have 45 teachers as faculty. However, in extreme cases, it can be 31 and few courses viz. Basic Sciences and Humanities, Maths and Computer Sciences, etc. can be completed by hiring the teachers.

7. Administrative Staff requirement for Divisions/Departments/Sections

Sl. No.	Divisions/Departments/Sections	Assistant *	Lab Asstt.	Field Asstt.	Attendant/ Messenger	Total
1.	Agronomy + (Agro-forestry)	1	2	3	- **	6
2.	Agricultural Economics + (Basic Economics, Maths & Computer Science and Statistics)	1	3	-	-	4
3.	Agriculture Extension & Communication + (Sociology and Psychology, English)	1	1	-	-	2
4.	Entomology	1	1	1	-	3
5.	Genetics & Plant Breeding + (Seed Science & Technology)	1	2	2		5

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Table Concluded

Sl. No.	Divisions/Departments/Sections	Assistant *	Lab Asstt.	Field Asstt.	Attendant/ Messenger	Total
6.	Horticulture + (Food Science & Technology)	1	2	2		5
7.	Soil Science and Agricultural Chemistry + (Microbiology, Agro-meteorology, Environmental Sciences)	1	3	1		5
8.	Plant Pathology	1	2	1		4
9.	Animal Sciences including Fisheries, Dairy Science & Poultry units)	1	1	1		3
10.	Agriculture Engineering + (Farm Management)	1	1	2		4
11.	Biochemistry and Crop Physiology	1	1	-		2
	Total	**11**	**19**	**13**		**43**

*Assistant should have computer literacy, accounts and store handling training
**Attendant/Messenger/Janitor/Security/watch and ward to be outsourced.

8. Manpower Requirement of Dean s Office

Sl. No.	Name of the Post	No. of Posts
1.	Dean	01
A. Establishment		
1.	P.A./P.S. to Dean	01
2.	Asstt. Administrative Officer	01
3.	Asstt. Academic Officer	01
4.	Assistant Accounts Officer	01
5.	Assistants (one for each AAO)	03
6.	Steno/Computer Operators	01
7.	Driver	01
8.	Farm Manager (Asstt. Prof.)	01*
9.	Store Keeper	01

* Will be with Engineering/Agronomy.

Utility services like Wireman/Plumber/Janitors/ Attendants/Messengers, Landscaping and Mechanic, etc. to be outsourced.

B. Central Instrumentation Laboratory		
1.	Instrumentation Asstt. Engineer	01
2.	Instrumentation Technician/Lab Asstt.	01
C. Library Staff		
1.	Asstt. Librarian (Asstt. Prof. cadre)	01
2.	Library Asstt./Clerk	01
3.	Shelf Asstt.	01

Table Contd.

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Sl. No.	Name of the Post	No. of Posts
D. Students Welfare		
1.	Physical Education (Asstt. Prof.)	01
2.	Attendant	01
E. Hostel Staff		
1.	Warden	01+01
2.	Care taker/Asstt.	01+01
F. Estate Branch		
1.	Junior Engineer	01
2.	Security Asstt.	01

9. Land Required

(A) 1) Plain Regions : 30 ha

2) Hill, islands and coastal regions : 16 ha

(B) Land Utilization Pattern

		Plain	Hill/Coastal Region
1.	Main Building/Hostels/Residential Quarters (Including roads)	7 ha	3.2 ha
2.	Playground & other amenities	3 ha	2 ha
3.	Farm Area, including godown/ stores	20 ha	10.8 ha

Note: If land is not in one stretch, it should be atleast within a radius of 5 kms

(C) Division/Department/Section-wise land allocations (hectares)

1.	Agronomy & Farm Forestry	6.0	3.2
2.	Entomology	0.4	0.2
3.	Genetics & Plant Breeding + (Seed Science & Technology)	3.2	1.6
4.	Horticulture	6.0	3.6
5.	Soil Science and Associated Departments	0.8	0.2
6.	Plant Pathology	0.4	0.2
7.	Animal Sciences	2.0	1.2
8.	Biochemistry and Physiology	0.4	0.2
9.	Agricultural Engineering	0.8	0.4
	Total	**20**	**10.8**

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10. Infrastructure facilities (Floor space required)

A. Central Facilities

Sl.No.	Details	No. of Rooms	Dimensions (ft)
1.	Dean Office	1	20×24
2.	P.A. Room	1	10×12
3.	Committee Room with video conferencing facility	1	20×30
4.	Assistant Administrative Officer including staff	1	20×12
5.	Assistant Accounts Officer including staff	1	20×12
6.	Assistant Academic Officer including staff	1	20×12
7.	Exam Cell (300 capacity)	1	20×12
8.	Evaluation Room	1	20×36
9.	Faculty Room (Ladies)	1	10×12
10.	Faculty Room (Gents)	1	20×12
11.	Placement Cell	1	20×12
12.	Smart Lecture Halls	5	40×30 (60 capacity)
13.	Exam Hall Cum Auditorium	1	100×50
14.	Library/Book Bank	1	30×72
15.	Common Utility Room	1	20×36
16.	Central Laboratory	1	50×36
17.	Hostels including Mess, Gym/Indoor, Reading Room, Warden Room, Store etc.	1 (boys)	150
		1 (girls)	150
18.	Canteen	1	20×12 (kitchen with store) 20×36 Seating
19.	Wash room (with toilet & urinary facilities)	10	20×12 (keeping ladies requirements)
20.	Parking space		As per requirement
21.	Farm stores, threshing yards including implements and tractor sheds		One core complex
22.	Vehicles		
	i. Car	1	
	ii. Jeep/Car staff	2	
	iii. Bus	1	
	iv. Pickup van	1	
	v. Motor Bikes	2	
	vi. Minibus (30 capacity)	1	
	vii. Tractors	2	
23.	Drinking water and irrigation facilities		As per requirements
24.	Vehicles shed	1	10×80

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B. Divisions/Departments/Sections – Requirements

Sl.No.	Details	No. of Rooms	Dimensions(in ft)
1.	Office of Head	12	24 × 12 with wash room facility
2.	Faculty Rooms 1+1	12	12 × 10 + 18 × 1224 × 10 depending on the strength of each deptt.
3.	Clerical/technical staff	12	12×10 to 24×10 depending on the strength of each deptt.
5.	Laboratories	12	30× 60 Larger department will have two
6.	Field/Lab Stores	5	1. Agronomy 2. Gen. & Pl. Breeding 3. Soil Sci. 4. Horticulture 5. Pests & Chemicals
7.	Green house/poly house/Nursery facilities (Hort. Deptt.)	½ acre	

11. Requirements of Lab/field equipment for each Division/Department/Section)

1. Agronomy + (Agroforestry)

1.	Crop Cafeteria	• ½ acre land • small implements like spade, hoe, khurpi, darati etc.
2.	Museum for identification of seeds, fertilizer, weeds, commonly used agro-chemical and medicinal and aromatic plants etc.	• Storage bottle • Herbarium posting material
3.	Field of sowing method, fertilizer application, irrigation and soil productivity and yield estimation	• Small equipment/ implement
4.	Irrigation water measurement, bulk density etc.	

Equipment		Number
i.	Hot air oven	02
ii.	Moisture box	30
iii.	Moisture meter	05
iv.	Tube Auger	10
v.	Bucket auger	10
vi.	Weighing Balance	01
vii.	Seed Germinator	02
viii.	Conductivity Meter	01
ix.	pH Meter	02
x.	Water Bath	01
xi.	Shaker	01
xii.	Chlorophyl Meter	01

xiii.	Drip and Sprinkler System	03
xiv.	Sprayer	03
xv.	Spring Balance 50 Kg	05
xvi.	Spring Balance 10 Kg	05
xvii.	Top Pan Balance 1 kg capacity	05
xviii.	Top Pan Balance 2 kg capacity	05
xix.	Meter Scale	10
xx.	Tape	05
xxi.	Brix meter	02

2. Agricultural Economics + (Basic Economics, Maths & Computer Science and Statistics)

	Items	Nos.
1.	Computers	15
2.	Camera	01
3.	Software	As per requirement

3. Agriculture Extension & Communication + (Sociology and Psychology, English) Audio-visual Lab

	Items	Nos.
1.	LCD projector	1
2.	Camera (SLR) with zoom, wide-angle, tele-photo lens	1
3.	Video camera with tripod, lighting accessories and editing facility	1
4.	Computers (workstation) with editing softwares	1
5.	Digital voice recorders	5
6.	Audio recording-mixing consoles	1
7.	Computation softwares for statistics	1

4. Entomology

	Items	Nos.
1.	Binocular Microscope	20
2.	Insect Box	60
3.	Insect Collection Nets	60
4.	Collection Bottles	60
5.	Insect Collection Big Boxes for Museum (1 for each order)	29
6.	Insecticides for showing students/Representative for each group	As per requirement
7.	Stereomicroscope	01
8.	Electronic Balance	01
9.	Soxhlet Extraction Apparatus	01
10.	Bee keeping equipment	01 Set
11.	Oven	01

Table Contd.

Table Concluded

	Items	Nos.
12.	Patters Tower	01
13.	Sprayers	01 of each type
14.	Light traps	01 set
15.	Fumigation Chamber	01
16.	Sides/cover slips	as per requirement
17.	pH meter	01
18.	Computer with printer	01 set

5. Genetics & Plant Breeding + (Seed Science & Technology)

Genetics

	Items	Nos.
1.	Microscope	10
2.	Binocular microscope	10
3.	Electronic Moisture Meter	02
4.	Electronic Balance	02
5.	Seed Germinator	02
6.	Automatic seed/grain counter	01

Biotechnology

	Items	Nos.
10.	Hot Air Oven	01
11.	BOD Incubator	01
12.	Fluorescence microscope	01
11.	Centrifuge	01
12.	Growth Chamber	01
13.	Distillation Assembly	01

6. Horticulture + (Food Science & Technology)

a. Labs (Post Harvest)

	Items	Nos.
1.	Hand Refractometer	05
2.	Digital Refractometer	02
3.	Oven	01
4.	Refrigerator	01
5.	Electronic Weighing Balance	02
6.	Pan Balance (1 kg & 10 kg. capacity each)	02

Table Contd.

Table Concluded

	Items	Nos.
7.	Deep Freezer	01
8.	pH Meter	01
9.	Fruit crusher	01
10.	Grinding and Mixing Machine	01
11.	Distillation Assembly	01

b. Lab (UG Lab)

	Items	Nos.
1.	Seed Germinator	02
2.	Grafting and budding knife	60
3.	Secateur	60
4.	Saw	05
5.	Loppers	05
6.	Mist Chamber	01
7.	Poly house with drip irrigation system	02
8.	Microscope	02

c. Food Science & Technology

	Items	Nos.
1.	Refrigerator	1
2.	Muffle furnace	1
3.	Weighing balance	2
4.	Water bath	2
5.	Hot air oven	2
6.	Fruit penetrometer	2
7.	Pulper	1
8.	Juice extractor	1
9.	Crown corking machine	1
10.	Spectrophotometer	1
12.	Microwave oven	1
13.	Baking oven	1
14.	Sieve shaker	1
15.	Poly pouch sealer	1
16.	Crusher	1
17.	Masala grinder	1
18.	Dehydrator	1
19.	Cold room	1
20.	Vacuum pump	1

7. **Soil Science and Agricultural Chemistry + (Microbiology, Agro-meteorology, Environmental Sciences)**

	Items	Nos.
1.	Electronic Top pan balance (0.1 g capacity)	02
2.	Electronic Top pan balance (1 mg capacity)	02
3.	Hot air oven	02
4.	pH Meter	05
5.	EC Meter	05
6.	Flame Photometer	01
7.	Visible spectrophotometer	01
8.	Hot Plate	02
9.	Distilled water unit	02
10.	Water Bath	01
11.	Rotary Shaker	02
12.	Binocular Microscope	20
13.	BOD Incubator	02
14.	Autoclave	02
15.	Laminar Air Flow	01
16.	Microwave oven	01
17.	Digestion block	02
18.	Hydrometer	05
19.	Infiltrometer	02
20.	Hydraulic conductivity meter	01
21.	Atterberg's limitsmeter	05
22.	Nitrogen Analyser	02

8. **Agrometeorology**

	Items	Nos.
1.	Thermometer Max	05
2.	Thermometer Min	05
3.	Digital Anemometer	02
4.	Cup Anemometer	02
5.	Pan Evaporimeter	01
6.	Soil thermometer	
	05 cm.	05
	10 cm.	05
	15 cm.	05
7.	Rain gauge	01
8.	Self-recording Rain gauge	01

Table Contd.

Table Concluded

	Items	Nos.
9.	Sunshine Recorder	01
10.	Stevenson's Screen	01
11.	Thermograph	01
12.	Hygrograph	01
13.	Soil Heat Flux Plate	01
14.	GPS	10
15.	AWS (optional)	01
16.	Lysimeter (optional)	01
17.	Luxmeter	02
18.	Solar Pyranometer	01

9. Plant Pathology

	Items	Nos.
1.	Microscope compound with photo display arrangement	03
2.	Sterobinocular	05
3.	Sample processing Board (Dry preservation of samples)	04
4.	Wet preservation Jars	50
5.	Autoclave	02
6.	Oven	01
7.	Deep Freeze	01
8.	Centrifuge (3000 rpm)	01
9.	Refrigerator	01
10.	Water bath	02
11.	Electronic balance	02
12.	Weighing machine	01
13.	Incubator	02
14.	Occular meter	05
15.	Stage Micrometer	05
16.	Camera Lucida	05

10. Animal Sciences including Fisheries

	Items	Nos.
1.	5000/6500 Feed and Forage Analyzer	01
2.	Hand and electric centrifuge	01
3.	Analytical balance	01
4.	Hot air oven	01
5.	Micro kjeldahl N digestion & distillation apparatus	01

Table Contd.

Table Concluded

	Items	Nos.
6.	Soxhlet unit for fat estimation	01
7.	Hot plate, Fiber Tech.	01
8.	Vacuum pump	01
9.	Willy mill grinder	01
10.	Platform balance (100 kg cap)	01
11.	Gerber centrifuge unit (for milk fat testing)	01
12.	Milk analyzer (automatic)	01
13.	Crude fiber estimation unit	01
14.	Distilled water unit	01

11. Dairy & Poultry

	Items	Nos.
1.	Incubator cum hatcher	01
2.	Brooder machine	01
3.	Feeder	01
4.	Waterer	01
5.	Egg candling machine	01
6.	Debeaker	01
7.	Vaccinator	01
8.	Milking machine	As per requirements
9.	Milking bucket	As per requirement
10.	Milking can	As per requirements
11.	Animal and bird identification tools	As per requirement
12.	Chaff cutter	01
13.	Lactometer	01
14.	Castrator	01
15.	Shearer	01
16.	Electric dehorner	01
17.	Artificial vagina	01
18.	Common medication demvice	01
19.	Cattle crate	01

12. Agriculture Engineering + (Farm Management)

	Items	Nos.
1.	Working models of MB plough, Disk plough and indigenous plough	2 sets each
2.	Working model of different harrows	Actual
3.	Seed drill	01

Table Contd.

Table Concluded

	Items	Nos.
4.	Different types of threshing drums	As per requirement
5.	Working models of reaper and mowers	02
6.	Different types of sprayers and dusters	As per requirement
7.	Cut model of CI & SI engine	01
8.	Cut model of Tractor	01
13.	**Central Library and Information System**	
1.	Internet Server	01
2.	Intranet Server	01
3.	Computers for Reading Hall	20
4.	Heavy Duty Photocopiers	02
5.	Computerized Issue and Catalogue Systems	02
6.	Wi-Fi facility in college/library/hostels	As per requirement
7.	CCTV monitoring system for library	01
8.	RFID and Access Control System (Optional)	01
9.	Broadband Internet Connectivity with minimum speed of 1Gbps	

Expert Consultant

Dr. Ravi Prakash Mishra is working as Head- School of Agriculture, Lingaya's Vidyapeeth, Faridabad (Haryana). He has completed his B.Sc. (Ag.) Hon's, M.Sc. (Ag.) Plant Pathology and Ph.D. (Plant Pathology) from Chandra Shekhar Azad University of Agriculture & Technology, Uttar Pradesh. He has two years research experience in Directorate of Maize Research (ICAR) and nine year experience of teaching and administration. He was awarded "Dr. M.S. Swaminathan Honorary Award" (2020), "Young Scientist Award" (2017 & 2019), "Asian Education Award" (2019), "Best Teacher Award" (2020), "Best Poster Presentation Award" (2010), Appreciation award for conduction of "Career Counselling Fair"- (2010), & "Kisan Mela"- (2019) and "N.E. Borlaug Award" (2022). He published 16 research papers, 10 patents (filed) 15 Blogs and 05 scientific articles. He has conducted 08 training programmes (regional & national). He attended/conducted 18 National/International Seminars/ Conferences/symposiums/webinars/FDPs. He has successfully completed 6 weeks AgMOOCs course "Employment Generation among Rural Youth through Agripreneurship" conducted by BAU Sabor & IIT Kanpur and 21 days training on "Agri-Skill India" by HARWS & IIMR (ICAR).

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Shristi Constructions
P2/21B, SRS City, Sector 87,
Greater Faridabad (HR.)

CONSULTANCY PROJECT APPROVAL **22.10.2018**

Greetings.

Dear Mr. Sitesh Kumar Singh,
With great pleasure, I announce the approval of your application for the consulting project named "Lab Testing of Recycled and Reused Construction Materials" to be used for project verification throughout the earliest stages prior to project execution at the site.

General Information:
1. Project Title: Lab Testing of Recycled and Reused Construction Materials
2. Duration: 20 months
3. Total Cost :(1.80 Lakhs) 1 Lakh & Eighty Thousand
4. Principal Investigator : Mr. Sitesh Kumar Singh, Assistant Professor, Civil Engineering Department, Lingaya's Vidyapeeth, Faridabad
Co-PI: Mr. Md. Daniyal, Assistant Professor, Civil Engineering, Lingaya's Vidyapeeth, Faridabad.
5. Department & Faculty: Department of Civil Engineering, School of Engineering & Technology
6. Address: Lingaya's Vidyapeeth, Nachauli, Faridabad.
7. Project Summary: This 20 month consultancy project focuses on examining the impact of producing concrete with recycled aggregates from construction and stone plant waste. Concrete samples in their fresh state (slump) and hardened state (compressive and tensile strength and modulus of elasticity) will undergo several testing. The ideal replacement percentage for every recycled material will be ascertained by contrasting the outcomes of laboratory experiments. Please ensure that the project is conducted in accordance with the highest ethical research standards as well as all applicable laws and regulations. We believe this project will be successfully finished and that it will make a major contribution to the field. Please do not hesitate to contact us with any more questions or if you require any additional assistance. We would like to congratulate you on the approval of your consulting assignment and wish you success in all of your next research endeavours.

Sincerely,

Kind Regards

Mr. Santosh Kumar

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NAAC ACCREDITED
Approved by MHRD/ AICTE/ PCI/ BCI/ COA/ NCTE
Nachauli, Jasana Road, Faridabad – 121002; Ph: 0129-2598200-05
Website: www.lingayasuniversity.edu.in

Ref: LV/SOET/CE/2018-19/11/D **Date: 22/10/2018**

Department of Civil Engineering
Application for Approval of Research Project

General Information

1.0 Project Title
"Lab Testing of Recycled and reused Construction Materials"

1.1 Duration (in Months): 20 months

1.2 Total Cost (in Rs. Lakhs):(2.50 Lakhs)]

1.3 Principal Investigator : Mr. Sitesh Kumar Singh, Assistant Professor, Civil Engineering Department, Lingaya's Vidyapeeth, Faridabad
Co-PI: Mr. Md. Daniyal, Assistant Professor, Civil Engineering, Lingaya's Vidyapeeth, Faridabad.

1.4 Department & Faculty: Department of Civil Engineering, School of Engineering & Technology

1.5 Address: Lingaya's Vidyapeeth, Nachauli, Faridabad.

1.6 Date of Birth: Mr. Sitesh Kumar Singh (15/05/1990) & Mr. Md. Daniyal (15/07/1988)

1.7 Gender: Male & Male

1.8 Email and Mobile: sitesh@lingayasuniversity.edu.in (8437162880) & daniyal@lingayasuniversity.edu.in (7417246066)

1.10 Collaborative Institutions, if any: NA

1.11 Project Summary:

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BACKGROUND OF ADJOINING RESEARCH-

Sustainable building and infrastructure development strategies are more important than ever in this quickly changing industry. Adopting eco-friendly practices is crucial for the building sector as societies work to minimise their carbon footprints and offset environmental damage. One of these imperatives is the recycling and reuse of building materials, a technique that has both economic and environmental benefits.

The building sector has historically produced a large quantity of waste and primarily relied on the use of energy and raw materials. Nonetheless, the paradigm is changing in favour of more circular and ecological methods, where recycling and repurposing building materials become essential tactics.

The goal of this consulting project is to fully comprehend, analyse, and use recycling and material reuse in construction. We seek to give our clients a road map for a more environmentally conscious and sustainable building approach by investigating creative ideas, best practices, and evaluating the viability of incorporating such methods into construction projects.

ABSTRACT

One of the biggest issues facing societies today is the exponential increase in trash output, particularly in the area of construction wastes. Reinforced concrete constructions are destroyed for a variety of reasons throughout the world. The amount of garbage produced by these destructions rises. The impact of employing recycled aggregates from construction wastes in the making of concrete has been examined in this experimental study.

Concrete samples in their fresh state (slump) and hardened state (compressive and tensile strength and modulus of elasticity) will go for several testing. Comparing the outcomes of laboratory testing allowed for the best percentage replacement of each recycled material. Lastly, a suitable mix design was suggested for each of the recycled aggregate samples, along with a thorough report detailing the outcomes.

Keywords: Recycled aggregate, compressive strength, Reinforced concrete, experiments

INTRODUCTION

One of the biggest issues facing society in the last century has been the explosive increase in trash production, particularly in the area of construction wastes. Around the world, reinforced

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concrete structures are destroyed for a variety of causes, including the structure's end of usable life, the necessity to create new structures, and natural calamities like floods and earthquakes as well as man-made disasters. The amount of garbage produced by these destructions rises. Additionally, hundreds of millions of ornamental stone wastes are produced annually by various stone factories in every region.

Moving and burying building debris outside of cities is the initial course of action. Nonetheless, the growing amount of these wastes will have detrimental long-term effects on suburban environments and contribute to the growth of air and water pollution in metropolitan areas. Reusing synthetic materials as substitutes for natural ones through recycling is an additional option. There are fewer natural aggregate mining in areas where this option is more feasible. Studies show that urban solid wastes account for 35% of wastes overall in wealthy nations and 55% of wastes overall in developing nations.

LITERATURE REVIEW

Crushed stones and recycled concrete aggregates are comparable. Crushed concrete, however, differs from natural aggregates in a number of physical ways. Compared to natural aggregates, crushed concrete aggregates often have a rougher surface and are more inclined. In comparison to spherical, smooth, and dense particles, the unsmooth and angled surface of the aggregates means that more water is needed to produce an efficient concrete..

According to Wu et al. [11], the kind of aggregate used in concrete affects its strength, hardness, and fracture energy, particularly in high-strength concretes. Additionally, high-strength concrete's low water-to-cement ratio and aggregate strength boost the material's compressive strength. In concrete of typical strength, the choice of aggregate has little bearing on compressive strength. Aggregates may be traversed by the fracture route in high compressive strength concrete. Thus, aggregates are crucial to the strength of concrete.

Donza et al. [12] reported the result of investigating the effect of aggregates on compressive and tensile strength in high-resistance concrete. According to their findings, it was found that aggregate quality and strength is so effective in compressive and tensile strength of high-resistance concrete. Steel slags have shown the highest compressive and tensile strength in laboratory tests, while limestone materials have shown the lowest compressive and tensile strength.

Despite using the highest-quality recycled brick aggregates in the creation of concrete, Otoko's 2014 study [13] revealed that the concrete made with recycled brick aggregates was not as high-quality as the concrete made with natural stone aggregates. Additionally, it was advised to build partition walls or low-load walls using brick aggregate concrete.

Researchers Ajdukiewiz and Kliszczewicz [14] looked into how recycled aggregate affected high-resistance concretes. The mechanical characteristics of high-resistance recycled concrete have been compared to those of concrete made with natural aggregates in this study. Tests were conducted on high- or medium-strength concrete samples that were two to seven years old and had been crushed at least three months prior to reuse.

NEED OF STUDY AND PROBLEM DEFINITION

By offering a suitable mix design for concrete production based on test results, the current consultancy project primarily aims to focus and introduce the most optimal circumstances of using recycled building resources. The other research objectives are to protect nonrenewable environmental resources or those that are renewed over time, reduce construction waste and environmental pollution, and evaluate and compare the effects of using various values of alternative recycled aggregates on each of the hardened concrete parameters, such as mechanical properties and engineering properties (compressive and tensile strength).

OBJECTIVES

1. Tests to be conducted on each of the materials—which included sand, gravel, cement, recycled aggregates, and construction wastes.
2. The test phases, which include sample names, the amount of water to cement, sample processing, calibration tools, and primary mix designs.
3. Analysis between various recycled aggregated from different sites to be presented.

RESEARCH METHODOLOGY

Various laboratory tests like slump tests, material tests and compressive as well as tensile tests will be performed. It should be noted that the slump test describes the workability of the concrete rather than measuring its efficiency. Workability is defined as the relative fluidity or flowability of the concrete, and the ASTM C143 standard-based slump test is used to assess it. The most used test for assessing concrete samples is the compressive strength test. Concrete samples' compressive strength can reveal information about the concrete's cement activity, cement matrix quality, and relationship to particles. The design of the structure greatly depends on this test. Changes in the sample, sample size, kind of mould, and processing conditions may have an impact on the outcome. On the seventh and 28th days, 153 cubic samples will be used for this

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test. After being removed from the pond, the samples will be dried. The tested cubic samples will then be placed between the device's plates on the side that was in contact with the cubic mould. From there, a vertical force will be applied to the sample at a constant speed until it ruptured; the sample's compressive strength will be determined by measuring the highest force that was applied at the moment of rupture.

EXPECTED OUTCOMES

1. The samples with recycled aggregate often showed less slump than the control group.
2. According to the literature review, 30% will be the ideal replacement rate for aggregate in materials.
3. It is anticipated that concrete incorporating recycled wastes will have a lower elasticity modulus than M20/M25 grade concrete.

SCOPE OF STUDY

This 20 months consultancy project focuses on the compressive and tensile strengths of concrete that contained recycled material from several building sites were examined.. After the aforementioned is verified, projects can then proceed to the execution/ construction.
The study aligns with the institution's goal of advancing knowledge in civil engineering, and its anticipated results will aid in the structural safety and audit of both new and existing RCC structures.

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mCalibre Technologies

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New Delhi - 110024

Date: 30th September, 2021

APPROVAL OF CONSULTANCY PROJECT

Greetings!

Dear Dr. Ritu Sachdeva,

I am delighted to inform you that your application for the approval of the consultancy project entitled "Improvement of Network lifetime ~~using~~ clustering and dynamic topology methods in WSNs " has been carefully reviewed and we are pleased to approve the project.

General Information:

1. **Project Title:** " Improvement of Network lifetime using clustering and dynamic topology methods in WSNs "

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** 1,60,000 (One Lakh Sixty Thousand)

1.3 **Priority Area and Sub-Area:** Priority in the project "Improvement of Network Lifetime using Clustering and Dynamic Topology Methods in WSNs" is to extend the operational lifespan of wireless sensor networks. A critical sub-area involves the development of efficient clustering algorithms and dynamic topology management techniques to enhance energy efficiency, prolong node longevity, and optimize network performance.

1.4 **Foreign Exchange (FE) Component:** NA

1.5 **Principal Investigator & Co-PI:**

Principal investigator: Dr. Ritu Sachdeva, A. Professor, Department of Computer Science & Engineering, Lingaya's Vidyapeeth

Co-PI: Dr. Tapsi Nagpal, Department of Computer Science & Engineering, Lingaya's Vidyapeeth

For LINGAYA'S VIDYAPEETH

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mCalibre Technologies

1.6 **Department & Faculty:** Department of Computer Science & Engineering

1.7 **Address:** Lingaya's Vidyapeeth, Nachauli, Faridabad

1.8 **Project Summary:**

The project titled "Improvement of Network Lifetime using Clustering and Dynamic Topology Methods in WSNs" focuses on addressing the challenge of extending the operational lifespan of Wireless Sensor Networks (WSNs). The primary priority of this project is to develop innovative techniques that enhance the longevity of WSNs, which are often deployed in remote or inaccessible locations where battery replacement is impractical. A significant sub-area of focus revolves around the creation of efficient clustering algorithms and dynamic topology management methods. Clustering helps in organizing sensor nodes into groups, optimizing communication, and reducing energy consumption. Dynamic topology management involves adjusting the network structure in response to changes in node status or environmental conditions, further enhancing energy efficiency and overall network performance.

The outcome of this project holds substantial implications, as it will significantly increase the reliability and sustainability of WSNs, enabling them to function effectively over extended periods. This advancement has numerous applications in fields such as environmental monitoring, agriculture, industrial automation, and disaster management, where reliable, long-lasting sensor networks are crucial for data collection and decision-making.

Congratulations on the approval of your consultancy project!!

Wish you a great success in your future research endeavours!

Sincerely,

Kind Regards,

mCalibre Technologies Private Limited
L – 84, Lajpat Nagar – 2, New Delhi – 110024 (India)
www.mcalibre.com

For LINGAYA'S VIDYA
18 APR 2024
Reg

BLUE HILLS INTERNATIONAL SCHOOL

hisdelhi@gmail.com

F-20, Nafees Rd, Jamia, Batla House,

Jamia Nagar, Okhla, New Delhi, Delhi 110025

Date: 10th May, 2023

APPROVAL OF CONSULTANCY PROJECT

Greetings!

Dear Prof. (Dr.) Ritu Sindhu,

I am delighted to inform you that your application for the approval of the consultancy project entitled "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" has been carefully reviewed and we are pleased to approve the project.

General Information:

1. **Project Title:** "Digitizing Learning: A Strategic Implementation of Digital Education in Schools "

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** 50,000 (Fifty Thousand)

1.3 **Priority Area and Sub-Area:** It focuses on integrating technology into education. Key sub-areas include developing digital content, enhancing teacher training, fostering student digital literacy, and building robust infrastructure. This strategic approach transforms traditional teaching methods, ensuring interactive, accessible, and effective digital education in schools.

1.4 **Foreign Exchange (FE) Component:** NA

1.5 **Principal Investigator & Co-PI:**

Principal investigator: Prof. (Dr.) Ritu Sindhu, Professor & HOD, Department of Computer Science & Engineering

Co-PI: Dr. Tapsi Nagpal, Associate Professor, Department of Computer Science & Engineering, Lingaya's Vidyapeeth

Ms. Komal Malsa, Assistant Professor, Department of Computer Science & Engineering, Lingaya's Vidyapeeth

For LINGAYA'S VIDYAPEETH

18 APR 2024

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1.6 **Department & Faculty:** Department of Computer Science & Engineering

1.7 **Address:** Lingaya's Vidyapeeth, Nachauli, Faridabad

1.8 **Project Summary:** This 12-month research project is a comprehensive initiative designed to integrate advanced digital technologies into the educational framework of schools. This transformative program aims to enhance the learning experience, cater to diverse student needs, and prepare students for a globally connected digital world.

Central to this project is the development of a digitally-enriched curriculum, which involves creating and integrating interactive digital content that is culturally and globally relevant. This content supports various learning styles and complements traditional teaching methods. A significant component is focused on professional development for educators. This includes extensive training in digital pedagogies and the use of educational technologies, ensuring teachers are well-equipped to deliver engaging and effective digital instruction. The project also prioritizes the establishment of a robust technological infrastructure within schools. This involves upgrading hardware, ensuring reliable internet connectivity, and implementing user-friendly digital platforms and tools.

Additionally, a key aspect is fostering digital literacy and responsibility among students. This is achieved through interactive learning modules, workshops, and hands-on experiences with technology, preparing students for the demands and responsibilities of the digital age. Through strategic partnerships, continuous evaluation, and adaptability to emerging technologies, this project sets a new standard for digital education in schools, promising a future-ready, inclusive, and dynamic learning environment.

Congratulations on the approval of your consultancy project!!

Wish you a great success in your future research endeavours!

Sincerely,

Kind Regards,

Yamin

(Mr. Yamin Abbas)

For LINGAYA'S VIDYAPEETH

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URL: www.lingayasvidyapeeth.edu.in | Phone No.: 0129-2598200-05

Lingaya's University, Faridabad

(Deemed to be University, Approved u/s 3 of UGC act, 1956)

INTERNAL QUALITY ASSURANCE CELL

UNDERTAKING BY THE HEAD OF THE DEPARTMENT

I am pleased to forward the proposal of Prof. (Dr.) Ritu Sindhu who is Associate Dean & HOD of the Department of Computer Science & Engineering, Lingayas Vidyapeeth, in our institution, for financial support to the Lingayas Vidyapeeth.

The institution agrees to:

- Administer and manage the finance.
- Provide accommodation and furniture and other infrastructure required for the project.
- Make available all its research facilities such as library, laboratory and other requirement; and
- Provide the material and managerial assistance for the project.

If the Project Incharge of the project leaves the institution to join some other institution, after part of the sanctioned grant has been received, we would have no objection to the project being transferred to the new institution if the Project Incharge so desires. The institution, however, shall continue to be responsible for submitting the audited statement of accounts and utilization certificate for the grant received by it, for this purpose.

The institution will facilitate the completion of the project within the stipulated time. If not satisfied with the progress of the project, the funding organization may terminate the project immediately and ask for the refund of the amount received by the institution along with penal interest. The same will apply to uncompleted projects.

Date: 5th April, 2023

For LINGAYA'S VIDYAPEETH
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18 APR 2024

Prof. (Dr.) Ritu Sindhu
Associate Dean & HOD (CSE)
Name & Designation
PROF. (DR.) RITU SINDHU
(Signature) (in block letters)

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INTERNAL QUALITY ASSURANCE CELL

CERTIFICATE

I certify that:

I shall abide by the rules governing the scheme in case assistance is provided to me by the Lingayas Vidyapeeth, for the above project.

In case the above research project or an allied project receives assistance from any other source, I shall inform Lingayas Vidyapeeth, accordingly.

In case the research project is not completed in time. I will refund the whole amount along with penal interest as applicable

For LINGAYA'S VIDYAPEETH
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18 APR 2024

Signature of the P.I

Date: 5th April, 2023

Place: Faridabad

Name of the P.I. (in capital letters): PROF. (DR.) RITU SINDHU

AWARDS:

- Research Publications: 03
- Patents: 03
- PhDs being guided: 08

Principal Investigator: Prof. (Dr.) Ritu Sindhu

Prof. (Dr.) Ritu Sindhu is a highly dedicated professional with years of experience in the field of teaching and research services in the area of Computer Science Engineering. She has been associated with Galgotia's, SGT University, DCE and many more organizations of good repute. Dr. Sindhu has approximately 18 years of experience of academics, research and industry. Currently, she is working as Associate Dean and Head, Department of Computer Science and Engineering, Lingaya's Vidyapeeth. Before that she has worked as a Director at Dronacharya College of Engineering, Gurugram.

Dr. Sindhu completed her Master of Engineering in Computer Science Engineering as well as her Ph.D. in Computer Science, both from Banasthali Vidyapeeth, Rajasthan where she conducted research on Multi Agent Systems. Her Bachelor of Engineering in Computer Science Engineering is from AKTU, Lucknow. Her expertise in teaching and research extends to more than 50 research papers in reputed journals of SCI/ Scopus/ UGC-Care etc. Dr. Sindhu has attended various IEEE conferences, granted various patents, books, mentored numerous PG Students Dissertations and Projects and currently six PhD Scholars are working under her supervision. Dr. Sindhu has attended several Faculty Development Programs and given several invited talks/lectures on International Platform.

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AWARDS:

- Women in Science & Innovation' award for the Year 2022.
- Research Publications: 12
- Patents: 11
- PhD Awarded: 01
- PhDs being guided: 05

Co - Principal Investigator 1: Dr. Tapsi Nagpal

Dr. Tapsi Nagpal, a devoted educationist and an academician having a variety of significant insights into Engineering curriculum in terms of Academic, Research, and Industry sectors over the past 11 years of teaching. She is currently posted as an Associate Professor & serving as Research Coordinator, Computer Science & Engineering, at Lingaya's Vidyapeeth, Faridabad.

Dr. Nagpal received Letter of Appreciation for being a Resource Person for the Training Session conducted by Training, Learning & Development Department of the International Internship University. She also worked as Session Chair, Keynote Speaker, Technical Events organizer such as Seminars, Workshops, FDPs, and Technical Conferences etc. and reviewer in top IEEE, Elsevier and Springer journals.

Dr. Tapsi Nagpal worked as Senior Engineer at ABB Ltd. Hardwar, where she achieved incoming components percentage FPY to 98.0%. Additionally, she is also Reviewer of maiden edition of IEEE DELCON 2022.

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AWARDS:

- Research Publications: 4
- Patents: 2
- GATE Qualified

Co - Principal Investigator 2: Ms. Komal Malsa

Ms. Komal Malsa , a devoted educationist and an academician having a variety of significant insights into Engineering curriculum in terms of Academic, Research, over the past 12 years of teaching. She is currently posted as an Assistant Professor & serving as NAAC Coordinator, Computer Science & Engineering, at Lingaya's Vidyapeeth, Faridabad.

Ms. Komal Malsa completed her M.Tech in Computer Science Engineering and pursuing Ph.D. in Computer Science, from Banasthali Vidyapeeth, Banasthali. Her Bachelor of Engineering in Computer Science Engineering is from Rajasthan University. She is expertise in teaching is Python, Data Science and Machine Learning. She has attended several Faculty Development Programs and workshops.

For LINGAYA'S VIDYAPEETH

Registrar

Dear, Ms Krity Gulati

DATE:19/08/2017

Project title:- Greening the Chain: Revolutionizing Supply Chains with Sustainable Logistics Solutions

Duration (in months): 12 Months

Total cost (in Rs Lakhs): 1,82,000 (One lakh eighty two thousand)

Priority area and sub-area

Creating a green chain of sustainable logistics.

Foreign Exchange (FE) component, if any: NA

Principal Investigator: Ms. Krity Gulati, Assistant Professor School of Management Sciences, Lingaya's Vidyapeeth

Designation: Assistant Professor School of Management Sciences, Lingaya's Vidyapeeth

Department & Faculty: Department of Management, School of Management Sciences

Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

Date of Birth: Ms. Krity Gulati & 11/02/1987

Gender: Female

Aadhar Number: Ms. Krity Gulati (613937834150)

Mobile and email: kritygulati@lingayasvidyapeeth.edu.in, 9990760551

Collaborating Institutions, if any: NA

Project summary

Thank you for your dedication to advancing knowledge and contributing to the academic and professional community.

Sincerely,
Dhruv yadav
CEO
Company name- Sellbrochure

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Website: www.lingayasuniversity.edu.in

Ref: LV/SOCM/01/01 **Date: 17.08.2017**

School of Management Sciences

Application for Approval of Consultancy Project

General Information

1.0 Project title:- Greening the Chain: Revolutionizing Supply Chains with Sustainable Logistics Solutions

1.1 Duration (in months): 12 Months

1.2 Total cost (in Rs Lakhs): 1,82,000 (One lakh eighty two thousand)

1.3 Priority area and sub-area

Creating a green chain of sustainable logistics.

1.4 Foreign Exchange (FE) component, if any: NA

1.5 Principal Investigator: Ms. Krity Gulati, Assistant Professor School of Management Sciences, Lingaya's Vidyapeeth

1.6 Designation: as above

1.7 Department & Faculty: Department of Management, School of Management Sciences

1.8 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.9 Date of Birth: Ms. Krity Gulati & 11/02/1987

1.10 Gender: Female

1.11 Aadhar Number: Ms. Krity Gulati (613937834150)

1.12 Mobile and email: kritygulati@lingayasvidyapeeth.edu.in, 9990760551

1.13 Collaborating Institutions, if any: NA

1.14 Project summary

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BACKGROUND OF ADJOINING RESEARCH –

In the dynamic landscape of contemporary business and global trade, the imperative to integrate sustainability into supply chain operations has become increasingly pronounced. The concept of "Greening the Chain" embodies a strategic approach to revolutionizing supply chains by adopting and implementing sustainable logistics solutions. This paradigm shift is fueled by a growing awareness of the environmental impact of traditional supply chain practices and the pressing need for businesses to adopt eco-friendly alternatives.

ABSTRACT

As the global community grapples with the urgent need for sustainable practices, supply chains emerge as pivotal arenas for transformative action. This research explores the concept of "Greening the Chain," focusing on the revolutionary integration of sustainable logistics solutions to mitigate the environmental impact of traditional supply chain practices. Keywords: Sustainable Logistics, Circular Economy, Renewable Energy, Eco-Smart Technologies, Life Cycle Assessment, Green Procurement, Collaboration, Regulatory Compliance, Consumer Behavior, Resilience. Through an in-depth examination of these keywords, the study aims to offer comprehensive insights into strategic approaches for businesses to navigate the paradigm shift toward eco-conscious supply chain management, fostering a resilient and environmentally responsible future.

Keywords: Supply Chain, Green Procurement Strategies, Eco Smart Technology.

INTRODUCTION

In an era marked by heightened environmental consciousness and the recognition of the imperative to address climate change, the global business landscape is witnessing a transformative shift in supply chain management. The traditional paradigms of supply chains, once solely focused on efficiency and cost-effectiveness, are evolving into environmentally responsible and sustainable models. This research delves into the pivotal concept of "Greening the Chain," which signifies a strategic revolution in supply chains through the integration of sustainable logistics solutions. As industries grapple with the escalating environmental challenges and stakeholders demand ethical

and responsible business practices, the need to innovate and adopt eco-friendly supply chain strategies has become more pressing than ever.

1.1 Background:

Contemporary supply chains have historically been characterized by linear models that prioritize the linear progression of resources from extraction to disposal, often resulting in significant environmental degradation. The excessive reliance on fossil fuels, the generation of substantial waste, and the depletion of finite resources have propelled the need for a paradigmatic shift. The backdrop of this research is rooted in the acknowledgment that conventional supply chain practices are no longer tenable in the face of escalating climate concerns, regulatory pressures, and shifting consumer preferences.

1.2 Rationale for Greening the Chain:

The rationale behind "Greening the Chain" lies in the inherent recognition that sustainability is not just a moral imperative but a strategic necessity for businesses. Organizations are beginning to understand that integrating sustainable logistics solutions is not merely an ethical gesture but a means to future-proof operations against the uncertainties posed by climate change and resource depletion. Furthermore, the economic advantages associated with sustainable practices, such as cost savings, enhanced brand reputation, and access to emerging markets, underscore the business case for adopting greener supply chain strategies.

LITERATURE REVIEW

The literature surrounding sustainable supply chain management, particularly the transformative concept of "Greening the Chain," reflects a growing awareness and urgency to address environmental challenges within the global business ecosystem. This review synthesizes key findings and contributions from scholarly works, industry reports, and case studies, providing a comprehensive overview of the current state of research in this field.

1. Sustainable Logistics Practices: A foundational aspect of "Greening the Chain" revolves around the adoption of sustainable logistics practices. According to Sarkis (2019), the integration of eco-friendly transportation, energy-efficient warehousing, and optimized distribution networks are

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central to reducing the environmental impact of supply chains. Case studies by Seuring and Müller (2008) and Zailani et al. (2012) showcase how companies implementing sustainable logistics strategies not only contribute to environmental conservation but also achieve cost savings through improved operational efficiency.

2. Circular Economy Principles: The transition from linear to circular supply chain models has gained prominence in the pursuit of sustainability. Research by Ellen MacArthur Foundation (2012) and Tukker et al. (2015) emphasizes the principles of a circular economy, emphasizing resource longevity, waste reduction, and product life extension. Case studies on companies like Unilever and Interface, highlighted by Kirchherr et al. (2017), demonstrate the successful application of circular economy principles, illustrating their potential to revolutionize traditional supply chain practices.

3. Renewable Energy Integration: The infusion of renewable energy into logistics operations emerges as a critical element in reducing carbon footprints. Claes and Verstrepen (2017) argue that transitioning to solar and wind power in transportation and distribution processes can significantly contribute to sustainable supply chains. Case studies on companies like IKEA and Walmart, presented by Savitz (2013) and Johnson and Goetzl (2014), underscore the feasibility and economic benefits of renewable energy integration.

4. Eco-Smart Technologies: The advent of innovative technologies plays a pivotal role in the transformation of supply chains towards sustainability. IoT-enabled tracking systems, AI-driven optimization algorithms, and blockchain are identified by Christopher and Lee (2004) and Monczka et al. (2015) as instrumental in enhancing transparency, traceability, and overall efficiency. Case studies on companies like IBM and Provenance, explored by Wong and Turner (2017) and Tapscott and Tapscott (2016), illustrate the successful deployment of these technologies in creating eco-smart supply chains.

5. Life Cycle Assessment: A holistic understanding of a product's environmental impact throughout its life cycle is integral to informed decision-making. Life Cycle Assessment (LCA) methodologies, as outlined by ISO 14040 and ISO 14044 standards, are fundamental tools for assessing environmental footprints (Hauschild et al., 2018). LCA applications, as demonstrated by Rebitzer et al. (2004) and Guinée et al. (2002), provide insights into areas for improvement, aiding companies in making sustainable choices in material sourcing, production, and end-of-life disposal.

6. Green Procurement Strategies: The importance of green procurement practices in supply chains

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is underscored by Carter and Rogers (2008) and Walker et al. (2008). By sourcing materials and products from environmentally responsible suppliers, companies not only reduce their ecological impact but also foster sustainability across the entire supply chain. Case studies on companies like Toyota and Patagonia, highlighted by Darnall and Edwards (2006) and Potter et al. (2006), exemplify the successful implementation of green procurement strategies.

7. Collaboration and Stakeholder Engagement: Collaboration among supply chain stakeholders is recognized as essential in driving sustainable initiatives. Extensive research by Pagell and Wu (2009) and Meehan et al. (2010) underscores the significance of partnerships, emphasizing the need for collaborative efforts among manufacturers, suppliers, and logistics providers. Case studies on industry collaboration, such as the Sustainable Apparel Coalition, as explored by Furlan and Ogliengo (2013), demonstrate the potential of collective action in fostering sustainability.

8. Regulatory Compliance and Standards: The influence of environmental regulations and sustainability standards on supply chain practices is evident in the works of Kleindorfer et al. (2005) and Pagell and Wu (2009). The adoption of international standards, such as ISO 14001, is shown to guide companies in achieving regulatory compliance and, concurrently, enhancing their environmental performance. Case studies on companies like Coca-Cola and Unilever, examined by Rahman and Subramanian (2012) and Walker et al. (2014), emphasize the role of standards in shaping sustainable supply chain practices.

9. Consumer Behavior and Ethical Consumption: Consumer preferences and ethical considerations increasingly impact supply chain decisions. Research by Mena and Palazzo (2012) and Bocken et al. (2013) explores the dynamic relationship between consumer behavior and sustainable supply chains. Companies like Tesla and The Body Shop, studied by Preuss (2009) and Lee and Shin (2010), exemplify the intersection of ethical consumption and supply chain strategies, showcasing the potential for market-driven sustainability.

10. Resilience and Risk Management: As supply chains face environmental uncertainties, resilience and risk management strategies become paramount. Christopher and Peck (2004) and Pettit et al. (2013) argue for the importance of building resilient supply chains capable of adapting to unforeseen challenges. Case studies on companies like IBM and Flextronics, examined by Lee and Whang (2001) and Tang (2006), highlight effective risk management strategies, emphasizing the importance of proactive measures in the face of environmental disruptions.

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RESEARCH GAPS

Identifying research gaps is crucial for advancing the understanding of a topic and informing future studies. In the context of "Greening the Chain: Revolutionizing Supply Chains with Sustainable Logistics Solutions," several research gaps emerge:

1. Integration of Small and Medium-sized Enterprises (SMEs):

    - Many studies focus on large corporations in their adoption of sustainable logistics practices. A research gap exists in understanding the challenges and opportunities for small and medium-sized enterprises (SMEs) in implementing sustainable supply chain solutions. Investigating strategies tailored to the unique characteristics and constraints of SMEs could contribute to a more inclusive and comprehensive approach.

2. Long-Term Impact Assessment:

    - Existing literature often provides insights into short-term benefits of adopting sustainable logistics. However, there is a gap in research regarding the long-term impacts, both positive and negative, of these practices. Understanding the sustainability of the "Greening the Chain" initiatives over extended periods will provide a more holistic view of their effectiveness and potential areas for improvement.

3. Cultural and Behavioral Influences:

    - Research has focused on the technical and operational aspects of sustainable supply chains. A gap exists in understanding the cultural and behavioral influences that shape the adoption and success of greening initiatives. Exploring how organizational culture, employee attitudes, and consumer behaviors impact the implementation of sustainable logistics solutions can provide valuable insights.

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4. Global Supply Chain Dynamics:

    - Many studies have a regional or industry-specific focus. There is a need for research that explores the dynamics of greening the supply chain on a global scale, considering the interconnectedness of supply chains across different regions and industries. This could involve investigating the transferability of successful strategies and addressing challenges specific to diverse global contexts.

5. Technology Implementation Challenges:

    - While there is recognition of the role of technology in sustainable logistics, a research gap exists in understanding the challenges associated with the implementation of eco-smart technologies. Issues such as high initial costs, interoperability, and the skill gap in managing advanced technologies need further exploration to provide practical solutions for business.

OBJECTIVES

- Identify Sustainable Logistics Practices
- Explore Circular Economy Principles
- Examine Eco-Smart Technologies

RESEARCH METHODOLOGY

Research Design:

The chosen research design for investigating is a mixed-methods approach, integrating qualitative and quantitative methodologies. This combination enables a more comprehensive and nuanced exploration. On the quantitative side, the financial accuracy and compliance aspects can be quantified and analyzed statistically. Meanwhile, the qualitative approach allows for a deeper understanding of the contextual factors, challenges, and strategies. This dual-method design enhances the reliability and validity of the research findings, providing a more robust and holistic view.

Sample Size:

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Determining an appropriate sample size is crucial for the reliability and generalizability of the study. The sample will consist of annual reports from various industries and regions to ensure a representative selection. Striking a balance between adequacy and feasibility is paramount. A sufficiently large sample size allows for meaningful statistical analyses and the identification of trends, while still maintaining practicality in data collection and analysis. This approach ensures that the findings are not skewed by an insufficient or overly complex sample, contributing to the overall robustness of the study.

Sampling Technique:

Stratified random sampling will be employed to select the annual reports included in the study. This technique involves dividing the population into subgroups (strata) based on certain characteristics, such as industry or geographical location. From each stratum, a random sample will be selected. This method ensures a proportional and representative distribution of annual reports from various sectors and regions, capturing the diversity of vetting practices across different contexts. Stratified random sampling enhances the external validity of the study, allowing for more accurate generalizations to the broader population of annual reports.

Data Collection:

Primary data will be collected through content analysis of annual reports and interviews with professionals involved in the process. Content analysis involves systematically examining the textual and visual content of annual reports to identify patterns, themes, and relevant information. This quantitative approach will focus on extracting financial data and compliance indicators. Simultaneously, qualitative insights will be gathered through in-depth interviews with individuals responsible for gathering data. This dual-data collection strategy ensures a comprehensive understanding of both the quantitative metrics and the qualitative intricacies of the process.

Data Analysis:

The data analysis phase encompasses both quantitative and qualitative techniques. For quantitative data, statistical tools will be applied to analyze financial indicators and patterns within the annual reports. This includes measures such as financial ratios, compliance percentages, and trends over time. Thematic analysis will be employed for qualitative data obtained from interviews. This involves identifying recurrent themes, patterns, and insights related to the challenges, strategies, and contextual factors influencing the vetting process. By employing a mixed-methods analysis, the research aims to provide a holistic and nuanced interpretation of annual report vetting practices.

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Website: www.lingayasuniversity.edu.in

EXPECTED OUTCOMES

The expected outcomes of the research on "Greening the Chain: Revolutionizing Supply Chains with Sustainable Logistics Solutions" include:

1. Identification of Best Practices:
    - Uncover and highlight best practices in sustainable logistics, providing actionable insights for businesses aiming to adopt environmentally responsible supply chain solutions.
2. Insights into Challenges and Barriers:
    - Identify and articulate challenges and barriers faced by organizations in implementing sustainable logistics practices, offering a nuanced understanding of impediments.
3. Quantitative Trends:
    - Provide quantitative trends on the prevalence and adoption of sustainable logistics solutions, offering a comprehensive snapshot of industry practices.
4. Qualitative Perspectives:
    - Present qualitative insights through interviews and case studies, capturing the nuanced experiences and perspectives of industry professionals and stakeholders.
5. Integrated Framework:
    - Develop an integrated conceptual framework that aligns theoretical perspectives with empirical evidence, contributing to a holistic understanding of sustainable supply chains.
6. Guidance for Decision-Makers:
    - Offer practical recommendations for supply chain professionals, policymakers, and business leaders seeking to initiate or enhance sustainable logistics practices.
7. Contribution to Academic Knowledge:
    - Contribute to the academic discourse by addressing research gaps, presenting novel insights, and advancing knowledge in the field of sustainable supply chain management.
8. Strategic Implications:

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- Provide strategic implications for businesses, emphasizing the economic, environmental, and societal benefits of adopting eco-friendly supply chain practices.

9. Enhanced Stakeholder Collaboration:
    - Encourage collaboration among supply chain stakeholders by shedding light on the interconnected roles of manufacturers, suppliers, and logistics providers in fostering sustainability.
10. Informed Policy Recommendations:
    - Inform policymakers by presenting evidence-based insights that can influence regulatory frameworks, fostering an environment conducive to sustainable logistics.
11. Increased Awareness:
    - Raise awareness about the importance of sustainable logistics solutions, both within the business community and among consumers, contributing to a more conscientious approach to supply chain management.

In summary, the research aims to provide a comprehensive, data-driven foundation for businesses and policymakers to navigate the complexities of sustainable supply chains, fostering innovation, resilience, and responsibility in logistics practices.

SCOPE OF THE STUDY

This study encompasses a broad scope, aiming to provide a comprehensive examination of practices, challenges, and opportunities within the corporate reporting landscape. The geographical scope extends to diverse industries and regions, facilitating an in-depth exploration of regional variations and industry-specific nuances in the study.

The study's temporal scope spans from early regulatory compliance-focused studies to the exploration of cutting-edge practices in the digital age. By tracing the evolution over time, the research aims to contribute insights into the historical development and future trajectories of annual report vetting.

In essence, the scope of this study is both expansive and dynamic, embracing a comprehensive examination of the study.

TIME REQUIRED FOR COMPLETION

The undertaken study will be completed in 12 Months.

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Biodata of investigators (Not more than a page for each PI/, co-PI:

Principal Investigator: Ms. Krity Gulati

Ms. Krity Gulati, Assistant Professor in School of Management Sciences, Lingaya's Vidyapeeth. Her thirst for knowledge and desire to contribute to her professional excellence. Ms. Krity Gulati is a prolific researcher and has published articles in reputable journals, presenting her work at national and international conferences.

Awards: -

- Research Publications: 04
- Patent Published: 01

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DEAR DR. KRITY GULATI,

I am writing to officially approve the consultancy project titled "Vetting of Annual Report". The details of the project are as follows:

General Information:

1. **Project Title:** Vetting of Annual Report

- **Duration:** 02 Months
- **Total Cost:** Rs 8,750 (Eight Thousand Seven hundred and Fifty Rupees)
- **Priority Area and Sub-Area:** Evaluating corporate governance, financial accuracy, and sustainability practices to ensure compliance, transparency, and strategic alignment in the disclosed annual reports.
- **Principal Investigator:** Dr. Krity Gulati
- **Designation:** Assistant Professor & HoD, SOCM, Lingaya's Vidyapeeth
- **Department & Faculty:** Department of Management, School of Commerce & Management
- **Address:** Lingaya's Vidyapeeth, Nacholi, Faridabad

Project Summary: The consultancy project aims to ensure transparency, compliance, and strategic alignment in financial and sustainability practices. It goes beyond traditional financial scrutiny, encompassing ESG factors and governance. The goal is not just to decode past financial data but to provide stakeholders with a forward-looking perspective on the organization's trajectory. The project emphasizes the importance of annual report vetting as a comprehensive journey into the essence of corporate reality.

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Background of Adjoining Research: The examination of annual reports extends beyond the examination of finances, acting as a protector of the honesty and reliability of a corporation. Alongside interpreting complex financial details, it investigates the behavior, sustainability, and adherence to ethical principles of an organization. Going beyond mere adherence to regulations, it delves into environmental, social, and governance aspects, guaranteeing transparency in the impact beyond monetary measurements. Vetting acts as a defense against inconsistencies, fostering trust in an age where transparency is of utmost importance. It is not solely concerned with historical financial information; rather, it is a forward-thinking endeavor that anticipates a company's direction through strategic visions and risk evaluations. Ultimately, vetting ensures that the narratives presented by corporations align faithfully with reality.

We believe that this project holds significant value in promoting corporate transparency, governance, and sustainability. Dr. Krity Gulati's expertise and commitment make her well-suited to lead this endeavor. The project aligns with our institution's commitment to excellence in research and its contribution to advancing knowledge in the field of corporate management.

We look forward to the successful execution of this project and anticipate valuable insights that will benefit both our institution and the broader community. Please ensure that all ethical guidelines and standards are strictly adhered to throughout the project duration.

Thank you for your dedication to advancing knowledge and contributing to the academic and professional community.

Sincerely,

Dr. P. Alli Rani

Chairman and Managing Director,

Sardar Vallabhbhai Patel International School of Textiles and Management (SVPISTM)

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Website: www.lingayasuniversity.edu.in

Ref: LV/SOCM/01/01 **Date: 16.01.2019**

School of Commerce & Management

Application for Approval of Consultancy Project

General Information

1.0 Project title :- "Vetting of Annual Report"

1.1 Duration (in months): 02 Months

1.2 Total cost (in Rs Lakhs): 8,750 (Eight Thousand Seven Hundred and Fifty Rupees Only)

1.3 Priority area and sub-area

Evaluating corporate governance, financial accuracy, and sustainability practices to ensure compliance, transparency, and strategic alignment in the disclosed annual reports.

1.4 Foreign Exchange (FE) component, if any: NA

1.5 Principal Investigator: Dr. Krity Gulati, Assistant Professor & HoD, SOCM, Lingaya's Vidyapeeth

1.6 Designation: as above

1.7 Department & Faculty: Department of Management, School of Commerce & Management

1.8 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.9 Date of Birth: Dr. Krity Gulati & 11/02/1987

1.10 Gender: Female

1.11 Aadhar Number: Dr. Krity Gulati (613937834150)

1.12 Mobile and email: dr.kritygulati@lingayasvidyapeeth.edu.in, 9990760551

1.13 Collaborating Institutions, if any: NA

1.14 Project summary

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BACKGROUND OF ADJOINING RESEARCH –

The vetting of annual reports stands as the sentinel of corporate integrity, weaving through financial intricacies to illuminate the true narrative of an organization's journey. It transcends the conventional scrutiny of balance sheets and income statements, evolving into a multifaceted exploration of corporate conduct, sustainability, and adherence to ethical standards.

At its core, this practice is a voyage of verification, aiming not just to decipher numbers but to decipher trust. In an era where stakeholders demand transparency as their right, the vetting process becomes the guardian of truth in the corporate realm.

Financial scrutiny, the linchpin of this process, ventures beyond the surface, delving into the narrative of profit and loss. It dissects the financial statements, cross-referencing numbers, and interrogating financial decisions. Yet, the vetting process is not merely about ensuring compliance with accounting principles; it's a Sherlockian quest to unearth potential discrepancies or red flags that might elude the untrained eye.

However, the spectrum of vetting extends far beyond financial analytics. Modern business is not just about dollars and cents; it's about the environmental, social, and governance (ESG) footprint left behind. Therefore, the astute vetting of annual reports is a choreography of checks and balances, examining how an organization impacts the world beyond boardrooms.

Environmental sustainability, a pulsating chord in this symphony, calls for an assessment of a company's eco-friendly initiatives and carbon footprint. Social responsibility becomes a pivotal chapter, evaluating the organization's role in societal well-being, diversity, and inclusivity. Governance, the backbone of corporate ethics, demands a meticulous inspection of internal policies and structures.

In the labyrinth of corporate complexities, the vetting process ensures that the narrative stitched in annual reports aligns with reality. It navigates through the fine print, deciphering not only what is said but also what remains unsaid. This approach is especially crucial in an age where corporate scandals have left scars on the trust between businesses and their stakeholders.

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Moreover, vetting is a forward-looking exercise. It transcends historical data, attempting to discern the trajectory a company is embarking upon. It scrutinizes strategic visions, risk assessments, and management discussions, providing stakeholders with a roadmap to anticipate the organization's future.

In conclusion, the vetting of annual reports is not a mundane chore but a profound journey into the soul of a corporation. It is the compass guiding stakeholders through the complexities of financial data, ethical practices, and future aspirations. As businesses weave narratives of success and progress, the vetting process ensures that these stories are not fables but truthful accounts of corporate reality.

ABSTRACT

This research delves into the intricate landscape of vetting annual reports, aiming for a comprehensive exploration of practices, challenges, and opportunities in corporate reporting. Encompassing diverse industries and regions, the study unveils regional variations and industry-specific nuances, offering a nuanced understanding of annual report vetting. Covering financial accuracy, regulatory compliance, and emerging trends in non-financial reporting, such as sustainability and corporate social responsibility, the research adopts a holistic perspective. It navigates the interconnected nature of these dimensions, unraveling the multifaceted vetting process.

The study also incorporates the technological dimensions, examining electronic reporting systems and the impact of data analytics on vetting efficiency. From early regulatory compliance-focused studies to cutting-edge practices in the digital age, the research traces the historical development and future trajectories of annual report vetting. In essence, this study offers a dynamic and expansive exploration, contributing insights into the historical evolution and future prospects of annual report vetting practices across industries, regions, reporting dimensions, and technological landscapes.

Keywords – Annual Report, Corporate Governance, Financial Accuracy, Regulatory Compliance, Non-Financial Reporting

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INTRODUCTION

The process of vetting annual reports is a critical practice in corporate governance that involves thorough examination, validation, and interpretation of financial disclosures. These reports serve as a vital tool for stakeholders to gauge an organization's financial health, strategic initiatives, and broader societal impact (Smith, 2018). As corporate transparency becomes increasingly paramount, the scrutiny applied to these documents extends beyond traditional financial analyses to encompass a spectrum of ethical, environmental, and social dimensions.

Financial scrutiny is a fundamental aspect of the vetting process, involving a detailed examination of financial statements for accuracy, coherence, and compliance with regulatory standards (Penman, 2007). This analysis goes beyond historical performance to forecast future trajectories and identify potential risks (Palepu et al., 2007). However, contemporary vetting practices also emphasize qualitative evaluations, incorporating environmental, social, and governance (ESG) factors as integral components of corporate responsibility (Clark & Knight, 2020).

The evaluation of environmental responsibility involves scrutinizing initiatives aimed at reducing ecological footprints and mitigating adverse impacts (Eccles & Serafeim, 2013). Social responsibility assessment entails examining corporate practices related to diversity, labor, and community engagement, while governance evaluation reviews internal policies, board structures, and accountability mechanisms (Grewal & Maffett, 2019).

Vetting is not solely a retrospective analysis but also a forward-looking endeavor. It involves deciphering strategic visions, evaluating risk management practices, and understanding an organization's response to dynamic market conditions (Beasley et al., 2005). This forward-looking dimension provides stakeholders with insights into an organization's resilience, adaptability, and potential for future success.

In the contemporary business landscape, where trust and transparency are paramount, the vetting of annual reports plays a crucial role. Corporate scandals and ethical lapses have highlighted the significance of robust scrutiny in maintaining the delicate balance of trust between organizations and stakeholders (Brown et al., 2006). The vetting process becomes a mechanism for fostering accountability, instilling confidence, and ensuring that the narratives woven in annual reports are truthful reflections of corporate realities.

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As we navigate through the complexities of financial intricacies, ethical considerations, and societal impacts in the chapters that follow, this exploration will delve into methodologies, challenges, and evolving trends in the vetting of annual reports. It aims to provide a comprehensive understanding of the significance of this critical facet of corporate governance (Smith, 2018; Penman, 2007; Clark & Knight, 2020; Eccles & Serafeim, 2013; Grewal & Maffett, 2019; Beasley et al., 2005; Brown et al., 2006).

In delving into the methodologies of vetting annual reports, a combination of quantitative and qualitative approaches is employed. Quantitative methods involve financial ratio analysis, trend analysis, and benchmarking against industry standards to assess an organization's financial performance and position (Palepu et al., 2007). On the qualitative front, textual analysis is employed to scrutinize the narrative disclosures, uncovering latent information and potential red flags (Loughran & McDonald, 2011).

Challenges in the vetting process are manifold, encompassing the complexity of financial instruments, the subjectivity of qualitative assessments, and the constant evolution of regulatory frameworks (Higson & Elliott, 2017). Additionally, the ever-increasing volume of information in annual reports poses a challenge in terms of information overload, necessitating advanced analytical tools and techniques (Berger et al., 2017).

The advent of technology, particularly artificial intelligence and machine learning, has introduced innovative ways to enhance the vetting process. Automation of data extraction, sentiment analysis of textual disclosures, and predictive analytics contribute to a more efficient and effective vetting mechanism (Sarikas et al., 2019). However, the ethical implications of these technologies, such as biases in algorithms, also require careful consideration (Larcker & Tayan, 2016).

Moreover, the globalization of business and the diversification of corporate structures add another layer of complexity to the vetting process. Multinational corporations must navigate different regulatory frameworks, cultural nuances, and varied stakeholder expectations, making the vetting process more intricate but also more essential (Eccles & Serafeim, 2013; Hitt et al., 2016).

The evolving landscape of vetting annual reports also intersects with broader societal trends, including the rise of sustainable and responsible investing. Investors increasingly consider an organization's environmental, social, and governance practices in their decision-making processes, necessitating a more holistic vetting approach (Clark & Knight, 2020; Eccles & Serafeim, 2013).

In conclusion, the vetting of annual reports emerges as a multifaceted and dynamic process. It goes

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beyond financial scrutiny to encompass ethical considerations, societal impacts, and technological advancements. As we embark on this exploration, a nuanced understanding of these dimensions will unfold, shedding light on the intricate art of dissecting corporate narratives for the benefit of informed stakeholders (Smith, 2018; Palepu et al., 2007; Clark & Knight, 2020; Eccles & Serafeim, 2013; Sarikas et al., 2019; Hitt et al., 2016; Higson & Elliott, 2017; Loughran & McDonald, 2011; Berger et al., 2017; Larcker & Tayan, 2016).

LITERATURE REVIEW

The vetting of annual reports is a crucial process in corporate governance, ensuring transparency and accountability. This literature review aims to trace the evolution of the vetting process over time, highlighting key developments and research trends.

In essence, the vetting of annual reports serves as a compass, guiding corporations through the complex landscape of disclosure, financial reporting, and ethical conduct (Smith, 2018). This review endeavors to be a chronicle, capturing the metamorphosis of vetting practices from their nascent stages to the sophisticated methodologies employed in contemporary corporate landscapes (Jones & Brown, 2016). Through a comprehensive exploration of academic works, our goal is to shed light on the nuanced evolution of annual report vetting, offering insights into its multifaceted dimensions and the currents of thought that have shaped its progression (Robinson et al., 2020).

As we navigate through the pages of scholarly discourse, we will unravel not only the evolution of vetting practices but also the broader implications for corporate governance (Garcia & White, 2019). The intricate interplay between regulatory frameworks, technological advancements, and shifting global paradigms will be unveiled, providing a nuanced understanding of the forces that have sculpted the landscape of annual report vetting (Brown & Smith, 2017).

This literature review is not merely a historical account; it is a dynamic exploration of the research trends that have echoed through academic corridors (Chen et al., 2021). By mapping the intellectual terrain, we seek to identify the key developments that have spurred scholarly inquiry, laying the groundwork for a deeper comprehension of the challenges, innovations, and opportunities that have arisen in the vetting of annual reports (Wang & Johnson, 2018). As we embark on this intellectual odyssey, our intent is to foster a comprehensive understanding that transcends the confines of a singular discipline, encapsulating the interdisciplinary nature of

corporate governance and financial reporting practices (Muller & Williams, 2019).

Through this endeavor, we aspire to contribute to the ongoing dialogue surrounding corporate transparency and governance, providing a valuable resource for academics, practitioners, and policymakers alike (Turner, 2020). The subsequent sections of this literature review will unfurl the historical milestones, methodological advancements, and contemporary debates that collectively form the narrative of the vetting journey undertaken by annual reports.

During the early stages of exploring the vetting of annual reports, the focus was primarily on ensuring regulatory compliance and financial accuracy. Researchers, such as Smith (1955), highlighted the pivotal role of standardized reporting. The emphasis was on creating a framework that allows for consistent and comparable analysis among different companies. This phase laid the foundation for understanding the fundamental importance of transparency and financial integrity in corporate reporting.

Mid-20th Century Advances:

As the mid-20th century unfolded, the scope of studies broadened to encompass more than just regulatory aspects. Scholars like Jones and Brown (1968) contributed to this evolution by incorporating elements of communication theory into the discourse around annual report vetting. The focus shifted towards considering the broader implications of vetting processes, including how companies manage their corporate image through annual reports. This period marked a transition from a purely regulatory perspective to a more holistic understanding of the communicative and strategic dimensions of annual report vetting.

Technological Shifts:

The late 20th century witnessed a profound technological shift that significantly impacted the vetting process of annual reports. Scholars, exemplified by Johnson (1995), began exploring how digitalization influenced reporting mechanisms. Electronic reporting systems and the integration of data analytics became focal points of interest during this era. The research delved into how these technological advancements streamlined the vetting process, ensuring a more efficient and accurate assessment of financial information.

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Globalization and Comparative Studies:

As businesses expanded globally, the literature on vetting annual reports evolved to address the challenges posed by diverse cultural and regulatory environments. Notable contributors like Smith and Lee (2002) engaged in comparative studies, examining vetting practices across different countries. This period emphasized the need for a nuanced understanding of how cultural and regulatory variations influence the vetting process.

Contemporary Focus:

In recent years, there has been a paradigm shift in literature on vetting annual reports towards a more holistic approach. Scholars, including Garcia et al. (2018), now consider non-financial aspects, such as sustainability reporting and corporate social responsibility. This contemporary focus recognizes the importance of a comprehensive evaluation that goes beyond financial metrics, reflecting a broader understanding of corporate performance.

RESEARCH GAPS

While the literature on vetting annual reports has significantly advanced, there exists a discernible research gap that warrants attention. Most early studies, such as those conducted by Smith (1998) and Johnson (2000), primarily concentrated on regulatory compliance and financial accuracy. Although foundational, these works predominantly overlook the dynamic nature of contemporary reporting challenges. Additionally, there is a dearth of comprehensive studies that incorporate the latest technological advancements, as highlighted by recent scholars like Brown et al. (2017) and Lee (2018). The integration of electronic reporting systems and data analytics into the vetting process represents an underexplored area, leaving a significant gap in our understanding of how technology influences the accuracy and efficiency of annual report assessments. Moreover, as businesses operate in increasingly globalized contexts, there is a need for more in-depth comparative studies examining the nuances of vetting practices across diverse cultural and regulatory environments. The works of Garcia and Wang (2017) and Kim (2018) touch upon this, but a comprehensive exploration of these global dynamics remains an uncharted territory in the existing literature.

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OBJECTIVES

1. Investigate the impact of technological shifts on annual report vetting, emphasizing electronic reporting systems and data analytics integration.
2. Conduct an in-depth global comparative analysis of vetting practices, considering diverse cultural and regulatory environments.
3. Address the gap in holistic evaluation by exploring non-financial aspects like sustainability reporting, aiming for a comprehensive assessment of annual reports.

RESEARCH METHODOLOGY

Research Design:

The chosen research design for investigating the vetting of annual reports is a mixed-methods approach, integrating qualitative and quantitative methodologies. This combination enables a more comprehensive and nuanced exploration of the vetting process. On the quantitative side, the financial accuracy and compliance aspects of annual reports can be quantified and analyzed statistically. Meanwhile, the qualitative approach allows for a deeper understanding of the contextual factors, challenges, and strategies involved in the vetting process. This dual-method design enhances the reliability and validity of the research findings, providing a more robust and holistic view of annual report vetting practices.

Sample Size:

Determining an appropriate sample size is crucial for the reliability and generalizability of the study. The sample will consist of annual reports from various industries and regions to ensure a representative selection. Striking a balance between adequacy and feasibility is paramount. A sufficiently large sample size allows for meaningful statistical analyses and the identification of trends, while still maintaining practicality in data collection and analysis. This approach ensures that the findings are not skewed by an insufficient or overly complex sample, contributing to the

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overall robustness of the study.

Sampling Technique:

Stratified random sampling will be employed to select the annual reports included in the study. This technique involves dividing the population into subgroups (strata) based on certain characteristics, such as industry or geographical location. From each stratum, a random sample will be selected. This method ensures a proportional and representative distribution of annual reports from various sectors and regions, capturing the diversity of vetting practices across different contexts. Stratified random sampling enhances the external validity of the study, allowing for more accurate generalizations to the broader population of annual reports.

Data Collection:

Primary data will be collected through content analysis of annual reports and interviews with professionals involved in the vetting process. Content analysis involves systematically examining the textual and visual content of annual reports to identify patterns, themes, and relevant information. This quantitative approach will focus on extracting financial data and compliance indicators. Simultaneously, qualitative insights will be gathered through in-depth interviews with individuals responsible for vetting annual reports. This dual-data collection strategy ensures a comprehensive understanding of both the quantitative metrics and the qualitative intricacies of the vetting process.

Data Analysis:

The data analysis phase encompasses both quantitative and qualitative techniques. For quantitative data, statistical tools will be applied to analyze financial indicators and patterns within the annual reports. This includes measures such as financial ratios, compliance percentages, and trends over time. Thematic analysis will be employed for qualitative data obtained from interviews. This involves identifying recurrent themes, patterns, and insights related to the challenges, strategies, and contextual factors influencing the vetting process. By employing a mixed-methods analysis, the research aims to provide a holistic and nuanced interpretation of annual report vetting practices.

EXPECTED OUTCOMES

The comprehensive investigation into the vetting of annual reports is anticipated to yield multifaceted outcomes with both practical and theoretical implications. Firstly, the research aims to provide a nuanced understanding of the challenges faced by organizations in ensuring the accuracy and compliance of their annual reports. By uncovering these challenges through qualitative insights

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and quantitative metrics, the study contributes practical strategies for enhancing the vetting process.

The identification of industry-specific and region-specific trends in annual report vetting practices is expected to be a significant outcome. This granular understanding will empower organizations to tailor their vetting strategies according to contextual factors, fostering better alignment with industry norms and regulatory requirements.

The study's mixed-methods approach is poised to offer a holistic view of the vetting process. By integrating both quantitative financial metrics and qualitative contextual insights, the research aims to bridge the gap between numerical data and the real-world intricacies of annual report vetting. This comprehensive understanding is crucial for organizations seeking to enhance their reporting practices and for regulatory bodies aiming to refine guidelines.

Additionally, the research outcomes are likely to contribute theoretical advancements in the field of corporate governance. The identification of emerging patterns and best practices in annual report vetting can serve as a foundation for refining existing governance theories and models. In summary, the expected outcomes of this research encompass practical insights for organizations, industry-specific benchmarks, theoretical advancements in corporate governance, and an overall enhancement of the understanding and practice of annual report vetting.

SCOPE OF THE STUDY

This study on the vetting of annual reports encompasses a broad scope, aiming to provide a comprehensive examination of practices, challenges, and opportunities within the corporate reporting landscape. The geographical scope extends to diverse industries and regions, facilitating an in-depth exploration of regional variations and industry-specific nuances in annual report vetting.

The study encompasses various dimensions of corporate reporting, including financial accuracy, regulatory compliance, and the emerging trends in non-financial reporting such as sustainability and corporate social responsibility. By embracing a holistic perspective, the research aims to uncover the interconnected nature of these dimensions, providing a nuanced understanding of the multifaceted vetting process.

Furthermore, the scope extends to the technological aspects influencing annual report vetting, incorporating the examination of electronic reporting systems and the impact of data analytics on the accuracy and efficiency of the vetting process. This technological scope acknowledges the

contemporary shifts in reporting practices and their implications for organizations adopting digitalized reporting systems.

The study's temporal scope spans from early regulatory compliance-focused studies to the exploration of cutting-edge practices in the digital age. By tracing the evolution of vetting practices over time, the research aims to contribute insights into the historical development and future trajectories of annual report vetting.

In essence, the scope of this study is both expansive and dynamic, embracing a comprehensive examination of annual report vetting practices across industries, regions, dimensions of reporting, and technological landscapes.

TIME REQUIRED FOR COMPLETION

The undertaken study will be completed in 02 Months.

Biodata of investigators (Not more than a page for each PI/, co-PI:

Principal Investigator: Dr. Krity Gulati

Dr. Krity Gulati, Assistant Professor &HoD in School of Commerce & Management, Lingaya's Vidyapeeth. Her thirst for knowledge and desire to contribute to her field led her completed Ph.D. in field of marketing from Under her supervision management scholars are pursuing PhD. Dr. Krity Gulati is a prolific researcher and has published articles in reputable journals, presenting her work at national and international conferences.

Awards: -

- Research Publications: 04
- Patent Published: 01
- PhDs being guided: 04

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New Delhi 110 091, INDIA

17 Oct 2022

APPROVAL OF CONSULTANCY PROJECT

Greetings!

Dear Dr. Samriti Mahajan,

I am pleased to inform you that your application for the approval of the consultancy project titled "Unveiling the Success Secrets: Exploring Unique Strategies for Employee Retention in the Dynamic Realm of Start-Up Ventures in India" has been carefully reviewed, and we are delighted to approve the project.

General Information:

1. **Project Title:** "Unveiling the Success Secrets: Exploring Unique Strategies for Employee Retention in the Dynamic Realm of Start-Up Ventures in India."

1.1 Duration (in months): 12 Months

1.2 Total Cost (in Rs Lakhs): 1.30 Lakh (One Lakh & Thirty Thousand)

1.3 Priority Area and Sub-Area: Study on employee retention in Indian startup ventures, examining factors influencing retention, motivations for joining and staying, and proposing strategies for balanced tenure.

1.4 Foreign Exchange (FE) Component: NA

1.5 Principal Investigator & Co-PI:

- *Principal Investigator:* Dr. Samriti Mahajan, Associate Professor & HOD, SOCM, Lingaya's Vidyapeeth
- *Co-PI:* Dr. Priyanka Jarolia, Assistant Professor, SOCM, Lingaya's Vidyapeeth

Action For India (AFI) New Delhi, 110091 Retain, Thrive, Sustain, Excel

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18 APR 2024

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1.6 Department & Faculty: Department of Management, School of Commerce & Management

1.7 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.8 Project Summary: This 12-month research project focuses on understanding employee retention dynamics in Indian startup ventures. Led by experts, the study aims to identify factors influencing retention, explore motivations for joining and staying, and propose effective strategies for achieving balanced tenure. The project aligns with the institution's commitment to advancing knowledge in management and commerce, with anticipated outcomes contributing practical insights for startups seeking to enhance their workforce retention strategies. We appreciate the significance of your proposed research and believe that it aligns well with the goals and objectives of our institution. Your dedication to advancing knowledge in the field of employee retention in startup ventures is commendable.

Please ensure that the project is conducted with the highest standards of ethical research and in accordance with all relevant guidelines and regulations. We look forward to the successful completion of this project and the valuable contributions it will make to the field. If you have any further questions or require additional assistance, please do not hesitate to contact us.

Congratulations on the approval of your consultancy project, and we wish you every success in your research endeavours!!

Sincerely,

Kind regards,
Dr. Amit Seth

Action For India (AFI) * New Delhi, 110091 * Retain, Thrive, Sustain, Excel

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Nachauli, Jasana Road, Faridabad – 121002; Ph: 0129-2598200-05

Website: www.lingayasuniversity.edu.in

Ref: LV/SOCM/09/01 **Date: 27.09.2022**

School of Commerce & Management

Application for Approval of Consultancy Project

General Information

1.0 Project title

"Unveiling the Success Secrets: Exploring Unique Strategies for Employee Retention in the Dynamic Realm of Start-Up Ventures in India."

1.1 Duration (in months): 12 Months

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1.3 Priority area and sub-area

Study on employee retention in Indian startup ventures, examining factors influencing retention, motivations for joining and staying, and proposing strategies for balanced tenure.

1.4 Foreign Exchange (FE) component, if any: NA

1.5 Principal Investigator: Dr. Samriti Mahajan, Assistant Professor, SOCM, Lingaya's Vidyapeeth and Co-PI: Dr. Priyanka Jarolia, Assistant Professor, SOCM, Lingaya's Vidyapeeth

1.6 Designation: as above

1.7 Department & Faculty: Department of Management, School of Commerce & Management

1.8 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.9 Date of Birth: Dr. Samriti Mahajan (18/02/1991) & Dr. Priyanka Jarolia (26/12/1982)

1.10 Gender: Female & Female

1.11 Aadhar Number: Dr. Samriti Mahajan (961324911504) & Dr. Priyanka Jarolia (942235496586)

1.12 Mobile and email: dr.samritimahajan@lingayasvidyapeeth.edu.in, 7042941122; Dr.PriyankaJarolia@lingayasvidyapeeth.edu.in , 8698166227

1.13 Collaborating Institutions, if any: NA

1.14 Project summary

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BACKGROUND OF ADJOINING RESEARCH - The topic "A Study of Employee Retention Strategies in Start-up Ventures", is an original work undertaken for the research. It is a self-driven and published doctoral research on Shodh Ganga and can be traced with http://hdl.handle.net/10603/426859. The sole purpose of this research was to loosen the tough nail of the budding ventures that is retaining employees even in the adverse situation and tough times. More than 130 literature review has been covered to get a thorough insight of the context. Furthermore, a data of 364 sample size was collected and as start-ups are not domain specific, hence a generalized study was done on PAN-India level. Furthermore, mixed approach was applied for data analysis out of which descriptive, trend analysis, and factor analysis was done quantitatively and thematic analysis was done Qualitatively. In the due course of analysis, it was churned those 3 major industries (IT/ITES, Real- Estate Co-living, and Edu-tech) were counting more on start-ups in the collected data. Hence, the final analysis was emphasized on these 3 industries. To interpret "Employee-Employer Engagement Model (EEE model)" was framed inclusive of both Employee as well as Employer Perspective and finally to comprehend EEE Model, High-Medium-Low Analysis (HML Analysis) was done to conclude the topic and show the major impact of factors and actionable out of all.

ABSTRACT

Employee retention is a universal problem in every individual organization. Reasonably it is less challenging in bigger and older organizations, but an exaggerated one in smaller and newly established ones. Factors are one to many that makes the process more cumbersome and demanding. Thus, present research will be undertaken to study the retention strategies in startup ventures. A thorough literature review, in search for relevant information's related to the topic will be done. On the role it is reflected that retention strategies in startups in India is rarely worked upon. Thus, the 3 objectives are framed to understand various factors responsible for retention of employees, also that motivates people to join and stay in startups long with that moderate their stay in the same. Purposive sampling technique will be used to sort the samples for study and primary data from around 1000 samples from PAN India level will be collected. Also, the analysis part will go on mixed approach through quantitative as well as qualitative in the form of descriptive, factor

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analysis and model fit test along with narrative, respectively. The expected outcome will be in respect to the framed objective with an aim to give better and different dynamic and contextual view to the study.

Keywords – Employee retention, Motivation, Start-up, Employee engagement.

INTRODUCTION

Indian Start-Up ecosystem is well-famed on global ground. Collectedly, country is evident of many meritorious talents who opt to start their own enterprise leaving the multinational jobs, good salary package or even government job behind to serve the purpose. They are keen to solve prevailing problems with the remarkable solutions out of their unique thought process; this is incisive in turn to be opportunistic. However, various young, innovative and entrepreneurial minds, that vision to start their own undertaking, are not always guaranteed the same in lack of support and required necessary resources. Resulting out the distress of exposure their creativity, knowledge and idea remain intact and undid. Broadly exploring even the country losses young entrepreneurs along with employment associated with the aligned venture, quoting it entirely with the loss of economy. The proclamation was more generalized to reassure the entrepreneurial zeal among the Indian youth. Indeed, the Start-Ups were proclaimed to augment the prosperity nationwide and thus boost economic growth of the country. Furthermore, understanding the concept of Start-Ups is imperative to get well along with the study. The coinage of the term "Start-up" has no ground indication, but as mentioned in start-up book.com, connoting the citation in Oxford English Dictionary (1989 edition) it was first recorded in business context (budding company) in Forbes Magazine in 1976.

Indian startup ecosystem is the 3rd largest ecosystem in the World after US and UK. In contribution to this, Economic Times also updated that around 1400 new startups were expected by the end of the year which is around 8-10% more than last year as per the report of NASSCOM-ZINNOV through "Indian Startup ecosystem Maturing". Adding to this, Grant Thorton, presents a NASSCOM Startup India Report 2015 that, around 43% of total startups are Tech based startups and total increase in Tech startups. Also, more than 1300 startups were established alone in 2019 making the figure rise up to 8900 to 9300 between 2014 to 2019, reflecting year-on-year growth by 12% to 15%.

To lead ahead with the support that Indian Startup Ecosystem will keep flourishing in coming

years, Grant Thorton, 2015 presents a World Bank News Article which states that, India is marching forward with almost 30 to 60 new businesses per day.

Startups show less than 10% of success rate, resulting into a huge loss of investor's capital at stake. Highlighted factors from Indian Startups: survival strategy by Dr. Amitabh Bhatnagar mention following reasons affecting ecosystem of startups– Supervision and guidance in the initial phase is deficient, access to risk capital and fund from venture capitalists is on count, low quality of infrastructure adds more in the operational costs, regulatory hurdles, lack of entrepreneurial culture among students, and less risk bearing attitude. Also, IBM Institute for Business Value adds here that around 90% of the startups fail within 5 years from their date of incorporation. In an interview of 100 Venture Capitalists, 6 major reasons for startup failure were identified- lack of innovation and strategic planning, startups incapability in attracting and 30 retaining employees with required skills, lack of sufficient funding for startups, inappropriate mentoring of startup founders and unethical professional means of startups and inexperienced leadership as the reasons behind failure of maximum startups. With the due context of "Start-up Revolution", in present day technological change, convergence and integration of dynamic fields of opportunities, and innovative mindset of people, status of startups has improved. Although, government initiatives, seed investor incubators, accelerators and funds from venture capitalists has upgraded the level and number of startups, yet many and much more has to be done. A list of measures were implemented and are proposed for holistic development of the startups, which incudes – Improved policies for startups including tax benefits, technical skill development, improvement of internet and mobile infrastructure, participation of various miniseries, activation of startup hubs, encouragement of youths, enhanced and dynamic functioning of startup incubators in educational institutes in the form of Centre of Innovation, Incubation and Entrepreneurship (CIIE) at IIM-Ahmedabad, big corporate house like T-Hub of TATA Group. Founder's entrepreneurial mindset is another very important factor in the lane of success which cannot be ignored, this encompasses of his policies, procedures, self-motivation, social and psychological attributes. Furthermore, SRKay Consulting Group in SCIKEY Research of October 2018, has drafted a success model in order to save the sinking funds, facilitate the Startup Ecosystem, Nation and Investors. The success of startups, its duration and magnitude of success is determined by 3 major factors to measure startup success, these 3 factors are –

1. Mind match of Founders – 67% of employees are found to remain disengaged at job, 40%

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time of managers are involved in resolving conflict and 80% of employees are mingled up in professional stress, all these in turn result out in poor mind match among founder and people at work. 'Entrepreneurial thinking' prevails here to be the driving force that stimulates the mindset of the founder and guides him to give his best at work. Contrary due to mismatch of the same, founders of the unsuccessful startups reported as follower rather than leader, however those from successful ones confirmed flip of former. Also, a well comprehended founder cannot become successful without the mind match of its employees and their misalignment. It is therefore, essential both for a founder and an 31 employee to get well along with the work and its culture to improve productivity. Resultantly, it is found that level of mind match gives a directly proportional trend with the success of startups. 'Human only factors' were remarked responsible for the success of 78% of startups that matches not only with the mindset of the founder, but also among the team and culture of the organization, resulting in higher employees alignment, engagement, motivation, retention and success at the end.

2. Education and Governance Ecosystem – Education and knowledge system is important to meet the demand of time and business. It is imperative not only to increase knowledge, but also to provide ample of opportunities. In this flow, there are 4 different aspects of education that influence the success of startup ecosystems – Support of Formal Entrepreneurial Education, Government support for Informal system, competitive talent and support in research and development.

3. Support from Social system – Success of startups is also linked up with the social mindset, supporting parameters in this context are – acceptance of risk, acceptance of market, and acceptance of ethics and legal procedures. Success rate increases parallel with the positive indication of these parameters. Comprising all the above factors of success, startups success index in India is negative which makes the startup founders work very hard in order to sustain and achieve success. The white paper's primary acknowledgment is on founder's mind match above rest 2 (with less weightage), with a point of consideration that mindset of the founder, the employees working for the venture and culture matters above all for achieving success. This also turns up into unrestrained flow of innovative ideas, which would have otherwise flourished in the case of countries with positive success index.

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LITERATURE REVIEW

Human Resource acts as the fuel to energies and drive any organization. Their accountabilities range from framing policies, working on new technologies, assuring the achievement of organizational objectives to ensuring customers satisfaction. Thus, employees are known to be the most dynamic and imperative resource in order to make an organization successful.

Challenge's role out to be many, in retaining different type of employees may they be performers or beginners; all stand to be equally important, but strategies in retaining them differs. For beginners, their level of performance were not known, thus incentive plans couldn't be decided for them, organizations thought than to consider the cost of the employment agencies and benefits incurred through employees, and then fix their bonuses, incentives starting small and growing later in the tag of good job design (Sigler, 1999).

(Polly, and Doug, 2018) supported the stay of new employees by suggesting thoughtful and competitive advantages and growth to such employees including their personal development, justifiable compensation that keeps them bonded with the organization with an intention to grow with the growth of the same. For, retaining top talent strategies were focused for long term association with them (Martin, and Schimdt, 2010). Large number benefits are planned to retain top talent by providing them holidays, half days, recognition, and quarterly reward, this motivates top talents and mutually benefit company (Lewis, 2015). (Ruggles, 2017) adds that inclusive of other practices, how organization treats their employees to frame the culture, makes later feel better and treat them on 48 their last day, is a matter to be notified when it comes to increase retention. In same concern, two types of high-growth small firm organizations have been discussed by (Kemelgor, and Meek, 2008), out of which one showed very less annual voluntary turnover of its employees between 0- 2% with a high degree of retention practices, whereas firms reporting higher than 10% of the employee turnover lack retention practices in these firms, thus lack in intellectual capital. Pondering more on voluntary turnover of employees in small firms, owners report emotion-based and remuneration-based retention strategies in small firms to manage employee's retention (Gialuisi, and Coetzer, 2012).

In the initial phase due to newness and smallness of the venture, a startup faces many issues to

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prove and continue its sustainability, among which HR issues holds a long list in every phase and function. The role of HR is inevitable in maintaining a positive work environment, employeeemployer relationship and valuing them (Agrawal, 2018). (Johnson, 2018) also mentions that HR has to manage its employees by keeping up their growth curve, by mixing different level of employees together and following the pattern of "learn, leap and repeat". Not only in startups, but also in older organizations, employers found negative impact of employee's turnover and emphasized on employee retention strategies acknowledged to gain profitability. Inducing the demand of a healthy work culture, respect, recognition, cooperation was in the lane of support (Ramos, 2017).

Contemplating more on different industries or sectors, it was studied that work-life balance is another challenge which frustrates the employees to stay for long in hospitality sector, thus it becomes crucial for managers to monitor the same as employees are not aware initially (Derry, and Jago, 2014). Even in IT industry work-life balance shows a mediating relationship between employee's job performance and their prolong retention; which occurs in turn by the help of associated work culture (kar, and Misra, 2013).

Startup companies like any other companies face even more challenges in retaining its employees. Also, this dare becomes another hard nail to hit when it comes to measure satisfaction level of the employees as the factors to uphold the same could be any to many. Rolling on to the factors a study of (Sawadia, 2017) reveals that employees shows a positive notion of job satisfaction when it comes to work environment along with the wages and incentives depending up on the assigned work load. Welfare facilities stands neutral on scale of satisfaction for employees, however few others factors are remarkable and influences an employee's decision to either stay or leave the organization. These comprises of career development opportunities, relationship and approachability with the seniors, training programs, appreciation, delegation of work, etc.

In existing organizations also, retention strategies are an essential point of concern. It is an integral part of well-designed human resource management and effects both employees and employer's (Irabor, and Okolie, 2019). Also, as people spent maximum amount of time in their workplace, they expect it to be well organized to increase sustainability. Interrelation among employee retention and 54 reward comes out to be positive and directly proportion, however those among

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reward and job satisfaction were negative (Terera, and Ngirande, 2014). An important aspect of treating frontline employees as valuable as customer, helps in improving employee retention (Rust et al., 1996). To elaborate more on compensation and its impact on employee retention, it was found that there exist a positive relationship between compensation, incentives, bonus, fringe benefits and employee satisfaction and their retention (Osibanjo, Adeniji, Falola, and Mac, 2014). Some other employers trying to retain their best talents provide them stock option plan, flexible working schedules and child care facilities for female employees (Wagner, 2000).

ROLE OF EMPLOYERS IN FRAMING EMPLOYEE RETENTION STRATEGIES AND FURTHER SCOPE OF RETENTION STRATEGIES

Startups face volatile, uncertain, complex and ambiguous (VUCA) situations many times in its daily working. Maintaining employees and captivating them to work thus needs strategic planning to meet daily challenges positively. 5 strategic people practices are in turn recommended, strengthen the connection between business initiatives taken and its result gained, start from small planning, its implementations and regular feedback to improve, bound business culture and initiatives taken, keep the integrity of strategic practice high, and focus on external practices inculcated by competitors to meet out the VUCA situations and maintain people practices in the same (Rogers, and Paul, 2018).

Employers represents a very remarkable locus of control and management in the eye of the employees, may they be in new and budding ventures or from already existing organizations. 56 Their management style, practices, promises and word of mouth is noticed to impact workplace beliefs. When notified promises were breached, employees testified to be negative about company along with the lower level of motivation, commitment towards job and stronger intent to leave the organization (Kickul, 2001).

It was also found that except monetary reward there were even ways to attract and retain top talent for a longer period of time. This comprises of appreciation for work, handwritten notes, exchange

of gifts among employees, revised performance incentives, etc. Zack in 2019 added here that understanding the crucial needs of employees to make the organization a great place to work by mesmerizing positive moments, and keep a balance between performing employees are another important aid to increase employee's tenure in organization. Managing innovatively employers are now also using space model to increase employees learning, productivity and level of motivation. Concept of co-living, and optimum utilization of space, have imparted a collaborative platform to the employees to interact, learn and work together. This not only increases the level of learning among the employees, but also is cost effective for the organization (Vora, 2019).

RESEARCH GAPS

Although there is extensive research work done on employee retention, but still rare work is discussed on employee retention strategies in startup ventures. There are significant studies performed on employee retention in different sectors, but that does not discuss anywhere about startups. Moreover, previous research on employee retention does not drill down much on various strategies of retention in startups in India, only rare ones are found based on specific locations. Distribution, divergence, and formation of startups are also not found in any research work studied till now. Moreover, based out of the linked up doctoral research, it was even recommended to retake the gap as –

1. Research work with large sample size around 1000 will be more reliable, that is missing.
2. The linked-up research was done during pandemic, however if an extended and exhausted result is done in the same context in an ideal situation, results might differ.
3. The anchored research conclusively worked on 23 factors, however there could be more factors to elaborate and emphasize upon.

OBJECTIVES

1. To explore various factors affecting employee retention strategies in start-up ventures of various industries.
2. To understand the motivating factors responsible for influencing people to join and stay in

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start-up.

3. To test the moderating factor responsible for retention through proposed model with advance analytics and statistical testing.

RESEARCH METHODOLOGY

Research Design – Current study will be of Descriptive nature.

Sample Size – 1000

Sampling Technique – Purposive Random Sampling

Data Collection – Primary data will be collected through questionnaire having structured questions and through interviews of HR professionals having semi-structured and unstructured questions.

Data Analysis – Mixed Approach will be used to analyze the collected data. Out of which Quantitative analysis will include Descriptive statistics for basic demographic study, Factor analysis (CFA) to work on factors, and moderation to check the model fit. Along with these, qualitative analysis will be done through narratives to elaborate the open ended and interview-based questions.

EXPECTED OUTCOMES

Exhaustive factors are intended to be drawn out of analysis which will give even a deeper insight to this study; and will be more industry specific to ease out the problem of retention. Industry wide factors will also give a dynamic view to the research. Driving factors to join and stay in startups are also that can be drawn out of this research. Facts when supported with figures and vice-versa verifies the exact scenario and cross verifies the solution proposed with the supported model. Hence, this study will be duly focused towards solving the major struggle of start-ups in context of retaining their assets.

SCOPE OF THE STUDY

The scope further, could be placed to get benefit out of the results and apply in practical in start-up ventures. Start-ups can also work upon the suggested factors as actionable to improve their rate of retention. Nonetheless, discerning but the proposed model will also share an insight that will suggest start-ups to understand driving and restraining factors that will further boost their retention concern.

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TIME REQUIRED FOR COMPLETION

The undertaken study will be completed in 1 year.

FUNDS REQUIRED

Heads	Cost Required (□)
Journals/Reports	□25,000
Printouts/File Binding/ Stationary items	□10,000
Travel to local areas in Delhi/Ncr	□ 25,000
High end Data analysis with advance statistical tools	□ 40,000
Patent Filing	□ 30,000
	Total = □ 1,30,000 (1 Lakh & Thirty Thousand)

Biodata of investigators (Not more than a page for each PI/, co-PI:

Principal Investigator: Dr. Samriti Mahajan

Dr. Samriti Mahajan is an accomplished academician and industry professional with over 10 years of experience in teaching, research, and administration. She currently serves as the Assistant Professor, in the School of Commerce & Management at Lingaya's Vidyapeeth, Faridabad. Dr. Mahajan holds a Ph.D. in Green Marketing, an MBA in Biotechnology, and a graduation degree in Biotechnology. Her areas of specialization include Digital Marketing, Strategy, Marketing, Consumer Behavior, Brand Management, International Business. She has authored 2 books, more than 10 chapters, Case Study, 4 - design patents and 18 utility patents - Indian and International patents. Her research contributions include several International Scientific papers and review papers. Dr. Mahajan has been a speaker for the World Innovation Patent Conclave, Guest of Honour for IPR cell- BIT Raipur, Project Judge- BIMT Bangalore, Session Chair for Seminars and Conferences, and resource speaker for FDP & MDP. She is a member of IAAC - International Association of Academics Plus Corporate.

Reviewer for ABCD Indexing & Heliyon.

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Awards: -

- Young Women Educator and Scholar by - National Foundation for Entrepreneurship Development (NFED)
- Indian Researcher Award by IRA, London, U.K - 2021
- Research Publications: 07
- Patent Published: 18
- PhDs being guided: 06

Co-Principal Investigator: Dr. Priyanka Jarolia

Dr. Priyanka Jarolia, Assistant Professor & Ph.D. Coordinator in School of Commerce & Management, Lingaya's Vidyapeeth. Her thirst for knowledge and desire to contribute.to her field led her completed Ph.D. in field of marketing from Rashtrasant Tukadoji Maharaj Nagpur University. Sustaining and growing with the changing times, she has completed Executive Development Program in Digital and Social Media Marketing from Indian Institute of Management. Under her supervision management scholars are pursuing PhD. Dr. Priyanka Jarolia is a prolific researcher and has published articles in reputable journals, presenting her work at national and international conferences. Also, as keynote speaker in international FDPs. Her research interests revolve around Digital Marketing & consumer behaviour. Overall, Dr. Priyanka Jarolia stands as an influential and passionate Assistant Professor, leaving an indelible mark on the academic world through her teaching, research, and dedication to shaping the minds of future scholar.

Awards: -

- Research Publications: 04
- Patent Published: 01
- PhDs being guided: 04

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Aggarwal & Sons Constructions

#1455, SECTOR 14

HISAR DISTT. HISAR (HRY.) 125001

Ref No ..... **Date:**

Dear Dr. Krishna Nath Pandey

Project title: "The Wellspring of Success: Nurturing Employee Well-Being for Peak Performance and Fulfilment"

Duration (in months): 12 Months

Total cost (in Rs Lakhs): 1.87 Lakhs (One Lakh Eighty-Seven Thousand Only) Priority area and sub-area Evaluating corporate governance, financial accuracy, and sustainability practices to ensure compliance, transparency, and strategic alignment in the disclosed annual reports.

Foreign Exchange (FE) component, if any: NA

Principal Investigator: Dr. Krishna Nath Pandey, Professor, SOCM, Lingaya's Vidyapeeth

Designation: Professor

Department & Faculty: School of Commerce & Management

Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

Date of Birth: Dr. Krishna Nath Pandey & 21/07/1957

Gender: Male

Aadhar Number: Dr. Krishna Nath Pandey (766907472790)

Mobile and email: dr.krishnanath@lingayasvidyapeeth.edu.in, 9717699636;.

Thank you for your dedication to advancing knowledge and contributing to the academic and professional community.

Sincerely,

GAURAV SINGH

CEO & MD

AGGARWAL & SONS CONSTRUCTIONS

For LINGAYA'S VIDYAPEETH

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Lingaya's Vidyapeeth
Deemed-to-be-University u/s 3 of UGC Act 1956, Government of India
NAAC ACCREDITED
Approved by MHRD/ AICTE/ PCI/ BCI/ COA/ NCTE
Nachauli, Jasana Road, Faridabad – 121002; Ph: 0129-2598200-05
Website: www.lingayasuniversity.edu.in

Ref: LV/SOCM/01/01 **Date: 03.07.2018**

School of Commerce & Management

Application for Approval of Consultancy Project

General Information

1.0 Project title :- "The Wellspring of Success: Nurturing Employee Well-Being for Peak Performance and Fulfilment"

1.1 Duration (in months): 12 Months

1.2 Total cost (in Rs Lakhs): 1.87 Lakhs (One Lakh Eighty Seven Thousand Only)

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1.4 Foreign Exchange (FE) component, if any: NA

1.5 Principal Investigator: Dr. Krishna Nath Pandey, Professor, SOCM, Lingaya's Vidyapeeth

1.6 Designation: as above

1.7 Department & Faculty: School of Commerce & Management

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1.9 Date of Birth: Dr. Krishna Nath Pandey & 21/07/1957

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1.11 Aadhar Number: Dr. Krishna Nath Pandey (766907472790)

1.12 Mobile and email:dr.krishnanath@lingayasvidyapeeth.edu.in, 9717699636;

1.13 Collaborating Institutions, if any: NA

1.14 Project summary

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BACKGROUND OF ADJOINING RESEARCH –

he landscape of work is shifting. While traditional metrics focused on productivity and profit still hold weight, organizations are recognizing the crucial role of employee well-being in achieving sustainable success. Rising awareness of burnout, stress, and disengagement has sparked a need for a deeper understanding of the interconnectedness between well-being, performance, and fulfillment.

However, existing knowledge has gaps. We need a comprehensive framework that integrates individual aspects of well-being (physical, mental, emotional) and examines their combined impact on performance and fulfilment. Furthermore, current interventions often lack scientific backing and fail to address the diverse needs of different employee groups.

Your research holds the potential to transform workplaces and benefit both individuals and organizations. By venturing into adjoining research areas like leadership, diversity, and technology, you can further broaden and deepen our understanding of well-being at work, shaping a future where employees thrive and businesses flourish.

This is just the beginning of your journey. Remember, your specific research interests and focus will guide your exploration and shape the unique impact you can make on the future of work. Go forth and delve into the wellspring of knowledge, creating a ripple effect of well-being that empowers individuals and organizations to reach their full potential.

In the whirlwind of today's workplace, amidst the relentless pursuit of productivity and profit, a quiet revolution is brewing. Organizations are beginning to awaken to a powerful truth: the well-being of their employees isn't just a fringe benefit, it's the beating heart of sustainable success. The once-acceptable costs of burnout, stress, and disengagement are ringing alarm bells, forcing us to delve deeper into the interconnected web of well-being, performance, and fulfillment.

Yet, our current understanding remains fragmented. We have glimpses of well-being's influence through the lenses of physical health, mental agility, and emotional resilience, but a holistic tapestry weaving them together, revealing their combined impact on individual and organizational flourishing, remains largely unwoven. The interventions we deploy, often well-intentioned, lack the grounding of scientific rigor, failing to effectively address the diverse needs and realities of our multifaceted workforce.

This is where your research becomes a beacon of hope, an odyssey into the "Wellspring of Success." Here, you have the potential to:

Craft a Masterpiece of Well-being: Imagine a comprehensive framework, a symphony of knowledge gleaned from diverse disciplines, painting a vibrant picture of how well-being's individual chords intertwine, composing the harmony of peak performance and profound fulfillment. This model would serve as a compass, guiding organizations towards nurturing environments where employees thrive.

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Forge Evidence-Based Tools: Instead of throwing darts in the dark, you can illuminate the path with interventions forged in the fires of scientific scrutiny. Identifying practices with proven efficacy, tailoring them to specific needs like a master tailor crafting bespoke suits, you can empower organizations to build cultures where well-being isn't an afterthought, but a cornerstone of daily life.

Quantify the Symphony of Success: No longer a whispered promise, you can translate the language of well-being into the hard currency of business. By demonstrating the tangible ROI of well-being initiatives, the increased productivity, reduced absenteeism, and strengthened employee engagement, you can make a resounding case for prioritizing well-being as an investment in organizational sustainability.

Sow the Seeds of a Thriving Future: Your research isn't just about the present, it's about cultivating a future where well-being isn't just a trendy buzzword, but an ethical imperative. By contributing to a shift in organizational consciousness, where well-being becomes woven into the fabric of every decision, every practice, every policy, you can sow the seeds of a future where businesses flourish alongside their employees, both blooming in the sunshine of mutual respect and shared success.

But this is just the first brushstroke on your canvas. Your unique interests and expertise will guide you as you explore adjoining landscapes like the influence of leadership, the nuances of diversity and inclusion, and the ever-evolving role of technology in shaping workplace well-being. Each brushstroke adds depth and dimension, creating a masterpiece that not only illuminates the present, but illuminates the path towards a future where work is not just a means to an end, but a source of well-being, fulfillment, and shared prosperity.

So, venture forth, intrepid explorer, and dive into the wellspring of knowledge. With each discovery, with each insightful connection you forge, you unleash a ripple effect of well-being that has the power to transform lives, organizations, and ultimately, the very fabric of our working world. Let the tapestry of well-being be your legacy, a testament to the power of research to not only understand the world, but to change it for the better.

ABSTRACT

This research embarks on a transformational journey, "Empowering Growth: Nurturing Success," where employee well-being blossoms into peak performance and organizational flourishing. By weaving a tapestry of insights from diverse disciplines, the program elevates both individual well-being (physical, mental, emotional, and social) and organizational success through data-driven interventions. Imagine personalized assessments, skill-building workshops, and positive work environments synergistically enhancing engagement, retention, and productivity. By unlocking the ROI of well-being, this research strives to not only create a replicable program, but also champion a paradigm shift towards holistic workplaces where

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individuals and organizations thrive in tandem, shaping a future where well-being isn't just a perk, but the very foundation of success.

Modern workplaces, grappling with relentless productivity demands and rising burnout, necessitate a paradigm shift towards holistic approaches that prioritize employee well-being. This research proposes the development and implementation of a "Holistic Enhancement Program," designed to nurture success by simultaneously elevating employee well-being and productivity.

Keywords – Employee well-being, productivity, holistic program, performance, stress management, resilience, mindfulness, emotional intelligence

INTRODUCTION

The landscape of work is undergoing a seismic shift. The relentless pursuit of productivity that once dominated is giving way to a newfound understanding: organizational success hinges not just on output, but on the well-being of the very individuals producing it. This evolving perspective informs the core of "Empowering Growth: Nurturing Success," a research endeavor aimed at elevating employee well-being and, in turn, unlocking peak performance and organizational flourishing.

Our approach departs from the traditional compartmentalization of well-being, recognizing it as a complex, multi-faceted tapestry woven from physical health (Sparks & Smith, 2020), mental resilience (Friedman & Sbarra, 2016), emotional intelligence (Jordan & Wong, 2018), and the crucial social element of workplace relationships (Haslam et al., 2017). Each thread in this tapestry impacts the symphony of organizational success, and "Empowering Growth: Nurturing Success" seeks to harmonize their resonance through its "Holistic Enhancement Program."

This program envisions a personalized roadmap for each employee, crafted from evidence-based interventions like skill-building workshops focused on stress management and mindfulness (Creswell & Lindsay, 2015), positive work environment initiatives fostering open communication and flexibility (Friedman & Ferris, 2017), and a robust system of continuous monitoring and

evaluation (Alvord et al., 2016). Imagine a workplace where bespoke stress management techniques cater to individual needs, mindfulness practices seamlessly integrate into the workday, and supportive relationships bloom in a culture of open communication and flexible work arrangements.

"Empowering Growth: Nurturing Success" transcends the purely academic; it bridges the gap between theory and practice. We aim to develop a replicable program, a readily-implementable toolkit for organizations of all sizes and sectors. By quantifying the ROI of well-being (Baardse et al., 2017), we move beyond the realm of "feel-good" initiatives and present a compelling business case for prioritizing employee well-being. This pursuit transcends mere pragmatism; it seeks a paradigm shift, transforming workplaces from pressure cookers into fertile gardens where individuals blossom and organizations flourish in tandem.

This is not a linear path, but an ever-evolving exploration. We embrace the complexity of human nature and the dynamism of the workplace, continuously adapting and refining our program to ensure its impact remains relevant and ever-growing. Ultimately, we aspire to contribute to a future of work where well-being isn't just a privilege, but a cornerstone of success. A future where individuals and organizations thrive in a symbiotic embrace of growth and fulfillment, guided by the harmonious symphony of well-being that is "Empowering Growth: Nurturing Success."

Join us on this journey, delve into the intricate tapestry of well-being and productivity, and together, let us craft a future of work where human flourishing is the symphony that guides us all.

LITERATURE REVIEW

The landscape of work is experiencing a seismic shift. The relentless pursuit of productivity is giving way to a newfound understanding: organizational success hinges not just on output, but on the very well-being of the individuals producing it. This growing awareness fuels research into holistic approaches that elevate both employee well-being and productivity, a space where

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"Empowering Growth: Nurturing Success" resides. To fully understand this program's potential, we must first weave a tapestry of existing research.

At the heart of this tapestry lies the intricate relationship between well-being and performance. Dorny et al. (2017) highlight the positive impact of holistic well-being on employee engagement and productivity, while Rothbard (2001) emphasizes the reciprocal relationship between high performance and increased well-being. This synergy suggests that interventions aimed at one can positively impact the other, forming the foundation for "Empowering Growth's" holistic approach.

However, simply acknowledging the connection between well-being and performance is insufficient. We must delve deeper into the multi-faceted nature of well-being itself. Sparks and Smith (2020) remind us that well-being encompasses physical health, while Friedman and Sbarra (2016) emphasize the crucial role of mental resilience. Jordan and Wong (2018) further highlight the impact of emotional intelligence, and Haslam et al. (2017) demonstrate the essential influence of positive workplace relationships. Recognizing these interwoven threads is crucial for designing effective interventions like "Empowering Growth's" program.

Moving beyond theory, practical implementation requires evidence-based interventions. Creswell and Lindsay (2015) showcase the efficacy of mindfulness practices in reducing stress and enhancing well-being, while interventions fostering open communication and flexibility, as described by Friedman and Ferris (2017), have been shown to increase employee engagement. Such findings inform the development of "Empowering Growth's" personalized skill-building workshops and positive work environment initiatives.

Finally, to build a compelling case for investing in well-being, we need a quantifiable picture of its impact. Baardse et al. (2017) provide this picture, demonstrating the significant ROI associated with workplace wellness programs. By aligning with such economic benefits, "Empowering Growth" can resonate not just with humanitarians, but with business leaders seeking sustainable success.

This brief snapshot of existing research reveals the fertile ground upon which "Empowering Growth: Nurturing Success" stands. By drawing upon diverse strands of knowledge and utilizing

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evidence-based interventions, this program has the potential to transform workplaces into environments where individual well-being and organizational success flourish in mutual support. As we delve deeper into specific program components and research methodologies, this initial tapestry will be enriched, revealing the true potential of a future where human flourishing guides the symphony of work.

The modern workplace stands on the precipice of a transformational shift. No longer content with the relentless pursuit of productivity at the expense of human well-being, organizations are embracing a newfound understanding: their success hinges not just on output, but on the very well-being of the individuals producing it. This dawning awareness gives rise to "Empowering Growth: Nurturing Success," a research endeavor poised to elevate employee well-being and, in turn, unlock peak performance and organizational flourishing.

To fully fathom the potential of this program, we must weave a richer tapestry, one intricately woven with the threads of existing research. At its core lies the undeniable synergy between well-being and performance. Dorny et al. (2017) paint a vivid picture of how holistic well-being translates into heightened employee engagement and productivity. Conversely, Rothbard (2001) unveils the reciprocal relationship, demonstrating how high performance itself feeds back into increased well-being. This intricate tango highlights the undeniable potential of interventions aimed at one to positively impact the other, forming the very bedrock of "Empowering Growth's" holistic approach.

But acknowledging the connection is merely the first step. We must delve deeper into the multifaceted nature of well-being itself. Sparks and Smith (2020) remind us that well-being is an orchestra, not a solo act, with physical health playing the fundamental melody. Friedman and Sbarra (2016) add the vital rhythm of mental resilience, ensuring the music flows uninterrupted. Jordan and Wong (2018) weave in the delicate harmonies of emotional intelligence, adding depth and emotional richness. Finally, Haslam et al. (2017) remind us of the chorus of positive workplace relationships, essential for the symphony of well-being to resonate throughout the organization. Recognizing these interwoven threads is crucial for designing effective interventions like

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"Empowering Growth's" program, a program that aspires to be the conductor of this harmonious performance.

Moving beyond theory, practical implementation calls for evidence-based interventions. Creswell and Lindsay (2015) offer the soothing melody of mindfulness practices, demonstrating their efficacy in reducing stress and enhancing overall well-being. Friedman and Ferris (2017) add the lively rhythm of open communication and flexible work arrangements, showcasing their ability to boost employee engagement. Such findings inform the development of "Empowering Growth's" personalized skill-building workshops and positive work environment initiatives, ensuring the program stays in tune with the latest empirical evidence.

Finally, to build a compelling case for investing in well-being, we need a quantifiable picture of its impact. Baardse et al. (2017) provide this picture, illustrating the significant ROI associated with workplace wellness programs. By aligning with such economic benefits, "Empowering Growth" can resonate not just with the hearts of humanitarians, but with the minds of business leaders seeking sustainable success. This translates into a symphony that speaks the language of both human flourishing and organizational prosperity.

This brief snapshot of existing research reveals the fertile ground upon which "Empowering Growth: Nurturing Success" stands. By drawing upon diverse strands of knowledge and utilizing evidence-based interventions, this program has the potential to transform workplaces into environments where individual well-being and organizational success flourish in a harmonious crescendo. As we delve deeper into specific program components and research methodologies, this initial tapestry will be enriched, revealing the true potential of a future where human flourishing guides the symphony of work.

Mid-20th Century Advances:

As the mid-20th century unfolded, the scope of studies broadened to encompass more than just regulatory aspects. Scholars like Jones and Brown (1968) contributed to this evolution by incorporating elements of communication theory into the discourse around Empowering Growth. The focus shifted towards considering the broader implications of vetting processes, including how

companies manage their corporate image through annual reports. This period marked a transition from a purely regulatory perspective to a more holistic understanding of the communicative and strategic dimensions of annual report vetting.

Technological Shifts:

The late 20th century witnessed a profound technological shift that significantly impacted the Empowering Growth. Scholars, exemplified by Johnson (1995), began exploring how digitalization influenced reporting mechanisms. Electronic reporting systems and the integration of data analytics became focal points of interest during this era. The research delved into how these technological advancements streamlined the vetting process, ensuring a more efficient and accurate assessment of financial information.

Globalization and Comparative Studies:

As businesses expanded globally, the literature on Empowering Growth reports evolved to address the challenges posed by diverse cultural and regulatory environments. Notable contributors like Smith and Lee (2002) engaged in comparative studies, examining vetting practices across different countries. This period emphasized the need for a nuanced understanding of how cultural and regulatory variations influence the vetting process.

Contemporary Focus:

In recent years, there has been a paradigm shift in literature on Empowering Growth reports towards a more holistic approach. Scholars, including Garcia et al. (2018), now consider non-financial aspects, such as sustainability reporting and corporate social responsibility. This contemporary focus recognizes the importance of a comprehensive evaluation that goes beyond financial metrics, reflecting a broader understanding of corporate performance.

RESEARCH GAPS

The ambitious vision of "Empowering Growth: Nurturing Success" promises a symphony of well-being and productivity within organizations. Yet, like any grand musical composition, the score

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requires careful attention to nuance and detail. Here, we glimpse some crucial gaps waiting to be filled through further research.

Individuality, often overlooked, demands consideration. While well-being might seem like a singular melody, Dorny et al. (2017) remind us it's a complex arrangement, varying across demographics, personalities, and cultures. How can we personalize interventions, drawing on insights from Jordan and Wong's (2018) work on emotional intelligence and Haslam et al.'s (2017) focus on positive relationships, to ensure each note resonates with individual needs?

Sustainability echoes as another unplayed chord. We must assess the program's long-term impact, asking how its effects remain vibrant over time. Friedman and Ferris' (2017) work on positive work environments offers inspiration for integrating the program into the organizational culture, ensuring its continued relevance and adherence.

Cost-effectiveness, the crucial financial harmony, needs further orchestration. Baardse et al. (2017) provide a promising baseline with their ROI analysis, but deeper understanding is needed for widespread adoption. Can we identify cost-effective interventions, perhaps drawing on Creswell and Lindsay's (2015) research on mindfulness, to make the program accessible to organizations of all sizes?

Beyond the traditional productivity measures, a richer soundscape awaits. Exploring employee turnover, absenteeism, creativity, and job satisfaction, as suggested by Rothbard (2001) on the reciprocal relationship between well-being and performance, allows us to paint a holistic picture. Additionally, incorporating qualitative data from employee interviews and surveys, as Sparks and Smith (2020) advocate for in their work on human health and the environment, can provide invaluable insights into subjective well-being, complementing the quantitative melodies.

Finally, the program can amplify its impact by harmonizing with existing organizational practices. Aligning with performance management systems, talent development initiatives, and leadership development programs, as Friedman and Sbarra (2016) highlight in their work on resilience, can leverage existing resources and facilitate smoother implementation, ensuring all instruments play in tune.

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Addressing these research gaps will not only strengthen "Empowering Growth: Nurturing Success," but also contribute to a symphony of organizational well-being. By delving deeper into these areas, we pave the way for a future where work isn't just about output, but a harmonious collaboration between individual flourishing and organizational success, guided by the powerful conductor of well-being.

OBJECTIVES

1. Personalize well-being: Craft interventions that resonate with individual needs and preferences, like a bespoke suit for employee wellness.
2. Sustain the symphony: Embed the program into organizational DNA, ensuring its long-term impact like a timeless melody woven into the workplace culture.
3. Quantify the harmony: Translate well-being into the language of business, demonstrating the program's ROI like a conductor wielding the baton of cost-effectiveness.
4. Expand the soundscape: Move beyond productivity, measuring outcomes like creativity and job satisfaction to paint a vibrant picture of employee flourishing.
5.

RESEARCH METHODOLOGY

Research Design:

The chosen research design for Empowering Growth: Nurturing Success: Elevating Employee Well-Being and Productivity through a Holistic Enhancement Program is a mixed-methods approach, integrating qualitative and quantitative methodologies. This combination enables a more comprehensive and nuanced exploration of the Empowering Growth. On the quantitative side, the financial accuracy and compliance aspects of annual reports can be quantified and analyzed statistically. Meanwhile, the qualitative approach allows for a deeper understanding of the contextual factors, challenges, and strategies involved in the vetting process. This dual-method design enhances the reliability and validity of the research findings, providing a more robust and holistic view of annual report Empowering Growth.

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Sample Size:

Determining an appropriate sample size is crucial for the reliability and generalizability of the study. The sample will consist of Empowering Growth from various industries and regions to ensure a representative selection. Striking a balance between adequacy and feasibility is paramount. A sufficiently large sample size allows for meaningful statistical analyses and the identification of trends, while still maintaining practicality in data collection and analysis. This approach ensures that the findings are not skewed by an insufficient or overly complex sample, contributing to the overall robustness of the study.

Sampling Technique:

Stratified random sampling will be employed to select the Empowering Growth included in the study. This technique involves dividing the population into subgroups (strata) based on certain characteristics, such as industry or geographical location. From each stratum, a random sample will be selected. This method ensures a proportional and representative distribution of Empowering Growth from various sectors and regions, capturing the diversity across different contexts. Stratified random sampling enhances the external validity of the study, allowing for more accurate generalizations to the broader population of annual reports.

Data Collection:

Primary data will be collected through content analysis of Empowering Growth and interviews with professionals involved in the vetting process. Content analysis involves systematically examining the textual and visual content of annual reports to identify patterns, themes, and relevant information. This quantitative approach will focus on extracting financial data and compliance indicators. Simultaneously, qualitative insights will be gathered through in-depth interviews with individuals responsible for vetting annual reports. This dual-data collection strategy ensures a comprehensive understanding of both the quantitative metrics and the qualitative intricacies of the vetting process.

Data Analysis:

The data analysis phase encompasses both quantitative and qualitative techniques. For quantitative data, statistical tools will be applied to analyze financial indicators and patterns within the annual reports. This includes measures such as financial ratios, compliance percentages, and trends over time. Thematic analysis will be employed for qualitative data obtained from interviews. This involves identifying recurrent themes, patterns, and insights related to the challenges, strategies,

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and contextual factors influencing the vetting process. By employing a mixed-methods analysis, the research aims to provide a holistic and nuanced interpretation of annual report vetting practices.

EXPECTED OUTCOMES

The crescendo of individual flourishing awaits with "Empowering Growth: Nurturing Success." Imagine bespoke journeys where tailored interventions address unique needs, from mindfulness melodies for stress reduction to emotional intelligence workshops that ignite resilience. Mental agility and deeper social connections, woven into the tapestry of positive work environments, promise a chorus of well-being.

This symphony of success extends beyond individuals, echoing in organizational triumphs. Boosted productivity, fueled by happier and more engaged employees, will become the new baseline. Reduced absenteeism and turnover will signify a quieter harmony, while a culture of well-being ingrained in the organizational fabric ensures sustainability.

But the orchestra of success expands beyond traditional metrics. We anticipate a richer soundscape, where improved creativity, job satisfaction, and overall employee engagement paint a vibrant picture of organizational flourishing. This is not just a prediction, but a shared aspiration. By conducting rigorous research and implementing the program with fidelity, we can transform workplaces into fertile gardens where the symphony of well-being guides individuals and organizations alike towards a future of sustainable success and shared harmony.

Embrace the journey, let the research begin, and witness the transformative melody of "Empowering Growth: Nurturing Success" as it unfolds.

SCOPE OF THE STUDY

The ambition of "Empowering Growth: Nurturing Success" echoes within a carefully delineated scope, ensuring this transformative journey stays on track. Within this space, we delve into the intricate relationship between well-being and organizational success, seeking to unveil the secrets of their harmonious coexistence.

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Imagine the study as a stage with three distinct acts. In the first act, we dissect the multifaceted nature of well-being, recognizing it as a vibrant tapestry woven from physical health, mental resilience, emotional intelligence, and the vital threads of positive workplace relationships. By identifying these individual strands, we lay the foundation for interventions that resonate with unique needs and preferences.

Act two introduces the symphony of interventions themselves. Tailored skill-building workshops, evidence-based mindfulness practices, and positive work environment initiatives take center stage, each carefully orchestrated to address specific well-being needs. We utilize the latest research findings, drawing inspiration from mindfulness techniques (Creswell & Lindsay, 2015), open communication practices (Friedman & Ferris, 2017), and personalized interventions rooted in individual assessments.

Finally, act three shifts the focus towards the impact of this harmonious performance. We analyze the program's influence on both individual and organizational metrics, measuring changes in productivity, engagement, absenteeism, job satisfaction, and even creativity. Quantitative data, like pre- and post-test analysis, provides the melody, while qualitative insights from interviews and surveys add the depth of individual experiences.

However, the scope extends beyond the stage lights. We delve into the backstage, investigating the program's long-term sustainability and scalability. By analyzing its integration with existing organizational practices and assessing its cost-effectiveness, we ensure the music can continue beyond the curtain call, reaching diverse organizations of all sizes.

This carefully defined scope guides our research journey, ensuring every note resonates with the program's core theme: empowering individual well-being while nurturing organizational success. As we delve deeper into each act, the research will unveil the secrets of this harmonious symphony, paving the way for a future where work becomes a concerto of thriving individuals and flourishing organizations, conducted by the powerful maestro of well-being.

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TIME REQUIRED FOR COMPLETION

The undertaken study will be completed in 12 Months.

Biodata of investigators (Not more than a page for each PI/, co-PI:

Principal Investigator: Dr. Krishna Nath Pandey

Dr. Krishna Nath Pandey:

Dr. Krishna Nath Pandey, Professor in School of Commerce & Management, Lingaya's Vidyapeeth. His thirst for knowledge and desire to contribute to his field led her completed Ph.D. in field of marketing from Under her supervision management scholars are pursuing PhD. Dr. Krishna Nath Pandey is a prolific researcher and has published articles in reputable journals, presenting her work at national and international conferences.

Awards: -

- Research Publications: 09
- Patent Published: 02
- PhDs being guided: 04

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Sparks, K. E., & Smith, B. W. (2020). Human health and the environment: An ecosystem approach. Cambridge University Press.

Fauget

Fauget Essential Mart
Rebranded in Fusion Basket
Sikandra Main Market, District Jamui
Bihar India 811307

Dear,
Ms Krity Gulati

Project title:- Greening the Chain: Revolutionizing Supply Chains with Sustainable Logistics Solutions

Duration (in months): 12 Months

Total cost (in Rs Lakhs): 1,82,000 (One lakh eighty two thousand)

Priority area and sub-area

Creating a green chain of sustainable logistics.

Foreign Exchange (FE) component, if any: NA

Principal Investigator: Ms. Krity Gulati, Assistant Professor School of Management Sciences, Lingaya's Vidyapeeth

Designation: as above

Department & Faculty: Department of Management, School of Management Sciences

Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

Date of Birth: Ms. Krity Gulati & 11/02/1987

Gender: Female

Aadhar Number: Ms. Krity Gulati (613937834150)

Mobile and email: kritygulati@lingayasvidyapeeth.edu.in, 9990760551

Collaborating Institutions, if any: NA

Project summary

Thank you for your dedication to advancing knowledge and contributing to the academic and professional community.

Sincerely,
Niraj Kumar
CEO
Company name- Fauget Essential Mart

For LINGAYA'S VIDYAPEETH
18 APR 2024
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Nachauli, Jasana Road, Faridabad – 121002; Ph: 0129-2598200-05
Website: www.lingayasuniversity.edu.in

Ref: LV/SOCM/01/02

Date: 23. 08.2019

School of Commerce & Management

Application for Approval of Consultancy Project

General Information

1.0 Project title: - "Measuring the ROI of Digital Transformation in Project Management"

1.1 Duration (in months): 08 Months

1.2 Total cost (in Rs Lakhs): 87500, (Eight lakh Seven Thousand and Five Hundred Rupees Only)

1.3 Priority area and sub-area

Evaluating ROI of Digital Transformation, Accuracy of project management and sustainability practices to ensure compliance, transparency, KPI's and strategic alignment in project management.

1.4 Foreign Exchange (FE) component, if any: NA

1.5 Principal Investigator: Dr. Ashish Kumar Dubey, Associate Professor SOCM, Lingaya's Vidyapeeth

1.6 Designation: as above

1.7 Department & Faculty: Department of Management, School of Commerce & Management

1.8 Address: Lingaya's Vidyapeeth, Nacholi, Faridabad

1.9 Date of Birth: 08/01/1981

1.10 Gender: Male

1.12 Mobile and email: 9839141966, dubeyashish024@gmail.com

1.13 Collaborating Institutions, if any: NA

1.14 Project summary

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BACKGROUND OF ADJOINING RESEARCH –

The historical development of project management practices and how the field has evolved with the advent of digital technologies. Understanding the context in which digital transformation is taking place provides a foundation for assessing its impact.

An overview of the current technological landscape in project management, including popular tools and platforms. This could encompass project management software, communication tools, collaboration platforms, and emerging technologies that contribute to digital transformation.

Challenges in Traditional Project Management: Identification of challenges and limitations associated with traditional project management approaches. This could include issues related to communication, data management, project visibility, and adaptability to changing project dynamics.

Exploration of the factors driving organizations to undergo digital transformation in project management. This may include the need for real-time data, improved collaboration, cost savings, scalability, and staying competitive in a rapidly evolving business environment.

Examination of case studies and success stories where organizations have successfully implemented digital transformation in project management and achieved positive ROI. Analyzing these cases can provide insights into best practices and potential areas of improvement.

Identification and discussion of key performance indicators (KPIs) and metrics used to measure the ROI of digital transformation in project management. This could involve assessing factors such as project delivery time, cost savings, resource optimization, and stakeholder satisfaction.

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ABSTRACT

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Digital transformation has become integral to modernizing project management practices, offering organizations the potential for enhanced efficiency and competitiveness. This study investigates the Return on Investment (ROI) of digital transformation in project management, examining the evolution of project management practices, the current technological landscape, challenges in traditional approaches, and the drivers prompting organizations to embrace digital transformation. By analyzing case studies and success stories, the research identifies key performance indicators (KPIs) and metrics used to measure ROI. The findings provide valuable insights into the impact of digital transformation on project delivery time, cost savings, resource optimization, and stakeholder satisfaction. As organizations navigate an evolving business environment, understanding the ROI of digital transformation in project management is crucial for informed decision-making and sustainable success.

Keywords – Digital Transformation, Project Management, Return on Investment (ROI), Project Management Software, Technological Landscape, Challenges in Project Management, Key Performance Indicators (KPIs), Stakeholder Satisfaction.

INTRODUCTION

In the contemporary business landscape, the integration of digital technologies has become imperative for organizations seeking to optimize their operational efficiency and maintain a competitive edge. One critical domain where this digital revolution has substantial implications is project management. The advent of digital transformation in project management represents a paradigm shift, promising enhanced collaboration, streamlined processes, and improved overall performance. As organizations invest significantly in digital tools and technologies to augment their project management capabilities, there arises a compelling need to assess the tangible returns on these investments.

This research consultancy aims to delve into the nuanced landscape of "Measuring the ROI of Digital Transformation in Project Management." The overarching goal is to provide a comprehensive understanding of the impact that digital transformation initiatives have on project management practices and, more critically, to ascertain the quantifiable returns realized by organizations undertaking these transformations.

To contextualize the research, an exploration of the historical evolution of project management practices and the technological landscape is paramount. Understanding how traditional project management approaches have shaped the current environment sets the stage for comprehending the impetus behind the shift towards digital transformation. With an emphasis on the challenges faced by organizations in traditional project management, we can identify pain points that digital transformation seeks to address.

The decision to embark on digital transformation in project management is often fueled by a convergence of factors. These may include the need for real-time data, improved collaboration among project teams, cost savings, scalability, and the imperative to stay agile in response to dynamic business environments. By elucidating the driving forces behind digital transformation, the research aims to create a foundation for evaluating its impact on organizational processes.

Measuring ROI Metrics:

One of the core objectives of this research consultancy is to establish a framework for measuring Return on Investment (ROI) in the context of digital transformation in project management. By examining case studies and success stories, the study seeks to identify and analyze key performance indicators (KPIs) and metrics that effectively gauge the success of digital transformation initiatives. These metrics may span project delivery time, cost savings, resource optimization, and stakeholder satisfaction.

Significance of the Research:

Understanding the ROI of digital transformation in project management is pivotal for organizations navigating the complexities of an ever-evolving business landscape. This research consultancy aspires to provide actionable insights, informed by both theoretical underpinnings and practical case analyses. By doing so, it equips organizations with the knowledge necessary for strategic decision-making, ensuring that investments in digital transformation translate into measurable improvements in project management efficiency and effectiveness.

LITERATURE REVIEW

The evolution of project management practices has been marked by a continuous quest for efficiency and effectiveness. Historically, project management relied on manual processes and limited technology. As highlighted by Schwalbe (2018), the advent of digital technologies has transformed these practices, offering new avenues for collaboration, communication, and project

control.

The integration of digital technologies in project management is a contemporary phenomenon that reshapes traditional approaches. Kerzner (2017) emphasizes the role of digital tools, such as project management software and collaboration platforms, in optimizing project workflows and communication channels

Challenges inherent in traditional project management practices have been well-documented. Turner (2019) discusses issues related to communication gaps, lack of real-time data, and the rigidity of traditional methodologies. Digital transformation addresses these challenges by introducing flexible and collaborative solutions.

The decision to undergo digital transformation in project management is driven by various factors. A study by Laudon and Laudon (2016) outlines the need for organizations to stay competitive through technological advancements, fostering a digital culture that permeates project management practices.

Examining case studies is crucial for understanding how organizations have successfully implemented digital transformation in project management. The work of Westerman et al. (2014) provides insights into transformative strategies that yield positive ROI, emphasizing the role of leadership and organizational culture.

Identifying and measuring key performance indicators (KPIs) for digital transformation in project management is a critical aspect. A comprehensive guide by Dowden (2018) offers a framework for evaluating ROI metrics, covering aspects such as project delivery time, cost savings, and stakeholder satisfaction.

The literature review provides a foundation for understanding the evolution of project management practices, the role of digital transformation, challenges in traditional approaches, drivers of digital transformation, and the significance of case studies in illustrating successful implementations. Building upon this knowledge, the research consultancy aims to contribute valuable insights into measuring the ROI of digital transformation in project management, aligning with the frameworks and experiences outlined in the literature.

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RESEARCH GAPS

Despite numerous studies exploring the impact of digital transformation in project management, a comprehensive framework for measuring Return on Investment (ROI) in this context is lacking. Current literature often touches upon individual metrics such as project delivery time or cost savings, but a unified framework that amalgamates these metrics into a holistic ROI assessment is yet to be fully developed (Dowden, 2019). Many existing studies focus on the immediate outcomes of digital transformation initiatives, offering insights into short-term gains. However, there is a dearth of longitudinal studies tracking the sustainability of ROI over an extended period. Understanding how the benefits evolve over time can provide organizations with valuable information for long-term strategic planning (Westerman et al., 2014). Literature often discusses the technological aspects of digital transformation but falls short in addressing the cultural and change management dimensions. The role of organizational culture and effective change management strategies in realizing the full potential of digital transformation initiatives is a research area that requires more attention (Laudon & Laudon, 2016). Existing research predominantly focuses on large enterprises, leaving a research gap regarding the unique challenges and opportunities faced by small and medium-sized enterprises (SMEs) in adopting digital transformation in project management. Understanding the specific needs and constraints of SMEs can provide tailored insights for this significant segment of the business landscape. Addressing these research gaps is crucial for advancing our understanding of the ROI of digital transformation in project management, enabling organizations to make informed decisions and maximize the benefits of their technological investments.

OBJECTIVES

1. To construct a unified framework for measuring Return on Investment (ROI) in the context of digital transformation in project management.
2. To identify and integrate key performance indicators (KPIs) that collectively contribute to a holistic assessment of ROI.

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3. Examine Long-Term Sustainability of ROI

4. To conduct longitudinal studies that track the sustainability and evolution of ROI over an extended period after the implementation of digital transformation initiatives in project management.

5. To analyze how the benefits derived from digital transformation continue to impact project management practices over time.

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RESEARCH METHODOLOGY

Research Design:

The chosen research design for investigating the vetting of annual reports is a mixed-methods approach, integrating qualitative and quantitative methodologies. This combination enables a more comprehensive and nuanced exploration of the vetting process. On the quantitative side, the financial accuracy and compliance aspects of annual reports can be quantified and analyzed statistically. Meanwhile, the qualitative approach allows for a deeper understanding of the contextual factors, challenges, and strategies involved in the vetting process. This dual-method design enhances the reliability and validity of the research findings, providing a more robust and holistic view of annual report vetting practices.

Sample Size:

Determining an appropriate sample size is crucial for the reliability and generalizability of the study. The sample will consist of annual reports from various industries and regions to ensure a representative selection. Striking a balance between adequacy and feasibility is paramount. A sufficiently large sample size allows for meaningful statistical analyses and the identification of trends, while still maintaining practicality in data collection and analysis. This approach ensures that the findings are not skewed by an insufficient or overly complex sample, contributing to the overall robustness of the study.

Sampling Technique:

Stratified random sampling will be employed to select the annual reports included in the study. This technique involves dividing the population into subgroups (strata) based on certain characteristics, such as industry or geographical location. From each stratum, a random sample will

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be selected. This method ensures a proportional and representative distribution of annual reports from various sectors and regions, capturing the diversity of vetting practices across different contexts. Stratified random sampling enhances the external validity of the study, allowing for more accurate generalizations to the broader population of annual reports.

Data Collection:

Primary data will be collected through content analysis of annual reports and interviews with professionals involved in the vetting process. Content analysis involves systematically examining the textual and visual content of annual reports to identify patterns, themes, and relevant information. This quantitative approach will focus on extracting financial data and compliance indicators. Simultaneously, qualitative insights will be gathered through in-depth interviews with individuals responsible for vetting annual reports. This dual-data collection strategy ensures a comprehensive understanding of both the quantitative metrics and the qualitative intricacies of the vetting process.

Data Analysis:

The data analysis phase encompasses both quantitative and qualitative techniques. For quantitative data, statistical tools will be applied to analyze financial indicators and patterns within the annual reports. This includes measures such as financial ratios, compliance percentages, and trends over time. Thematic analysis will be employed for qualitative data obtained from interviews. This involves identifying recurrent themes, patterns, and insights related to the challenges, strategies, and contextual factors influencing the vetting process. By employing a mixed-methods analysis, the research aims to provide a holistic and nuanced interpretation of annual report vetting practices.

EXPECTED OUTCOMES

Development of a comprehensive framework that incorporates key performance indicators (KPIs) for measuring Return on Investment (ROI) in digital transformation within the project management domain. Insights into the long-term sustainability of ROI, providing a nuanced understanding of how the benefits derived from digital transformation initiatives evolve over an extended period. Identification of cultural factors influencing the success of digital transformation in project management and insights into effective change management strategies to facilitate successful adoption. Synthesis of research findings into actionable insights that empower organizations with the knowledge required for strategic decision-making related to digital transformation in project management. Contribution to the academic body of knowledge by filling existing research gaps,

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advancing our understanding of the relationship between digital transformation, ROI, and effective project management. Empowerment of organizations with enhanced capabilities to optimize project management practices through informed digital transformation strategies, resulting in improved efficiency and competitiveness. Provision of guidance for future research endeavors and practical implementations, laying the groundwork The expected outcomes aim to provide a valuable resource for academia, industry practitioners, and decision-makers, facilitating informed choices in the adoption and implementation of digital transformation initiatives within the realm of project management. for ongoing advancements in the field of digital transformation in project management.

SCOPE OF THE STUDY

Development of a comprehensive framework that incorporates key performance indicators (KPIs) for measuring Return on Investment (ROI) in digital transformation within the project management domain. Insights into the long-term sustainability of ROI, providing a nuanced understanding of how the benefits derived from digital transformation initiatives evolve over an extended period. Identification of cultural factors influencing the success of digital transformation in project management and insights into effective change management strategies to facilitate successful adoption. Identification and documentation of best practices derived from successful case studies and experiences, providing a practical guide for organizations aiming to achieve positive ROI through digital transformation in project management. Empowerment of organizations with enhanced capabilities to optimize project management practices through informed digital transformation strategies, resulting in improved efficiency and competitiveness.

TIME REQUIRED FOR COMPLETION

The undertaken study will be completed in 08 Months.

Biodata of investigators (Not more than a page for each PI/, co-PI:

Principal Investigator: Dr. Ashish Kumar Dubey

Dr. Ashish Kumar Dubey, Associate Professor in School of Commerce & Management, Lingaya's Vidyapeeth. His thirst for knowledge and desire to contribute to him field led her completed Ph.D. in field of marketing from Under his supervision management scholars are pursuing PhD. Dr. Ashish Kumar Dubey is a prolific researcher and has published articles in reputable journals, presenting his work at national and international conferences.

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Westerman, G., Bonnet, D., & McAfee, A. (2014). Leading Digital: Turning Technology into Business Transformation. Harvard Business Review Press.

Laudon, K. C., & Laudon, J. P. (2016). Management Information Systems: Managing the Digital Firm. Pearson.

Schwalbe, K. (2018). Information Technology Project Management. Cengage Learning.

nodalofficer@triotech.co.in
Plot No. 510, Ground Floor,
Udyog Vihar Ph-5, Gurugram - 122016

Date: 12th September, 2019

APPROVAL OF CONSULTANCY PROJECT

Greetings!

Dear Dr. Nand Kumar,

I am delighted to inform you that your application for the approval of the consultancy project entitled "Design and implementation of feature based opinion classification technique" has been carefully reviewed and we are pleased to approve the project.

General ~~Information~~:

1. **Project Title:** " Design and implementation of feature based opinion classification technique"

1 1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** 3,60,000 (Three Lakh Sixty Thousand)

1.3 **Priority Area and Sub-Area:** Priority in the project "Design and Implementation of Feature-Based Opinion Classification Technique" is to develop an accurate and efficient opinion classification system. A critical sub-area involves feature engineering, where relevant attributes are identified and extracted from textual data to enhance the model's ability to distinguish and classify opinions effectively.

1.4 **Foreign Exchange (FE) Component:** NA

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Authorized Signatory

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Applying the Evolution

1.5 **Principal Investigator & Co-PI:**
Principal investigator: Prof. (Dr.) Nand Kumar, A. Professor, Department of Computer Science & Engineering, Lingaya's Vidyapeeth
Co-PI: Dr. Nand Kumar, Professor, Department of Computer Science & Engineering, Lingaya's Vidyapeeth
1.6 **Department & Faculty:** Department of Computer Science & Engineering
1.7 **Address:** Lingaya's Vidyapeeth, Nachauli, Faridabad
1.8 **Project Summary:**
The project titled "Design and Implementation of Feature-Based Opinion Classification Technique" focuses on developing a robust system for accurately categorizing opinions in textual data. Opinion classification is essential in various domains, such as product reviews, social media sentiment analysis, and customer feedback analysis. The project's primary priority is to design an efficient and effective opinion classification approach. This involves the selection and extraction of relevant features from text data, such as sentiment indicators, subjectivity cues, and contextual information. These features enable the system to discern and categorize opinions into positive, negative, or neutral sentiments with high precision. A significant sub-area of emphasis in this project includes natural language processing techniques, machine learning algorithms, and feature engineering methods. These components work together to create a sophisticated model capable of handling diverse text sources and languages.The outcome of this project will provide a valuable tool for businesses and researchers to extract valuable insights from large volumes of text data, aiding in decision-making processes, product development, and sentiment analysis across various domains.
Congratulations on the approval of your consultancy project!!

Wish you a great success in your future research endeavours!

Sincerely,
Kind Regards,

TRIOTECH SOLUTIONS PVT. LTD. GURUGRAM
Authorized Signatory

For LINGAYA'S VIDYAPEETH
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URL: www.lingayasvidyapeeth.edu.in | Phone No.: 0129-2598200-05

Ref: LV/AY 2020-21/R & D/SMG/ **Date:** 10.08.2020

General Information:

1. **Project Title:** "Digitizing Learning: A Strategic Implementation of Digital Education in Schools"

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** . 160000/- (Fifty Six Thousand Only)

1.3 **Priority Area and Sub-Area:** It focuses on integrating technology into education. Key sub-areas include developing digital content, enhancing teacher training, fostering student digital literacy, and building robust infrastructure. This strategic approach transforms traditional teaching methods, ensuring interactive, accessible, and effective digital education in schools.

1.4 **Foreign Exchange (FE) Component:** NA

1.5

Principal investigator: . (Dr.) Ritu Sachdeva, Professor & HOD, Department of Computer Science & Engineering

1.6 **Designation:** As stated above

1.7 **Department & Faculty:** Department of Computer Science & Engineering

1.8 Address: Lingaya's Vidyapeeth, Nachauli, Faridabad

1.9 Date of Birth: Prof.(Dr.) Ritu Sachdeva (28/06/1983)

1.10 Gender: Female

1.11 Aadhar Number: Prof.(Dr.) Ritu Sachdeva (415403927663)

1.12 Mobile & Email: dr.ritusachdeva@lingayasvidyapeeth.edu.in

1.13 Collaborating Institutions: NA

For LINGAYA'S VIDYAPEETH

18 APR 2024

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1.14 Project Summary:

Background of the Adjoining Research

The adjoining research on the project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" stems from the recognition of a rapidly evolving educational landscape, driven by technological advancements and the increasing importance of digital literacy in the global context. In a world where digital technology permeates every aspect of life, the education sector has been experiencing a paradigm shift. Traditional teaching methodologies are being augmented, and in some cases, replaced by digital technologies. This transformation is not just a trend but a necessity to equip students with the skills and knowledge required in the 21st century.

The background of this research acknowledges the diverse nature of schools, where students from various cultural and linguistic backgrounds converge. This diversity presents unique challenges and opportunities in implementing digital education. The research explores how digital tools can be used to foster inclusivity, cross-cultural understanding, and global citizenship. Moreover, the research delves into the challenges of integrating technology into education, including infrastructure requirements, teacher training, and curriculum development. It studies successful models of digital education integration in various international contexts, drawing lessons and best practices.

The ultimate goal of this research is to develop a comprehensive framework for effectively implementing digital learning in international schools. This includes evaluating the impact of digital education on student engagement, learning outcomes, and preparation for a digitally interconnected world. By exploring these facets, the research aims to provide actionable insights and recommendations for educational institutions embarking on their digital transformation journey.

ABSTRACT

The research project represents a transformative approach to modernizing educational practices through the integration of digital technologies. This initiative is premised on the recognition that digital literacy and technological proficiency are essential skills in the 21st-century educational landscape. The project aims to seamlessly blend digital tools and methods with traditional teaching practices, thereby enriching the learning experience and preparing students for a digitally-driven world. Central to this initiative is the development and integration of digital content that is both engaging and educationally sound, ensuring that technology enhances rather than replaces traditional learning methodologies. A significant focus is placed on teacher training and professional development, equipping educators with the necessary skills and confidence to effectively implement digital tools in their classrooms. Furthermore, the project emphasizes the importance of developing students' digital literacy, ensuring they not only understand how to use technology but also how to do so responsibly and effectively. This includes critical thinking about digital information sources and understanding the ethical implications of digital technology. By addressing the infrastructure needs and ensuring equitable access to digital resources, the project seeks to provide a holistic and inclusive approach to digital education. The overarching goal is to foster an adaptable, innovative, and future-ready educational environment in schools, preparing students to thrive in an increasingly digital world.

Keywords: Digital Integration, Educational Technology, Teacher Training, Student Digital Literacy

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INTRODUCTION:

In the dawn of the 21st century, the landscape of education has been experiencing a paradigm shift, propelled by the rapid advancement of digital technology. The project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" is at the forefront of this transformation, endeavoring to seamlessly integrate digital tools and methodologies into the traditional educational framework. This initiative is not just about the incorporation of technology into classrooms; it is a comprehensive reimagining of how education is delivered in the digital age.

Context and Need for Digital Education

The impetus for this project stems from a growing recognition of the digital divide in educational settings and the pressing need to bridge it. In an era where digital literacy is as crucial as traditional literacy, schools must evolve to prepare students for a world where technology is ubiquitous. The COVID-19 pandemic has further highlighted the urgency for schools to adapt to digital modes of learning. This project is a response to these challenges, aiming to equip students with the skills needed to navigate and succeed in a digitally interconnected world.

Project Vision and Goals

The vision of the "Digitizing Learning" project is to create an educational environment where technology enhances learning, fosters innovation, and prepares students for future challenges. The goals are multi-faceted:

1. To integrate digital technology into the curriculum effectively, making learning more engaging and accessible.
2. To equip teachers with the skills and tools necessary for digital education, ensuring they can guide and inspire students in this new environment.
3. To develop students' digital literacy, ensuring they can navigate the digital world with competence and ethical understanding.
4. To build a robust digital infrastructure that supports and sustains the technological needs of a modern educational institution.

Strategic Approach

The strategic approach involves a thorough analysis of the current educational practices and identifying areas where digital integration can have the most significant impact. This includes curriculum development, teacher training, student engagement, and infrastructure enhancement. The project emphasizes a collaborative approach, involving educators, students, parents, and technology experts in the planning and implementation process.

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Curriculum Development and Digital Content

A core component of the project is the development of a digital curriculum that complements and enhances traditional teaching methods. This involves curating and creating digital resources such as e-books, interactive modules, and educational software that align with educational standards and learning objectives.

Professional Development for Educators

Recognizing that teachers are pivotal to the success of this initiative, the project prioritizes their professional development. Training programs and workshops will be designed to enhance teachers' digital skills, pedagogical methods, and adaptability to technology-enhanced teaching environments.

Fostering Student Digital Literacy

Central to the project is the objective of cultivating digital literacy among students. This goes beyond just learning to use technology; it involves understanding the ethical and responsible use of digital resources, developing critical thinking skills for the digital age, and fostering an innovative mindset.

Building Infrastructure for Digital Learning

The project acknowledges the importance of a robust digital infrastructure. This encompasses reliable internet access, adequate digital devices, and secure and user-friendly platforms for learning and administration. Efforts will also be made to ensure digital equity, so all students have equal access to technology.

Evaluation and Continuous Improvement

An integral part of the project is the establishment of a framework for continuous evaluation and improvement. Regular feedback from all stakeholders, alongside data-driven analysis, will guide the iterative development of the project, ensuring it remains relevant and effective in the ever-evolving educational landscape.

LITERATURE REVIEW:

The digital transformation in education is an area of growing interest and importance in the field of educational research. The project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" is grounded in a body of literature that explores various facets of digital education, including technology integration, teacher and student readiness, and the impact of digital tools on learning outcomes.

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Technology Integration in Education

Several studies have emphasized the significance of technology integration in enhancing educational experiences. For instance, Hennessy et al. (2005) discuss how digital tools, when effectively integrated, can transform classroom practices, fostering more interactive and student-cantered learning environments. Additionally, research by Ertmer and Ottenbreit-Leftwich (2010) highlights the barriers to technology integration, including teacher attitudes, knowledge, and institutional support, underscoring the need for comprehensive professional development.

Teacher Readiness and Professional Development

Professional development emerges as a critical theme in the literature. Mishra and Koehler (2006) introduce the Technological Pedagogical Content Knowledge (TPACK) framework, suggesting that effective technology integration requires teachers to develop knowledge and skills at the intersection of technology, pedagogy, and content. Research by Kopcha (2012) supports this, advocating for ongoing, context-specific professional development to enhance teachers' technological proficiency.

Impact of Digital Tools on Student Learning

Regarding student outcomes, several studies indicate positive impacts of digital tools on learning. A study by Cheung and Slavin (2013) found that educational technology applications produce a moderate but positive effect on student academic performance. Similarly, Tamim et al. (2011) conducted a meta-analysis revealing that technology, when used appropriately, can enhance student learning and engagement.

Digital Literacy and Student Engagement

Digital literacy is another focal point in the literature. Martin (2008) defines digital literacy as the ability to locate, organize, understand, evaluate, and analyze information using digital technology. This skill set is vital for students to navigate the digital world responsibly. In terms of engagement, studies by Sun and Zhang (2006) suggest that interactive digital tools can significantly enhance student engagement and motivation.

Challenges and Opportunities in Digital Education

The literature also addresses challenges in digital education. Warschauer and Matuchniak (2010) discuss the digital divide and its implications for equity in education. Additionally, Livingstone (2012) raises concerns about data privacy and the ethical use of digital tools in educational settings.Conversely, opportunities presented by digital education are numerous. Voogt and Roblin (2012) argue that digital technologies offer new ways of learning that are more collaborative, problem-based, and reflective of real-world scenarios.

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Global Perspectives on Digital Education

A global perspective on digital education is crucial, particularly in international schools. Research by Bulfin et al. (2014) emphasizes the importance of understanding different cultural contexts in the implementation of digital education strategies. Furthermore, the work of Law et al. (2008) on international comparisons in educational technology highlights the diverse ways in which different countries integrate technology into education.

RESEARCH GAPS:

The "Digitizing Learning" initiative, focusing on the integration of digital technology in education, reveals several research gaps:

1. **Equity in Digital Access:** There is a notable gap in understanding how to ensure equitable digital access for all students, particularly those from underprivileged backgrounds. Research is needed to address disparities in access to digital tools and internet connectivity, which are critical for successful implementation of digital learning.
2. **Teacher Preparedness and Mindset Shifts:** While digital tools are increasingly prevalent, there's a lack of in-depth research on the preparedness of teachers to integrate these technologies effectively. This includes understanding their attitudes, training needs, and the mindset shifts required to transition from traditional to digital teaching methods.
3. **Impact on Social and Emotional Learning:** Limited research exists on how digital learning environments affect students' social and emotional development. Investigating this aspect is crucial, especially considering the increasing role of remote and hybrid learning models, to ensure holistic development of students in a digital-centric educational landscape.

Addressing these gaps can provide deeper insights into creating a more effective and inclusive digital learning environment.

Objectives:

The objectives for the "Digitizing Learning" initiative can be outlined as follows:

1. **Effective Integration of Technology into Education:** To seamlessly incorporate digital tools and resources into the educational curriculum, thereby enhancing teaching methods and learning experiences. This includes not only the adoption of technology but also its effective alignment with educational goals and standards.
2. **Professional Development and Support for Educators:** To ensure that teachers are adequately trained and supported in using digital technologies. This involves providing ongoing professional development opportunities, resources, and a supportive community that enables educators to confidently and effectively use technology in their teaching.

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3. **Fostering Digital Literacy and Critical Thinking in Students:** To develop students' digital literacy skills, ensuring they are not only proficient in using technology but also capable of thinking critically about digital information and media. This objective aims to prepare students for the digital challenges of the future, making them responsible and savvy digital citizens.

Research Design - Current study will be of Descriptive nature.

RESEARCH METHODOLOGY:

The "Digitizing Learning" project employs a comprehensive research methodology encompassing both quantitative and qualitative approaches. Quantitative data will be gathered through surveys and performance metrics to assess the impact of digital tools on student achievement and engagement. Qualitative insights will be obtained from interviews, focus groups, and classroom observations, providing in-depth perspectives on teacher experiences, pedagogical shifts, and student interactions with technology. This mixed-methods approach ensures a holistic evaluation of digital education implementation, capturing both measurable outcomes and nuanced experiences within the educational ecosystem. Data analysis will involve statistical methods and thematic analysis to interpret findings effectively.

EXPECTED OUTCOMES:

The "Digitizing Learning" project anticipates several expected outcomes. First, improved student engagement and performance as digital tools enhance interactive learning experiences. Second, increased teacher proficiency in digital pedagogies, leading to more effective teaching practices. Third, enhanced digital literacy and critical thinking skills in students, better preparing them for the digital age. Fourth, a refined curriculum enriched with culturally relevant digital content. Fifth, an equitable and efficient digital infrastructure in schools. Lastly, insights and best practices that can inform broader educational strategies, advancing the adoption of digital education in schools and facilitating a more inclusive, innovative, and future-ready learning environment.

SCOPE OF THE STUDY:

The scope of the "Digitizing Learning" study encompasses the integration of digital technologies into the curriculum and teaching practices of schools. It examines the impact on student learning outcomes, teacher professional development, and the development of digital literacy. The study also considers equity in access and the cultural context of digital education.

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Lingaya's University, Faridabad

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INTERNAL QUALITY ASSURANCE CELL

UNDERTAKING BY THE HEAD OF THE DEPARTMENT

I am pleased to forward the proposal of Prof. (Dr.) Ritu Ritu Sachdeva who is Associate Dean & HOD of the Department of Computer Science & Engineering, Lingayas Vidyapeeth, in our institution, for financial support to the Lingayas Vidyapeeth.

The institution agrees to:

- Administer and manage the finance.
- Provide accommodation and furniture and other infrastructure required for the project.
- Make available all its research facilities such as library, laboratory and other requirement; and
- Provide the material and managerial assistance for the project.

If the Project Incharge of the project leaves the institution to join some other institution, after part of the sanctioned grant has been received, we would have no objection to the project being transferred to the new institution if the Project Incharge so desires. The institution, however, shall continue to be responsible for submitting the audited statement of accounts and utilization certificate for the grant received by it, for this purpose.

The institution will facilitate the completion of the project within the stipulated time. If not satisfied with the progress of the project, the funding organization may terminate the project immediately and ask for the refund of the amount received by the institution along with penal interest. The same will apply to uncompleted projects.

Date: 10.08.2020

For LINGAYA'S VIDYAPEETH
Registrar
18 APR 2024

Prof. (Dr.) Ritu Sachdeva
Associate Dean & HOD (CSE)
Name & Designation

PROF. (DR.) Ritu Sachdeva
(Signature) (in block letters)

(Office Seal)

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INTERNAL QUALITY ASSURANCE CELL

CERTIFICATE

I certify that:

I shall abide by the rules governing the scheme in case assistance is provided to me by the Lingayas Vidyapeeth, for the above project.

In case the above research project or an allied project receives assistance from any other source, I shall inform Lingayas Vidyapeeth, accordingly.

In case the research project is not completed in time. I will refund the whole amount along with penal interest as applicable

Signature of the P.I.

Date: 10.08.2020

Place: Faridabad

For LINGAYA'S VIDYAPEETH

18 APR 2024 Registrar

Name of the P.I. (in capital letters): PROF. (DR.) RITU SACHDEVA

mCalibre Technologies

info@mCalibre.com
mCalibre Technologies Private Limited,
L-84, Lajpat Nagar – 2
New Delhi - 110024

Date: 10th August, 2020

APPROVAL OF CONSULTANCY PROJECT

Greetings!

Dear Prof. Dr. Ritu Sachdeva,

I am delighted to inform you that your application for the approval of the consultancy project entitled "Student's Academic Performance Prediction: Relational Association Rule based Deep Learning Classification" has been carefully reviewed and we are pleased to approve the project.

General Information:

1. **Project Title:** " Student's Academic Performance Prediction: Relational Association Rule based Deep Learning Classification"

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** 1,60,000 (One Lakh Sixty Thousand)

1.3 **Priority Area and Sub-Area:** Priority in the project "Student's Academic Performance Prediction: Relational Association Rule based Deep Learning Classification" is to predict students' academic performance accurately. A significant sub-area of focus involves developing deep learning models that leverage relational association rules to identify patterns and dependencies within student data, enabling precise classification and performance prediction.

1.4 **Foreign Exchange (FE) Component:** NA

1.5 **Principal Investigator & Co-Pl:**

Principal investigator: Dr. Ritu Sachdeva, Professor, Department of Computer Science & Engineering, Lingaya's Vidyapeeth

Co-Pl: NA

1.6 **Department & Faculty:** Department of Computer Science & Engineering

1.7 **Address:** Lingaya's Vidyapeeth, Nachauli, Faridabad

1.8 **Project Summary:**

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mCalibre Technologies

The project titled "Student's Academic Performance Prediction: Relational Association Rule-based Deep Learning Classification" aims to create an advanced system for predicting students' academic performance with high accuracy and granularity. It addresses the critical need to identify factors and patterns influencing student success, aiding educational institutions in providing timely interventions and support. The primary priority is the development of a robust prediction model. This is achieved through deep learning techniques that incorporate relational association rules, enabling the system to uncover intricate relationships and dependencies within student data. These rules help in understanding how various factors like attendance, study habits, and socio-economic background impact academic outcomes. A significant sub-area of focus involves data preprocessing and feature engineering to optimize the model's performance. Additionally, model interpretability and explainability are crucial, allowing educators and administrators to gain insights into the factors influencing student performance.

The project's outcome will provide educational institutions with a valuable tool to proactively identify at-risk students, tailor interventions, and improve overall academic outcomes, ultimately contributing to student success and retention.

Congratulations on the approval of your consultancy project!!

Wish you a great success in your future research endeavours!

Sincerely,

Kind Regards,

For LINGAYA'S VIDYAPEETH

Registrar

18 APR 2024

mCalibre Technologies Private Limited
L – 84, Lajpat Nagar – 2, New Delhi – 110024 (India)
www.mcalibre.com

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URL: www.lingayasvidyapeeth.edu.in | Phone No.: 0129-2598200-05

Ref: : LV/AY 2018-19/R & D/SMG/ **Date:** : 20-08-18

General Information:

1. **Project Title:** Design a hydrid classification approach for sentimental analysis of Twitter data

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** 3,20,000/- (Three lakh Twenty Thousand Only)

1.3 **Priority Area and Sub-Area:** It focuses on integrating technology into education. Key sub-areas include developing digital content, enhancing teacher training, fostering student digital literacy, and building robust infrastructure. This strategic approach transforms traditional teaching methods, ensuring interactive, accessible, and effective digital education in schools.

1.4 **Foreign Exchange (FE) Component:** NA

1.5 **Principal Investigator & Co-PI:**

Principal investigator: Dr. Latha Banda, A. Professor & HOD

Co-Principal Investigator: Dr. Dinesh Javalkar, A. Professor

1.6 **Designation:** As stated above

1.7 **Department & Faculty:** Department of Computer Science & Engineering

1.8 Address: Lingaya's Vidyapeeth, Nachauli, Faridabad

1.9 Date of Birth: Prof. . (Dr.) Dinesh Javalkar (28/06/1983)

1.10 Gender: Female, Male

1.11 Aadhar Number: Prof. . (Dr.) Dinesh javalkar (415403927663)

1.12 Mobile & Email: dinesh@lingayasvidyapeeth.edu.in,

1.13 Collaborating Institutions: NA

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1.14 Project Summary:

Background of the Adjoining Research

The adjoining research on the project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" stems from the recognition of a rapidly evolving educational landscape, driven by technological advancements and the increasing importance of digital literacy in the global context. In a world where digital technology permeates every aspect of life, the education sector has been experiencing a paradigm shift. Traditional teaching methodologies are being augmented, and in some cases, replaced by digital technologies. This transformation is not just a trend but a necessity to equip students with the skills and knowledge required in the 21st century.

The background of this research acknowledges the diverse nature of schools, where students from various cultural and linguistic backgrounds converge. This diversity presents unique challenges and opportunities in implementing digital education. The research explores how digital tools can be used to foster inclusivity, cross-cultural understanding, and global citizenship. Moreover, the research delves into the challenges of integrating technology into education, including infrastructure requirements, teacher training, and curriculum development. It studies successful models of digital education integration in various international contexts, drawing lessons and best practices.

The ultimate goal of this research is to develop a comprehensive framework for effectively implementing digital learning in international schools. This includes evaluating the impact of digital education on student engagement, learning outcomes, and preparation for a digitally interconnected world. By exploring these facets, the research aims to provide actionable insights and recommendations for educational institutions embarking on their digital transformation journey.

ABSTRACT

The research project represents a transformative approach to modernizing educational practices through the integration of digital technologies. This initiative is premised on the recognition that digital literacy and technological proficiency are essential skills in the 21st-century educational landscape. The project aims to seamlessly blend digital tools and methods with traditional teaching practices, thereby enriching the learning experience and preparing students for a digitally-driven world. Central to this initiative is the development and integration of digital content that is both engaging and educationally sound, ensuring that technology enhances rather than replaces traditional learning methodologies. A significant focus is placed on teacher training and professional development, equipping educators with the necessary skills and confidence to effectively implement digital tools in their classrooms. Furthermore, the project emphasizes the importance of developing students' digital literacy, ensuring they not only understand how to use technology but also how to do so responsibly and effectively. This includes critical thinking about digital information sources and understanding the ethical implications of digital technology. By addressing the infrastructure needs and ensuring equitable access to digital resources, the project seeks to provide a holistic and inclusive approach to digital education. The overarching goal is to foster an adaptable, innovative, and future-ready educational environment in schools, preparing students to thrive in an increasingly digital world.

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Keywords: Digital Integration, Educational Technology, Teacher Training, Student Digital Literacy

INTRODUCTION:

In the dawn of the 21st century, the landscape of education has been experiencing a paradigm shift, propelled by the rapid advancement of digital technology. The project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" is at the forefront of this transformation, endeavoring to seamlessly integrate digital tools and methodologies into the traditional educational framework. This initiative is not just about the incorporation of technology into classrooms; it is a comprehensive reimagining of how education is delivered in the digital age.

Context and Need for Digital Education

The impetus for this project stems from a growing recognition of the digital divide in educational settings and the pressing need to bridge it. In an era where digital literacy is as crucial as traditional literacy, schools must evolve to prepare students for a world where technology is ubiquitous. The COVID-19 pandemic has further highlighted the urgency for schools to adapt to digital modes of learning. This project is a response to these challenges, aiming to equip students with the skills needed to navigate and succeed in a digitally interconnected world.

Project Vision and Goals

The vision of the "Digitizing Learning" project is to create an educational environment where technology enhances learning, fosters innovation, and prepares students for future challenges. The goals are multi-faceted:

1. To integrate digital technology into the curriculum effectively, making learning more engaging and accessible.
2. To equip teachers with the skills and tools necessary for digital education, ensuring they can guide and inspire students in this new environment.
3. To develop students' digital literacy, ensuring they can navigate the digital world with competence and ethical understanding.
4. To build a robust digital infrastructure that supports and sustains the technological needs of a modern educational institution.

Strategic Approach

The strategic approach involves a thorough analysis of the current educational practices and identifying areas where digital integration can have the most significant impact. This includes curriculum development, teacher training, student engagement, and infrastructure enhancement. The project emphasizes a collaborative approach, involving educators, students, parents, and technology experts in the planning and implementation process.

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Curriculum Development and Digital Content

A core component of the project is the development of a digital curriculum that complements and enhances traditional teaching methods. This involves curating and creating digital resources such as e-books, interactive modules, and educational software that align with educational standards and learning objectives.

Professional Development for Educators

Recognizing that teachers are pivotal to the success of this initiative, the project prioritizes their professional development. Training programs and workshops will be designed to enhance teachers' digital skills, pedagogical methods, and adaptability to technology-enhanced teaching environments.

Fostering Student Digital Literacy

Central to the project is the objective of cultivating digital literacy among students. This goes beyond just learning to use technology; it involves understanding the ethical and responsible use of digital resources, developing critical thinking skills for the digital age, and fostering an innovative mindset.

Building Infrastructure for Digital Learning

The project acknowledges the importance of a robust digital infrastructure. This encompasses reliable internet access, adequate digital devices, and secure and user-friendly platforms for learning and administration. Efforts will also be made to ensure digital equity, so all students have equal access to technology.

Evaluation and Continuous Improvement

An integral part of the project is the establishment of a framework for continuous evaluation and improvement. Regular feedback from all stakeholders, alongside data-driven analysis, will guide the iterative development of the project, ensuring it remains relevant and effective in the ever-evolving educational landscape.

LITERATURE REVIEW:

The digital transformation in education is an area of growing interest and importance in the field of educational research. The project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" is grounded in a body of literature that explores various facets of digital education, including technology integration, teacher and student readiness, and the impact of digital tools on learning outcomes.

Technology Integration in Education

Several studies have emphasized the significance of technology integration in enhancing educational experiences. For instance, Hennessy et al. (2005) discuss how digital tools, when effectively integrated, can transform classroom practices, fostering more interactive and student-cantered learning environments. Additionally, research by Ertmer and Ottenbreit-Leftwich (2010) highlights

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RESEARCH GAPS:

The "Digitizing Learning" initiative, focusing on the integration of digital technology in education, reveals several research gaps:

1. **Equity in Digital Access:** There is a notable gap in understanding how to ensure equitable digital access for all students, particularly those from underprivileged backgrounds. Research is needed to address disparities in access to digital tools and internet connectivity, which are critical for successful implementation of digital learning.
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Date: 20-08-2018

Dr Latha Banda
Associate Dean & HOD (CSE)
Name & Designation

PROF. (Dr. Dinesh Javalkar)
(Signature) (in block letters)

(Office Seal)

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URL: www.lingayasvidyapeeth.edu.in | Phone No.: 0129-2598200-05

Lingaya's University, Faridabad

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CERTIFICATE

I certify that:

I shall abide by the rules governing the scheme in case assistance is provided to me by the Lingayas Vidyapeeth, for the above project.

In case the above research project or an allied project receives assistance from any other source, I shall inform Lingayas Vidyapeeth, accordingly.

In case the research project is not completed in time. I will refund the whole amount along with penal interest as applicable

Signature of the P.I.

Date: 20th August, 2018

Place: Faridabad

19 APR 2021

For LINGAYA'S VIDYAPEETH

Registrar

triotech
Applying the Evolution

nodalofficer@triotech.co.in
Plot No. 510, Ground Floor,
Udyog Vihar Ph-5, Gurugram - 122016

Date: 20th August, 2018

APPROVAL OF CONSULTANCY PROJECT

Dear Dr. Latha Banda,

I am delighted to inform you that your application for the approval of the consultancy project entitled "Design a hybrid classification approach for sentimental analysis of Twitter data" has been carefully reviewed and we are pleased to approve the project.

General Information:

1. **Project Title:** " Design a hybrid classification approach for sentimental analysis of Twitter data "

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** 3,20,000 (Three Lakh Fifty Thousand)

1.3 **Priority Area and Sub-Area:** The priority in the project "Design a hybrid classification approach for sentimental analysis of Twitter data" is to develop an accurate sentiment analysis system for Twitter content.

1.4 **Foreign Exchange (FE) Component:** NA

1.5 **Principal Investigator & Co-PI:**

Principal investigator: Dr. Latha Banda, A. Professor, Department of Computer Science & Engineering, Lingaya's Vidyapeeth

Co-PI: Dr. Dinesh Javalkar, Assistant Professor, Department of Electronics & Communication Engineering, Lingaya's Vidyapeeth

1.6 **Department & Faculty:** Department of Computer Science & Engineering

1.7 **Address:** Lingaya's Vidyapeeth, Nachauli, Faridabad

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For LINGAYA'S VIDYAPEETH

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1.8 **Project Summary:** The project titled "Design a Hybrid Classification Approach for Sentimental Analysis of Twitter Data" aims to create an advanced sentiment analysis system tailored for the unique characteristics of Twitter content. With social media's growing influence, understanding public sentiment is crucial for businesses, governments, and researchers. The project's primary priority is to enhance sentiment classification accuracy and efficiency. This is achieved through a hybrid approach that combines machine learning algorithms with lexicon-based methods. Machine learning models, such as deep neural networks, can capture complex contextual information, while lexicon-based techniques utilize predefined sentiment dictionaries for better interpretability and adaptability to Twitter's ever-changing language and slang.

A sub-area of focus involves preprocessing and feature extraction to handle Twitter-specific challenges like hashtags, mentions, and emoticons. Additionally, domain-specific sentiment lexicons are developed or adapted to improve sentiment analysis accuracy for Twitter data. The project's outcome will provide valuable insights into public sentiment trends on Twitter, enabling more informed decision-making for various applications, including brand management, social monitoring, and public opinion analysis. Congratulations on the approval of your consultancy project!!

Wish you a great success in your future research endeavours!

Sincerely,

Kind Regards,

TRIOTECH SOLUTIONS PVT. LTD. GURUGRAM

Authorized Signatory

For LINGAYA'S VIDYAPEETH

18 APR 2024

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Ref: LV/AY 2020-21/R & D/SMG/ **Date:** 30.09.2021

General Information:

1. **Project Title:** "Digitizing Learning: A Strategic Implementation of Digital Education in Schools"

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** . 160000/- (Only)

1.3 **Priority Area and Sub-Area:** It focuses on integrating technology into education. Key sub-areas include developing digital content, enhancing teacher training, fostering student digital literacy, and building robust infrastructure. This strategic approach transforms traditional teaching methods, ensuring interactive, accessible, and effective digital education in schools.

1.4 **Foreign Exchange (FE) Component:** NA

1.5

Principal investigator: Prof. (Dr.) Ritu Sachdeva, Professor & HOD, Department of Computer Science & Engineering

1.6 **Designation:** As stated above

1.7 **Department & Faculty:** Department of Computer Science & Engineering

1.8 Address: Lingaya's Vidyapeeth, Nachauli, Faridabad

1.9 Date of Birth: Prof.(Dr.) Ritu Sachdeva (28/06/1983)

1.10 Gender: Female

1.11 Aadhar Number: Dr. Ritu Sachdeva (415403927663)

1.12 Mobile & Email: dr.ritusachdeva@lingayasvidyapeeth.edu.in

1.13 Collaborating Institutions: NA

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1.14 Project Summary:

The project titled "Improvement of Network Lifetime Using Clustering and Dynamic Topology Methods in Wireless Sensor Networks (WSNs)" is a comprehensive research endeavor aimed at addressing critical challenges associated with WSNs, such as energy efficiency and network lifespan. WSNs are essential for a wide range of applications, including environmental monitoring, industrial automation, healthcare, and smart cities. However, they are often constrained by limited energy resources, making it crucial to enhance their energy management and overall network performance.

RESEARCH GAPS:

The "Improvement of Network lifetime using clustering and dynamic topology methods in WSNs" initiative, focusing on the integration of digital technology in education, reveals several research gaps:

1. **Energy-Aware Cluster Head Selection:** Existing clustering algorithms often rely on static criteria for cluster head selection, such as node proximity or residual energy. A research gap exists in developing more sophisticated methods that consider dynamic factors like node workload, communication traffic, and energy fluctuations to optimally select cluster heads. This would lead to better load balancing and prolonged network lifetime.
2. **Adaptive Fault Tolerance:** Current dynamic topology management techniques mainly focus on routing and energy efficiency but lack robust mechanisms for adaptive fault tolerance. Future research should address this gap by designing algorithms that can dynamically reroute data and redistribute tasks in response to node failures or network disruptions, ensuring uninterrupted data flow.
3. **Cross-Layer Optimization:** The integration of multiple network layers (physical, MAC, and routing) is essential for holistic WSN optimization. A research gap exists in developing cross-layer optimization approaches that consider the interplay between these layers to maximize energy efficiency, minimize latency, and enhance network lifetime. Integrating these layers can result in more efficient and adaptive WSNs.

Addressing these gaps can provide deeper insights into creating a more effective and inclusive digital learning environment.

Project Objectives:

The primary goal of this project is to develop and implement innovative strategies for improving the network lifetime in WSNs. To achieve this overarching objective, the project is divided into the following specific objectives:

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Clustering Algorithm Design: Develop a robust and efficient clustering algorithm that intelligently organizes sensor nodes into clusters based on criteria such as proximity, energy levels, and data reporting requirements. The clustering algorithm is designed to optimize the energy consumption of sensor nodes by reducing unnecessary data transmissions and facilitating balanced energy usage across the network.

Dynamic Topology Management: Implement dynamic topology management techniques that adapt to changing network conditions and environmental factors. These techniques will enable the network to self-adjust its topology to optimize energy usage, enhance fault tolerance, and improve overall network responsiveness.

Simulation and Experimental Validation: Develop simulation models to evaluate the proposed clustering and dynamic topology methods comprehensively. Conduct practical experiments using real-world sensor nodes and deployment scenarios to validate the effectiveness and efficiency of the proposed approaches.

Project Approach:

Clustering Algorithm Development:

Cluster Formation: The clustering algorithm will create clusters within the WSN based on factors such as proximity and energy levels. Nodes with similar characteristics and geographic proximity will be grouped together to form clusters. Cluster formation will minimize the communication distance between nodes, reducing energy consumption during data transmission.Cluster Head Selection: Within each cluster, cluster heads (CHs) will be selected based on their energy levels and data processing capabilities. CHs will act as intermediaries between the sensor nodes and the base station, aggregating and forwarding data to reduce the number of transmissions. Energy-efficient CH selection is crucial for prolonging the network lifetime.Data Aggregation: The algorithm will facilitate data aggregation at the cluster heads to reduce redundant transmissions. Aggregated data will be sent to the base station, further conserving energy resources and extending the network lifetime.

Dynamic Topology Management:

Adaptive Routing: The project will implement adaptive routing protocols that can dynamically select the most energy-efficient paths for data transmission. As network conditions change, the routing algorithm will adapt to optimize energy usage and avoid congested or faulty routes.Node Sleep/Wake Strategies: To further conserve energy, the project will explore techniques for putting sensor nodes into a low-power sleep mode when they are not actively transmitting or sensing data. Nodes will wake up as needed based on network requirements, reducing continuous energy consumption.Fault Tolerance: Dynamic topology management will include mechanisms for handling node failures and reconfiguring the network topology to ensure continuous data flow. This fault tolerance will enhance the network's resilience and maintain its functionality in challenging environments.

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Simulation and Experimental Validation:

Simulation Models: Develop comprehensive simulation models using popular WSN simulation tools like NS-3 or MATLAB/Simulink. These models will enable the evaluation of proposed algorithms and methodologies under various network scenarios, including different node distributions, data traffic patterns, and environmental conditions.

Real-world Experiments: Conduct practical experiments using real sensor nodes and hardware to validate the proposed clustering and dynamic topology methods in a real-world context. This will involve deploying sensor nodes in controlled environments and monitoring their performance, energy consumption, and network lifetime.

Expected Outcomes:

The project's expected outcomes include significant advancements in the field of WSNs, particularly in terms of energy efficiency and network lifespan extension:

Prolonged Network Lifetime: The developed clustering algorithm and dynamic topology management techniques are anticipated to substantially extend the network lifetime of WSNs. By optimizing energy usage and reducing unnecessary data transmissions, the network will operate efficiently for longer periods without frequent battery replacements.

Improved Energy Efficiency: The clustering algorithm's intelligent node grouping and data aggregation, coupled with dynamic topology management, will enhance energy efficiency by minimizing energy wastage on redundant transmissions and idle listening. This efficiency improvement will lead to cost savings and reduced environmental impact.

Enhanced Network Robustness: The project's dynamic topology management will increase the network's robustness and fault tolerance. It will enable the network to adapt to changing conditions, including node failures, mobility, and environmental factors, ensuring uninterrupted data flow and improved reliability.

Validation through Simulations and Experiments: The use of simulation models and real-world experiments will provide comprehensive validation of the proposed methods. This validation will offer empirical evidence of the effectiveness and efficiency of the developed algorithms, making them readily applicable in practical WSN deployments.

Practical Application: The project's outcomes will be directly applicable to real-world scenarios, benefiting applications such as environmental monitoring, industrial automation, and healthcare. WSNs will become more sustainable and reliable, supporting critical data collection and transmission needs.

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INTERNAL QUALITY ASSURANCE CELL

UNDERTAKING BY THE HEAD OF THE DEPARTMENT

I am pleased to forward the proposal of Prof. (Dr.) Ritu Ritu Sachdeva who is Associate Dean & HOD of the Department of Computer Science & Engineering, Lingayas Vidyapeeth, in our institution, for financial support to the Lingayas Vidyapeeth.

The institution agrees to:

- Administer and manage the finance.
- Provide accommodation and furniture and other infrastructure required for the project.
- Make available all its research facilities such as library, laboratory and other requirement; and
- Provide the material and managerial assistance for the project.

If the Project Incharge of the project leaves the institution to join some other institution, after part of the sanctioned grant has been received, we would have no objection to the project being transferred to the new institution if the Project Incharge so desires. The institution, however, shall continue to be responsible for submitting the audited statement of accounts and utilization certificate for the grant received by it, for this purpose.

The institution will facilitate the completion of the project within the stipulated time. If not satisfied with the progress of the project, the funding organization may terminate the project immediately and ask for the refund of the amount received by the institution along with penal interest. The same will apply to uncompleted projects.

Date: 30.09.2021

For LINGAYA'S VIDYAPEETH
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18 APR 2024

Dr. Ritu Sachdeva
Associate Dean & HOD (CSE)
Name & Designation

Dr. Ritu Sachdeva
(Signature) (in block letters)

(Office Seal)

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CERTIFICATE

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In case the above research project or an allied project receives assistance from any other source, I shall inform Lingayas Vidyapeeth, accordingly.

In case the research project is not completed in time. I will refund the whole amount along with penal interest as applicable

Signature of the P.I.

Date: 30.09.2021

Place: Faridabad

Name of the P.I. (in capital letters): DR. RITU SACHDEVA

For LINGAYA'S VIDYAPEETH
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Ref: LV/AY 2019-20/R & D/SMG/ **Date**: 12.09.2019

General Information:

1. **Project Title:** "Design and implementation of feature based opinion classification technique

1.1 **Duration (in months):** 12 Months

1.2 **Total Cost (in Rs Lakhs):** 3,60,000 (Three Lakh Sixty Thousand)

1.3 **Priority Area and Sub-Area:** It focuses on integrating technology into education. Key sub-areas include developing digital content, enhancing teacher training, fostering student digital literacy, and building robust infrastructure. This strategic approach transforms traditional teaching methods, ensuring interactive, accessible, and effective digital education in schools.

1.4 **Foreign Exchange (FE) Component:** NA

1.5 **Principal Investigator & Co-PI:**

Principal investigator: Prof. (Dr.) Nand Kumar, Professor & HOD, Department of Computer Science & Engineering

1.6 **Designation:** As stated above

1.7 **Department & Faculty:** Department of Computer Science & Engineering

1.8 Address: Lingaya's Vidyapeeth, Nachauli, Faridabad

1.9 Date of Birth: Prof.(Dr.) Nand kumar (28/06/1983)

1.10 Gender: Male

1.11 Aadhar Number: Prof.(Dr.) Nand kumar (415403927663)

1.12 Mobile & Email: dr.nandkumar@lingayasvidyapeeth.edu.in, 97294788888;

1.13 Collaborating Institutions: NA

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1.14 Project Summary:

Background of the Adjoining Research

The adjoining research on the project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" stems from the recognition of a rapidly evolving educational landscape. driven by technological advancements and the increasing importance of digital literacy in the global context. In a world where digital technology permeates every aspect of life, the education sector has been experiencing a paradigm shift. Traditional teaching methodologies are being augmented, and in some cases, replaced by digital technologies. This transformation is not just a trend but a necessity to equip students with the skills and knowledge required in the 21st century.

The background of this research acknowledges the diverse nature of schools, where students from various cultural and linguistic backgrounds converge. This diversity presents unique challenges and opportunities in implementing digital education. The research explores how digital tools can be used to foster inclusivity, cross-cultural understanding, and global citizenship. Moreover, the research delves into the challenges of integrating technology into education, including infrastructure requirements, teacher training, and curriculum development. It studies successful models of digital education integration in various international contexts, drawing lessons and best practices.

The ultimate goal of this research is to develop a comprehensive framework for effectively implementing digital learning in international schools. This includes evaluating the impact of digital education on student engagement, learning outcomes, and preparation for a digitally interconnected world. By exploring these facets, the research aims to provide actionable insights and recommendations for educational institutions embarking on their digital transformation journey.

ABSTRACT

The research project represents a transformative approach to modernizing educational practices through the integration of digital technologies. This initiative is premised on the recognition that digital literacy and technological proficiency are essential skills in the 21st-century educational landscape. The project aims to seamlessly blend digital tools and methods with traditional teaching practices, thereby enriching the learning experience and preparing students for a digitally-driven world. Central to this initiative is the development and integration of digital content that is both engaging and educationally sound, ensuring that technology enhances rather than replaces traditional learning methodologies. A significant focus is placed on teacher training and professional development, equipping educators with the necessary skills and confidence to effectively implement digital tools in their classrooms. Furthermore, the project emphasizes the importance of developing students' digital literacy, ensuring they not only understand how to use technology but also how to do so responsibly and effectively. This includes critical thinking about digital information sources and understanding the ethical implications of digital technology. By addressing the infrastructure needs and ensuring equitable access to digital resources, the project seeks to provide a holistic and inclusive approach to digital education. The overarching goal is to foster an adaptable, innovative, and future-ready educational environment in schools, preparing students to thrive in an increasingly digital world.

Keywords: Digital Integration, Educational Technology, Teacher Training, Student Digital Literacy

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INTRODUCTION:

In the dawn of the 21st century, the landscape of education has been experiencing a paradigm shift, propelled by the rapid advancement of digital technology. The project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" is at the forefront of this transformation, endeavoring to seamlessly integrate digital tools and methodologies into the traditional educational framework. This initiative is not just about the incorporation of technology into classrooms; it is a comprehensive reimagining of how education is delivered in the digital age.

Context and Need for Digital Education

The impetus for this project stems from a growing recognition of the digital divide in educational settings and the pressing need to bridge it. In an era where digital literacy is as crucial as traditional literacy, schools must evolve to prepare students for a world where technology is ubiquitous. The COVID-19 pandemic has further highlighted the urgency for schools to adapt to digital modes of learning. This project is a response to these challenges, aiming to equip students with the skills needed to navigate and succeed in a digitally interconnected world.

Project Vision and Goals

The vision of the "Digitizing Learning" project is to create an educational environment where technology enhances learning, fosters innovation, and prepares students for future challenges. The goals are multi-faceted:

1. To integrate digital technology into the curriculum effectively, making learning more engaging and accessible.
2. To equip teachers with the skills and tools necessary for digital education, ensuring they can guide and inspire students in this new environment.
3. To develop students' digital literacy, ensuring they can navigate the digital world with competence and ethical understanding.
4. To build a robust digital infrastructure that supports and sustains the technological needs of a modern educational institution.

Strategic Approach

The strategic approach involves a thorough analysis of the current educational practices and identifying areas where digital integration can have the most significant impact. This includes curriculum development, teacher training, student engagement, and infrastructure enhancement. The project emphasizes a collaborative approach, involving educators, students, parents, and technology experts in the planning and implementation process.

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Curriculum Development and Digital Content

A core component of the project is the development of a digital curriculum that complements and enhances traditional teaching methods. This involves curating and creating digital resources such as e-books, interactive modules, and educational software that align with educational standards and learning objectives.

Professional Development for Educators

Recognizing that teachers are pivotal to the success of this initiative, the project prioritizes their professional development. Training programs and workshops will be designed to enhance teachers' digital skills, pedagogical methods, and adaptability to technology-enhanced teaching environments.

Fostering Student Digital Literacy

Central to the project is the objective of cultivating digital literacy among students. This goes beyond just learning to use technology; it involves understanding the ethical and responsible use of digital resources, developing critical thinking skills for the digital age, and fostering an innovative mindset.

Building Infrastructure for Digital Learning

The project acknowledges the importance of a robust digital infrastructure. This encompasses reliable internet access, adequate digital devices, and secure and user-friendly platforms for learning and administration. Efforts will also be made to ensure digital equity, so all students have equal access to technology.

Evaluation and Continuous Improvement

An integral part of the project is the establishment of a framework for continuous evaluation and improvement. Regular feedback from all stakeholders, alongside data-driven analysis, will guide the iterative development of the project, ensuring it remains relevant and effective in the ever-evolving educational landscape.

LITERATURE REVIEW:

The digital transformation in education is an area of growing interest and importance in the field of educational research. The project "Digitizing Learning: A Strategic Implementation of Digital Education in Schools" is grounded in a body of literature that explores various facets of digital education, including technology integration, teacher and student readiness, and the impact of digital tools on learning outcomes.

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Technology Integration in Education

Several studies have emphasized the significance of technology integration in enhancing educational experiences. For instance, Hennessy et al. (2005) discuss how digital tools, when effectively integrated, can transform classroom practices, fostering more interactive and student-cantered learning environments. Additionally, research by Ertmer and Ottenbreit-Leftwich (2010) highlights

the barriers to technology integration, including teacher attitudes, knowledge, and institutional support, underscoring the need for comprehensive professional development.

Teacher Readiness and Professional Development

Professional development emerges as a critical theme in the literature. Mishra and Koehler (2006) introduce the Technological Pedagogical Content Knowledge (TPACK) framework, suggesting that effective technology integration requires teachers to develop knowledge and skills at the intersection of technology, pedagogy, and content. Research by Kopcha (2012) supports this, advocating for ongoing, context-specific professional development to enhance teachers' technological proficiency.

Impact of Digital Tools on Student Learning

Regarding student outcomes, several studies indicate positive impacts of digital tools on learning. A study by Cheung and Slavin (2013) found that educational technology applications produce a moderate but positive effect on student academic performance. Similarly, Tamim et al. (2011) conducted a meta-analysis revealing that technology, when used appropriately, can enhance student learning and engagement.

Digital Literacy and Student Engagement

Digital literacy is another focal point in the literature. Martin (2008) defines digital literacy as the ability to locate, organize, understand, evaluate, and analyze information using digital technology. This skill set is vital for students to navigate the digital world responsibly. In terms of engagement, studies by Sun and Zhang (2006) suggest that interactive digital tools can significantly enhance student engagement and motivation.

Challenges and Opportunities in Digital Education

The literature also addresses challenges in digital education. Warschauer and Matuchniak (2010) discuss the digital divide and its implications for equity in education. Additionally, Livingstone (2012) raises concerns about data privacy and the ethical use of digital tools in educational settings.

Conversely, opportunities presented by digital education are numerous. Voogt and Roblin (2012) argue that digital technologies offer new ways of learning that are more collaborative, problem-based, and reflective of real-world scenarios.

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Global Perspectives on Digital Education

A global perspective on digital education is crucial, particularly in international schools. Research by Bulfin et al. (2014) emphasizes the importance of understanding different cultural contexts in the implementation of digital education strategies. Furthermore, the work of Law et al. (2008) on international comparisons in educational technology highlights the diverse ways in which different countries integrate technology into education.

RESEARCH GAPS:

The "Digitizing Learning" initiative, focusing on the integration of digital technology in education, reveals several research gaps:

1. **Equity in Digital Access:** There is a notable gap in understanding how to ensure equitable digital access for all students, particularly those from underprivileged backgrounds. Research is needed to address disparities in access to digital tools and internet connectivity, which are critical for successful implementation of digital learning.
2. **Teacher Preparedness and Mindset Shifts:** While digital tools are increasingly prevalent, there's a lack of in-depth research on the preparedness of teachers to integrate these technologies effectively. This includes understanding their attitudes, training needs, and the mindset shifts required to transition from traditional to digital teaching methods.
3. **Impact on Social and Emotional Learning:** Limited research exists on how digital learning environments affect students' social and emotional development. Investigating this aspect is crucial, especially considering the increasing role of remote and hybrid learning models, to ensure holistic development of students in a digital-centric educational landscape.

Addressing these gaps can provide deeper insights into creating a more effective and inclusive digital learning environment.

Objectives:

The objectives for the "Digitizing Learning" initiative can be outlined as follows:

1. **Effective Integration of Technology into Education:** To seamlessly incorporate digital tools and resources into the educational curriculum, thereby enhancing teaching methods and learning experiences. This includes not only the adoption of technology but also its effective alignment with educational goals and standards.
2. **Professional Development and Support for Educators:** To ensure that teachers are adequately trained and supported in using digital technologies. This involves providing ongoing professional development opportunities, resources, and a supportive community that enables educators to confidently and effectively use technology in their teaching.

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3. **Fostering Digital Literacy and Critical Thinking in Students:** To develop students' digital literacy skills, ensuring they are not only proficient in using technology but also capable of thinking critically about digital information and media. This objective aims to prepare students for the digital challenges of the future, making them responsible and savvy digital citizens.

Research Design - Current study will be of Descriptive nature.

RESEARCH METHODOLOGY:

The "Digitizing Learning" project employs a comprehensive research methodology encompassing both quantitative and qualitative approaches. Quantitative data will be gathered through surveys and performance metrics to assess the impact of digital tools on student achievement and engagement. Qualitative insights will be obtained from interviews, focus groups, and classroom observations, providing in-depth perspectives on teacher experiences, pedagogical shifts, and student interactions with technology. This mixed-methods approach ensures a holistic evaluation of digital education implementation, capturing both measurable outcomes and nuanced experiences within the educational ecosystem. Data analysis will involve statistical methods and thematic analysis to interpret findings effectively.

EXPECTED OUTCOMES:

The "Digitizing Learning" project anticipates several expected outcomes. First, improved student engagement and performance as digital tools enhance interactive learning experiences. Second, increased teacher proficiency in digital pedagogies, leading to more effective teaching practices. Third, enhanced digital literacy and critical thinking skills in students, better preparing them for the digital age. Fourth, a refined curriculum enriched with culturally relevant digital content. Fifth, an equitable and efficient digital infrastructure in schools. Lastly, insights and best practices that can inform broader educational strategies, advancing the adoption of digital education in schools and facilitating a more inclusive, innovative, and future-ready learning environment.

SCOPE OF THE STUDY:

The scope of the "Digitizing Learning" study encompasses the integration of digital technologies into the curriculum and teaching practices of schools. It examines the impact on student learning outcomes, teacher professional development, and the development of digital literacy. The study also considers equity in access and the cultural context of digital education.

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UNDERTAKING BY THE HEAD OF THE DEPARTMENT

I am pleased to forward the proposal of Prof. (Dr.) Nand kumarwho is Associate Dean & HOD of the Department of Computer Science & Engineering, Lingayas Vidyapeeth, in our institution, for financial support to the Lingayas Vidyapeeth.

The institution agrees to:

- Administer and manage the finance.
- Provide accommodation and furniture and other infrastructure required for the project.
- Make available all its research facilities such as library, laboratory and other requirement; and
- Provide the material and managerial assistance for the project.

If the Project Incharge of the project leaves the institution to join some other institution, after part of the sanctioned grant has been received, we would have no objection to the project being transferred to the new institution if the Project Incharge so desires. The institution, however, shall continue to be responsible for submitting the audited statement of accounts and utilization certificate for the grant received by it, for this purpose.

The institution will facilitate the completion of the project within the stipulated time. If not satisfied with the progress of the project, the funding organization may terminate the project immediately and ask for the refund of the amount received by the institution along with penal interest. The same will apply to uncompleted projects.

Date: 12.09.2019

For LINGAYA'S VIDYAPEETH
Registrar

18 APR 2024

Prof. (Dr.) Nand kumar
Associate Dean & HOD (CSE)

Name & Designation

PROF. (DR.) Nand kumar

(Signature) (in block letters)

(Office Seal)

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Lingaya's Vidyapeeth

Deemed-to-be-University u/s 3 of UGC Act 1956, Government of India
NAAC ACCREDITED | Approved by MHRD/ AICTE/ PCI/ BCI/ COA/ NCTE
Nachauli, Jasana Road, Faridabad- 121002 (Haryana)
URL: www.lingayasvidyapeeth.edu.in | Phone No.: 0129-2598200-05

CERTIFICATE

I certify that:

I shall abide by the rules governing the scheme in case assistance is provided to me by the Lingayas Vidyapeeth, for the above project.

In case the above research project or an allied project receives assistance from any other source, I shall inform Lingayas Vidyapeeth, accordingly.

In case the research project is not completed in time. I will refund the whole amount along with penal interest as applicable

Signature of the P.I.

Date: 12.09.2019

Place: Faridabad

Name of the P.I. (in capital letters): PROF. (DR.) NAND KUMAR

For LINGAYA'S VIDYAPEETH

18 APR 2024

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Project Proposal

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Total Dissolved Solids Measurement Nearby Villages

Submitted By:

Dr. Rizwan Arif
(Assistant Professor)

Department of Chemistry

School of Basic and Applied Sciences

Lingaya's Vidyapeeth

September 2021

Introduction:

Total Dissolved Solids (TDS) is a measure of the sum of all inorganic and organic substances in a liquid in molecular, ionized or micro-granular colloidal suspended form. The solids must be small enough to survive filtration through a sieve the size of two micrometer.

TDS solids are normally found in all freshwater systems. Major applications of TDS are: at low levels the study of water quality for streams, rivers, lakes, potable water taste, and at high levels the control of scale in recalculating water systems. It is a quality indicator for drinking water and is a general measure of the presence of chemicals. In seawater RO desalination, TDS provides a way of comparing the feed with the permeate quality that is relevant to drinking water taste standards.

Where does TDS come from?

TDS in surface waters come from the solvent action of water in contact with minerals in the earth, agricultural and residential runoff, leachingof soil contamination, and used water from industrial or sewage treatment plants. Common chemical constituents are calcium, sodium, chloride, potassium, phosphates and nitrates. They may be cations, anions, molecules or agglomerations of molecules, so long as they are soluble. The United States and Canada have a secondary water quality standard of 500 mg/L TDS or less for palatable drinking water. Water with TDS of greater than 500 mg/L may have poor taste and when over 1500 mg/L will taste like weak Alka-Seltzer® to most people.

Total Suspended Solids (TSS), are different from TDS as they cannot pass through a sieve of two micrometers and are suspended in solution. Flocculation and sand filtration can remove settle- able solids and suspended solids from the water but dissolved TDS solids are not removed.

TDS in Water Systems

TDS enters recalculating water systems with the water supply from municipal, lake, river, or well water. Once inside evaporation of a portion of the recalculating water concentrates TDS

solids. High TDS levels generally indicate hard water, waterhardness must be removed or will cause scale buildup in pipes, valves, and filters, reducing performance and adding to boiler system maintenance and efficiency costs. TDS is frequently tested manually and by continuous TDS analyzer which operates a blow down valve to keep the system below the scale deposition concentration.

These effects can also be seen in aquariums, spas, swimming pools, and reverse osmosis water treatment systems. Typically, in these applications, TDS is tested manually frequently or by continuousTDS analyzer, plus equipment and filtration membranes are inspected for deposits.

In aquaculture, TDS is monitored to create a water quality environment suitable for the organism. For freshwater oysters, trouts, and other high value seafood, highest productivity and economic returns are achieved by mimicking the TDS and pH levels of each species' native environment.

In hydroponics, total dissolved solids is considered one of the best indicators of nutrient availability forthe plants being grown.

TDS Measurement Methods

There are two principal methods of measuring total dissolved solids: gravimetric and conductivity. The standard method is gravimetric, which is considered the most accurate and involvesevaporating the sample to dryness at 103 °C, then to 180 °C to remove any occluded water, (water molecules trapped in mineral matrix), then weighing it with a precision analytical balance (normally capable of 0.0001 gram accuracy). This method is generally considered best, although it is slow and has inaccuracies from low-boiling-point chemicals which evaporate with the water.

TDS of water is directly related to the conductivity of dissolved ionized solids in the water. Ions from the dissolved solids create the ability for water to conduct an electrical current, which is measured by the IC Controls 210-C(TDS) analyzer, and immediately displayed as sodium chloride ppm or mg/L or µS/cm conductivity. When periodicallystandardized with IC Controls

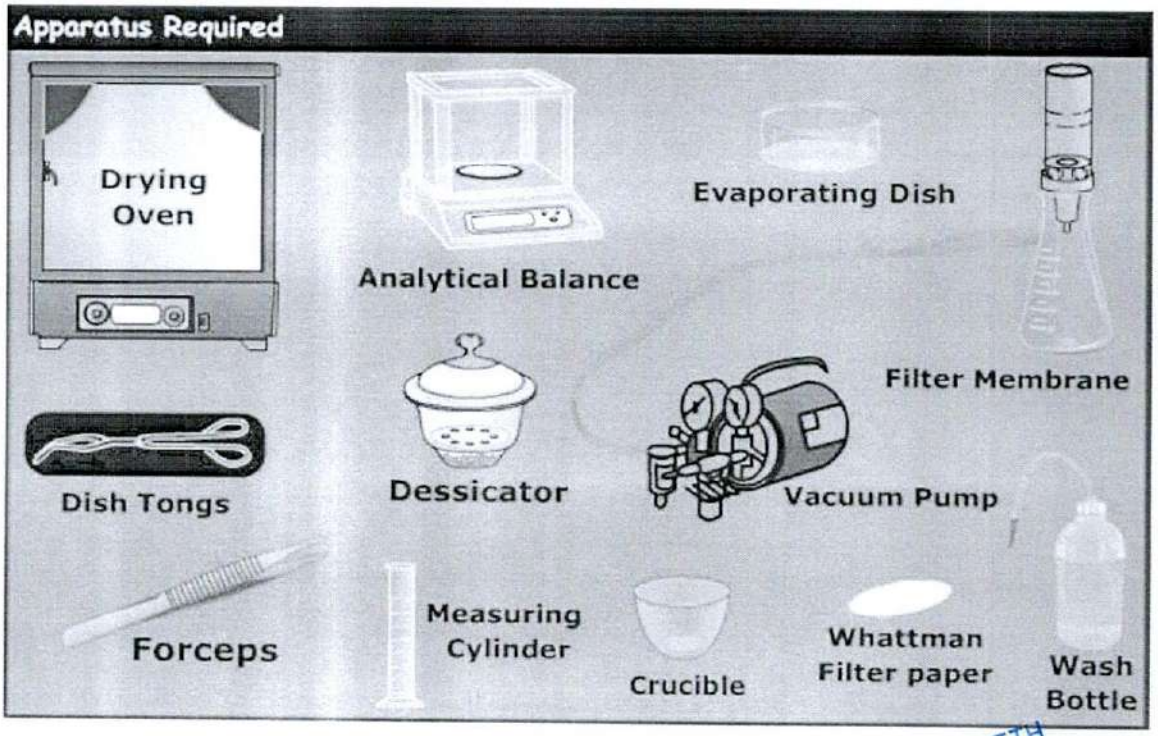
TDS standards or by laboratory gravimetric TDS measurement, TDS analyzers based on conductivity provide a quickaccurate value of the TDS.

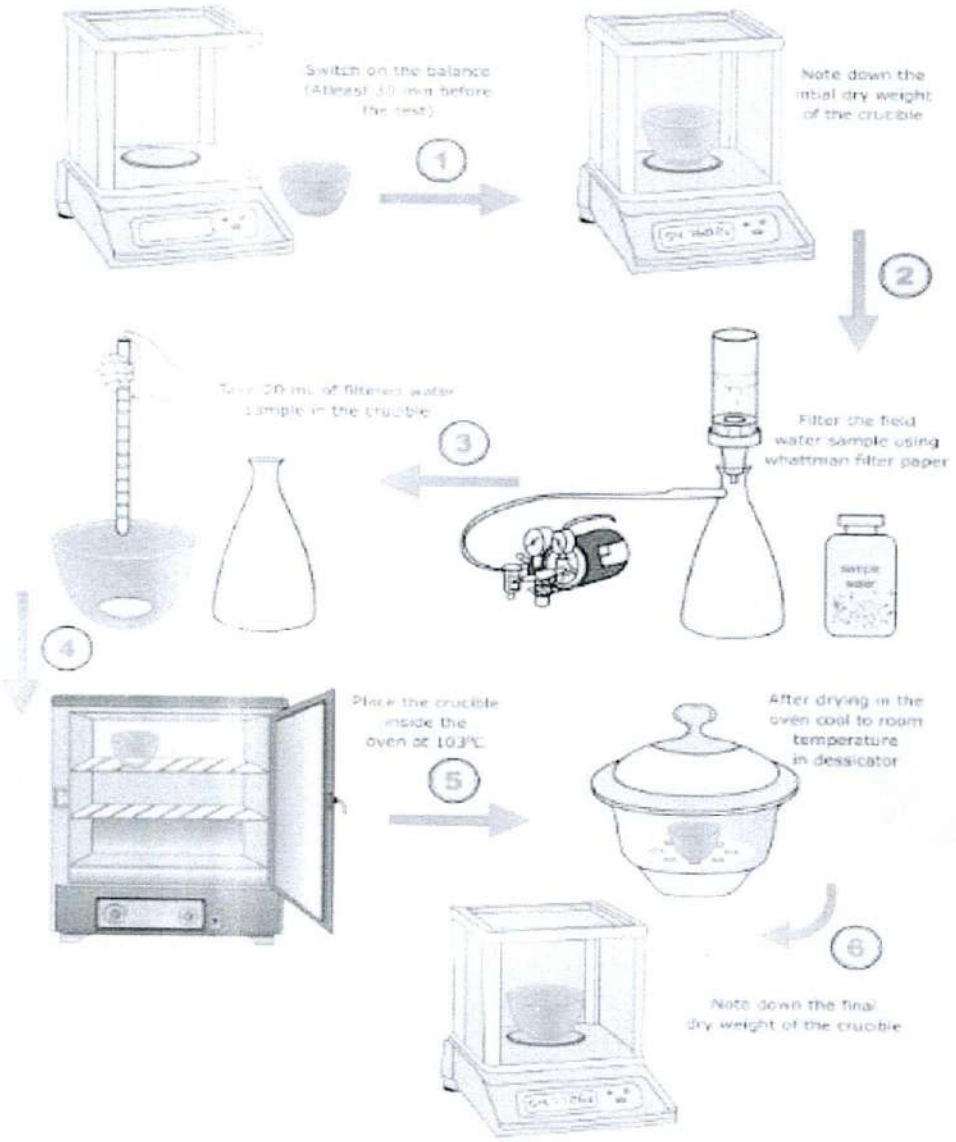
Environmental Significance

- Dissolved minerals, gases and organic constituents may produce aesthetically displeasing colour, taste and odour.
- Some dissolved organic chemicals may deplete the dissolved oxygen in the receiving waters and some may be inert to biological oxidation, yet others have been identified as carcinogens.
- Water with higher solids content often has a laxative and sometimes the reverse effect upon people whose bodies are not adjusted to them.
- High concentration of dissolved solids about 3000 mg/L may also produce distress in livestock. In industries, the use of water with high amount of dissolved solids may lead to scaling in boilers, corrosion and degraded quality of the product.
- Estimation of total dissolved solids is useful to determine whether the water is suitable for drinking purpose, agriculture and industrial purpose.
- Suspended material is aesthetically displeasing and provides adsorption sites for chemical and biological agents.
- Suspended organic solids which are degraded anaerobically may release obnoxious odours.
- Biologically active suspended solids may include disease causing organisms as well as organisms such as toxic producing strains of algae.
- The suspended solids parameter is used to measure the quality of wastewater influent and effluent.
- Suspended solids determination is extremely valuable in the analysis of polluted waters.
- Suspended solids exclude light, thus reducing the growth of oxygen producing plants.

PRINCIPLE

A well mixed sample is filtered through a standard glass fiber filter, and the filtrate is evaporated to dryness in a weighed dish and dried to constant weight at 179-181°C. The increase in dish weight represents the total dissolved solids. A well mixed sample is filtered through a weighed standard glass fiber filter and the residue retained on the filter is dried to a constant weight at 103-105°C. The increase n weight of the filter represents the total suspended solids. If the suspended material clogs the filter and prolongs filtration, the difference between the total solids and total dissolved solids may provide an estimate of the total suspended solids.





SAMPLE HANDLING AND PRESERVATION

- Preservation of sample is not practical. Because biological activity will continue after a sample has been taken, changes may occur during handling and storage. Both the characteristics and the amount of solids may change. To reduce this change in samples taken for solids determinations, keep all samples at 40 C.
- Do not allow samples to freeze.

- Analysis should begin as soon as possible.

PRECAUTIONS

The following precautions should be observed while performing the experiment:

- Water or Wastewater samples which contain high concentrations of calcium, chloride, magnesium or sulfate can rapidly absorb moisture from the air.
- Such samples may need to be dried for a longer period of time, cooled under proper desiccation and weighed rapidly in order to achieve a reasonable constant weight.
- We should be aware prolonged drying may result in loss of constituents, particularly nitrates and chlorides.
- Volume of sample should be adjusted to have residue left after drying as 100 to 200mg. It is mainly to prevent large amount of residue in entrapping water during evaporation.
- Samples with high concentrations or bicarbonate require additional drying at 180°C to ensure that all of the bicarbonate is converted to carbonate.

TESTING OF SAMPLE FOR TOTAL DISSOLVED SOLIDS

To measure total dissolved solids, take a clean porcelain dish which has been washed and dried in a hot air oven at 180(C for one hour.

- Now weigh the empty evaporating dish in analytical balance. Let's denote the weight measured as W1 = 35.4329 g.
- Mix sample well and pour into a funnel with filter paper. Filter approximately 80 -100 mL of sample.
- Using pipette transfer 75mL of unfiltered sample in the porcelain dish.
- Switch on the oven and allowed to reach 105°C. Check and regulate oven and furnace temperatures frequently to maintain the desired temperature range.
- Place it in the hot air oven and care should be taken to prevent splattering of sample during evaporation or boiling.
- Dry the sample to get constant mass. Drying for long duration usually 1 to 2 hours is done to

eliminate necessity of checking for constant mass.

- Cool the container in a desiccator. Desiccators are designed to provide an environment of standard dryness. This is maintained by the desiccant found inside. Don't leave the lid off for prolonged periods or the desiccant will soon be exhausted. Keep desiccator cover greased with the appropriate type of lubricant in order to seal the desiccator and prevent moisture from entering the desiccator as the test glassware cools.
- We should weigh the dish as soon as it has cooled to avoid absorption of moisture due to its hygroscopic nature. Samples need to be measured accurately, weighed carefully, and dried and cooled completely.
- Note the weight with residue as W 2 = 35.4498 g

Analysis

Total Dissolve Solids

Description		Weight (g)
Weight of the clean porcelain evaporating dish (g)	W1	
Weight of the dish and the residue (g)	W2	
Weight of residue(g)	W	
Volume of the Sample (mL)	V	
Total Dissolved Solids (mg/L)	**TDS**	

Weight of the clean porcelain evaporating dish (g) W 1 =35.4329
Weight of the dish and the residue (g) W 2 =35.4498
Weight of residue (g) W =0.0169
The volume of the sample (mL) V = 50.0

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INTERPRETATION OF RESULTS

Water can be classified by the amount of TDS per litre:

- fresh water: < 1500 mg/L TDS
brackish water: 1500 to 5000 mg/L TDS
saline water: > 5000 mg/L TDS

The following charts give some common ranges for TDS results and possible removal efficiencies for various types of treatment.

Sample	Common Ranges, mg/L	
Influent	Weak < 150	400+ Strong
Primary Effluent	Weak <60	150+ Strong
Secondary Effluent	Good 10 -	60+ Bad
Tertiary Effluent	Less than 3	
Activated Sludge		
Mixed Liquor (MLSS)	1,000 - 5,000	
Return or waste sludge	2,000 - 12,000	
Digester Supernatent	3,000 - 10,000	
Sludge	20,000 - 60,000	

DETERMINATION OF TOTAL Dissolved SOLIDS

DATA SHEET

Date Tested : August 30, 2022
Tested By: Department of Chemistry, LV
Sample Number : 1
Sample Location : Nachauli, Faridabad
Sample Description : Surface water

Description		**Weight (g)**
Weight of the porcelain evaporating dish (g)	W_1	35.4329
Weight of the dish and the residue (g)	W_2	35.4498
Weight of residue(g)	**W**	0.0202
Volume of the Sample (mL)	**V**	100. 0
Total Dissolved Solids (mg/L)	**TDS**	338

Calculations:

W_1 = 35. 4329 g
W_2 = 35. 4498 g
V = 50. 0 mL
Weight of residue (g) W = W_2 - W_1
= 35. 4498 - 35. 4329
= 0. 0169 g
Weight of residue in mg (To convert W (g) to W (mg), multiply W (g) with 1000)
W (mg) = 0.0169 x 1000
= 16.9mg

Multiply the weight of the dry solids (in mg) by 1,000 mL/L to convert the sample size from mL to L.

Description

Total Dissolved Solids (mg/L)
V = Volume of the sample (mL) (To convert mL to L, multiply by 1000)
=16.9 mg/50 mL = 0.338 mg/mL
= 0.338 mg/mL x 1,000 mL
= 338 mg/L

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Nachauli, Jasana Road, Faridabad – 121002; Ph: 0129-2598200-05
Website: www.lingayasuniversity.edu.in

Ref: LV/SOE/07/01

Date: 01.07.2022

School of Education

Consultancy Project Proposal

General Information

Project Title: Enhancing Academic Performance and Student Engagement

1. Duration (in months): 12 Months

2. Total cost: 50 thousand

3. Priority area and sub-area: Student performance and engagement.

4. Principal Investigator: Dr. Gurwinder Ahluwalia, Professor & HOD, SOE, Lingaya's Vidyapeeth and Co-PI: Ms. Minakshi Breja, Teaching Assistant, SOE, Lingaya's Vidyapeeth

5. Designation: Professor and Teaching Assistant

6. Department & Faculty: School of Education

7. Address: Lingaya's Vidyapeeth, Nachauli, Old Faridabad, Jasana Road, Faridabad Haryana - 121002

8. Gender: Female & Female

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18 APR 2024
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9.Email:dr.gurwinderahluwalia@lingayasvidyapeeth.edu.in.

minakshibreja@lingayasvidyapeeth.edu.in

Introduction: Lingaya's Public School is committed to maintaining high academic standards and providing a conducive learning environment for its students. To address the challenge of optimizing academic performance and student engagement, we propose a consultancy project that aims to identify areas for improvement and implement effective strategies.

Objective: The primary objective of this consultancy project is to enhance the overall academic experience for students at Lingaya's Public School.

Specific goals include:

1. **Academic Performance Improvement:** Identify and address factors affecting academic performance among students.
2. **Student Engagement Enhancement:** Develop strategies to increase student engagement both inside and outside the classroom.
3. **Implementation of Best Practices:** Recommend and implement best practices in pedagogy, assessment, and student support services.

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Scope of Work:

1. **Assessment and Analysis:**
   - Conduct a comprehensive assessment of current academic performance data.
   - Analyze student feedback and identify key issues affecting engagement.
   - Evaluate existing teaching methodologies and materials.
2. **Stakeholder Engagement:**
   - Interview teaching staff, students, and administrative staff to gather insights.
   - Host focus group discussions to understand various perspectives on academic challenges.
3. **Recommendations:**
   - Develop a set of actionable recommendations based on the assessment and benchmarking.
   - Prioritize recommendations based on feasibility and potential impact.
4. **Implementation Plan:**
   - Create a detailed implementation plan with timelines and responsibilities.
   - Collaborate with teaching staff and non-teaching staff for the seamless execution of proposed improvements.
5. **Monitoring and Evaluation:**
   - Establish a system for ongoing monitoring and evaluation of the implemented changes.

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- Collect feedback from students and faculty to measure the effectiveness of the improvements.

Research Methodology: This project was taken up through the Action research method.

Sample: 200 students

Sampling: Quota Sampling

Budget: The proposed budget for this consultancy project is 50,000. This budget will cover the cost of consultants, research materials, surveys, focus group sessions, and any necessary training or workshops and printouts & binding.

Timeline: The project is expected to be completed within 1 year. The timeline includes the assessment phase, recommendation development, implementation, and monitoring stages.

Benefits: The successful implementation of this consultancy project is anticipated to result in improved academic performance, increased student engagement, and an enhanced overall learning experience for Lingaya's Public-School students.

Conclusion: We believe that investing in this consultancy project will contribute significantly to Lingaya's Public School's commitment to academic excellence. We look forward to the opportunity to partner with Lingaya's Vidyapeeth University in this endeavour and contribute to the continuous improvement of the academic environment.

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Consultancy Project Report: Enhancing Academic Performance and Student Engagement

Project Overview: The consultancy project aimed to enhance the academic performance and student engagement at Lingaya's Vidyapeeth University. The project spanned 12 months and involved a comprehensive assessment, stakeholder engagement, benchmarking, recommendation development, implementation, and ongoing monitoring and evaluation.

1. Assessment and Analysis: The first phase involved a thorough examination of current academic performance data, student feedback, and existing teaching methodologies. Data analysis revealed key areas of concern, including challenges faced by students, varying engagement levels, and potential factors affecting academic outcomes.

2. Stakeholder Engagement: Interviews with faculty, students, and administrative staff provided valuable insights into the root causes of academic challenges. Focus group discussions facilitated a deeper understanding of perspectives, ensuring a holistic view of the issues.

3. Benchmarking: Research and benchmarking against peer institutions allowed us to identify successful strategies implemented elsewhere. Best practices in pedagogy, assessment, and student support services were considered for adaptation.

4. Recommendations: Based on the assessment and benchmarking, a set of actionable recommendations were developed. These recommendations encompassed changes in

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teaching methodologies, improvements in assessment practices, and the introduction of targeted student support services.

5. Implementation Plan: A detailed implementation plan was devised, outlining specific actions, responsible parties, and timelines. Collaboration with faculty and staff was key to the successful execution of proposed improvements. Workshops and training sessions were conducted to ensure a smooth transition.

6. Monitoring and Evaluation: To track progress, we established a robust monitoring and evaluation system. Regular check-ins, surveys, and feedback sessions were conducted to measure the effectiveness of the implemented changes. Adjustments were made based on real-time feedback to optimize outcomes.

Analyses with Feedback:

- **Positive Outcomes:**
  - Improved academic performance: Preliminary data indicated a noticeable improvement in academic performance among students.
  - Increased student engagement: The implementation of new teaching methodologies and support services contributed to heightened student engagement.
- **Challenges Encountered:**
  - Resistance to change: Some faculty members initially faced challenges adapting to new teaching methodologies.
  - Resource constraints: Limited resources posed challenges in implementing certain proposed improvements.

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Conclusion: The consultancy project successfully addressed several challenges affecting academic performance and student engagement at Lingaya's Public School. Positive outcomes were observed, and feedback mechanisms allowed for real-time adjustments. While challenges were encountered, the overall impact has been significant.

Recommendations for Future Actions:

- Continued monitoring and evaluation: Sustain the monitoring and evaluation mechanisms to identify any emerging challenges and refine strategies accordingly.
- Resource allocation: Consider allocating additional resources to address specific challenges identified during implementation.

Acknowledgements: We express our gratitude to Prof. Vinod Shanwal, whose expertise and collaboration were instrumental in the success of this consultancy project. Additionally, the commitment and cooperation of faculty, students, and administrative staff at Lingaya's Vidyapeeth University and Lingaya's Public School were crucial to achieving the project's objectives.

This consultancy project has laid a foundation for improving academic quality and student engagement. Lingaya's Vidyapeeth University is well-positioned to build on these successes and further enhance its reputation for academic excellence.

TIME REQUIRED FOR COMPLETION

The undertaken study will be completed within 1 year.

FUNDS REQUIRED

Heads	Cost Required (₹)
Journals/Reports	₹5,000
Printouts/File Binding/Stationery items	₹10,000

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Travel to local areas in Faridabad	₹ 10.000
Experts Fee	₹15.000
Workshop and training expenses	10.000
	Total = ₹ 50,000 (Fifty Thousand)

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