



# **Personal Profile for** **Samson Mhlanga**

## **1.0 Personal**

- 1.1 Family Name** : **Mhlanga**
- 1.2 First Name** : **Samson**
- 1.2.1 Religion : Christian
- 1.3 Date and Place of Birth : 18 December 1971, Chinhoyi, Zimbabwe
- 1.4 Passport Number : FN864198
- 1.4.1 Nationality : Zimbabwean
- 1.5 Marital Status and Dependents : Married with three (3) sons
- 1.6 Contact Address :

Department of Industrial & Manufacturing Engineering National University of Science & Technology P. O. Box 939 Ascot, Bulawayo Tel: Work: +263 (9) 282842 ext 2252 or 2610 Cell: (+263)772250 918 , Email <a href="mailto:smhlanga126@gmail.com">smhlanga126@gmail.com</a> , <a href="mailto:samson.mhlanga@nust.ac.zw">samson.mhlanga@nust.ac.zw</a> ;	
---	--

## **2.0 Qualifications**

- 2.1 MSc in Advanced Manufacturing Systems (Brunel, UK) 1996-97**
- 2.2 BEng. (Hons) Industrial Engineering (NUST, ZW) (2.1) 1991-95**
- 2.3 PGC- Postgraduate Certificate in Higher Education Management (Wits - SA) 2010**
- 2.4 PGC- Postgraduate Certificate in Engineering Education & Project Management (Tsinghua University, Beijing, China), 2009**
- 2.5 Certificate –Feasibility Study and Development of Renewable Energy Projects, Kafue Gorge Training Centre, Zambia in partnership with SACREEE and IRENA, 2021**
- 2.6 SOLTRAIN Specialized course for professionals on Medium Temperature Solar Process Heat 4-5 June 2022, STIAS, Stellenbosch, South Africa.
- 2.7 SOLTRAIN Specialised course for professionals on Solar Heat for Industrial Applications, 22 – 24 November 2017, Conference Centre at the Faculty of Theology, Stellenbosch, South Africa.
- 2.8 SOLTRAIN 2: Theoretical and Practical Training Course for Lecturers, Teachers, Instructors, Technicians and Students: Agenda – Theoretical and Practical Training, May 22 - 23, 2014, National University of Science and Technology (NUST), Bulawayo, Zimbabwe (15 participants)

- 2.9 SOLTRAIN 2: Solar Heat for Industrial Applications, 3 and 4 February, 2014, University of Pretoria, Auditorium of Carl & Emily Fuchs Institute for Micro Electronics, bldg no 14, Hatfield Campus, South Africa

### 3.0 Key Positions Held

- 3.1 *Acting Dean of Engineering (12-May 2021 to 1 Feb 2022)*
- 3.2 *Chairman (Dept of Industrial and Manufacturing Engineering) June 2010 to Dec 2019*
- 3.3 *Zimbabwe Coordinator of the Southern African Solar Thermal Training and Demonstration Initiative (SOLTRAIN 3) funded by Austria Development Agency with a budget of €84000 July 2017 to July 2019*
- SOLTRAIN 4 (Budget €164000 July 2019 to December 2022
- 3.4 *Acting Dean (Faculty of Industrial Technology) Aug 2009 to Apr 2010*
- 3.5 *Senior Lecturer Jan 2003 to present*
- 3.6 *Lecturer Nov 1997-Dec 2002*
- 3.7 *Staff Development Fellow Jan 1996-Nov 1997*

### 4.0 Industrial Experience

- Radiator and Tinning February 1994-February 1995
- Zimbabwe Cycles Industries January -March 1993
- National Blankets Ltd (Bulawayo) January -March 1992

### 5.0 Courses Taught at Undergraduate

Introduction to Industrial Engineering, Manufacturing Systems I &II, Concurrent Engineering I & II, Manufacturing Engineering Design, Computer Aided Manufacturing /Computer Aided Manufacturing, Manufacturing Systems III &IV,

### 6.0 Courses Taught at Postgraduate

Design Analysis & Control of Manufacturing Systems, Systems Modelling & Simulation, Manufacturing Strategy, CAD/CAM

### 7.0 Projects that were supervised POSTGRADUATE:

Since 1999 to 2023  
MBA NUST 4 students  
M Eng (NUST) 98 students

### 8.0 Projects that were supervised UNDERGRADUATE:

Since 1998 to 2023  
B Eng (NUST) 194 students

### 9.0 Membership Of Learned And Professional Societies

1. Fellow, Zimbabwe Institute of Engineer (ZIE) (2022-present)
2. Member, Zimbabwe Institute of Engineer (ZIE) (1996-2021)
3. Member, Southern African Institute for Industrial Engineering (SAIIE) (2001-2012)
4. Member, Institute of Industrial Engineers -IIE (USA) (1996-2001)

### 10.0 Membership of Committees at Faculty Level

1. Member -University Library Committee (1998 -2004)

2. Member -Book Management Committee (1998 -2004)
3. Member University Campus Timetable Committee (1998 -2001)
4. Member University Senate ICT (2001-2004, 2007 to 2011)
5. Member University Senate (2011-2019)

## **11.0 Departmental Positions**

- |  |                         |
|--|-------------------------|
| 1. Chairperson   | (June 2010- Dec 2019)   |
| 2. Acting Chairperson  | (August 2003- Feb 2004) |
| 3. Masters in Engineering Co-ordinator   | (2000- 2009)            |
| 4. Examination Co-ordinator  | (1998- 2009)            |
| 5. Member of M.Eng programme development committee responsible for drawing up the programme and the course contents. |                         |
| 6. Timetable co-ordinator  | (1998-2001)             |
| 7. Class Tutor Part III  | (1998-1999)             |

## **12.0 Projects**

### **12.1 Current Projects**

1. SOLTRAIN+ - Southern African Solar Thermal Training and Demonstration Initiative is a regional initiative on capacity building and demonstration of solar thermal systems in the SADC region. It is funded by the Austrian Development Agency. Budget overall €4million and local admin budget €164 000 (Jan 2023- Dec 2026)
- 2.

### **12.2 Past Projects**

1. SOLTRAIN - Southern African Solar Thermal Training and Demonstration Initiative is a regional initiative on capacity building and demonstration of solar thermal systems in the SADC region. It is funded by the Austrian Development Agency and co-funded by the Opec Fund for International Development. Phase IV Development of Renewable Road Map for Zimbabwe among others workpackages. Budget overall €4million and local admin budget €162 000 (July 2019- Dec 2022)
2. Inclusive Poultry Value Chain- Supporting the Green Technology in collaboration with Genova University, Italy. Budget overall US\$6million and local admin budget USD24 000 (July 2020- June 2021)
3. SOLTRAIN - Southern African Solar Thermal Training and Demonstration Initiative is a regional initiative on capacity building and demonstration of solar thermal systems in the SADC region. It is funded by the Austrian Development Agency and co-funded by the Opec Fund for International Development. Solar Trailer Project funded 18000Euros in Phase II.
4. Photovoltaic Panel Development and Testing in Rural and the Peri-Urban area (Interdisciplinary Project funded by Research Board NUST), value ZWL60 000 (2018-2020) (disturbed by Covid 19 after having developed tools for phase 1 and done pilot study in Mashaba area and Mbokodo area. Served as team member of project focussing on manufacturing aspects
5. GRCP (Orthopedic Development ) value of over USD 5000-00 plus travel ticket and accommodation to the UK to discuss project with Prof PT Mativenga Deputy Dean at Manchester University (2014-15)

6. Optimisation Rail Freight Logistics applying Crew scheduling, Application of Metaheuristics (USD 2400 funded by NUST Research Board)
7. Coal supply and Demand in Zimbabwe (USD 3626 funded by NUST Research Board)
8. Designing of a Marula nut cracking machine (2010 to date) (USD 3800 funded by NUST Research Board)
9. LPG training for ZERA (Tender awarded to Team: Eng Goriwondo, S Mhlanga and H Mlauzi about USD30 000.

## Project Submissions for International Funding

1. SOLARIA -Deployment of Solar Cooling and Heating Solutions through Local Value Chains for Green Transition in Africa. Budget overall €\$12million and local admin budget €360 000 (July 2021- Dec 2024) (received negative response May 2021)
2. RHIDA Project (Solar Thermal and Heating applied to Africa) Budget overall €\$12million and local admin budget €100 000 (July 2021- Dec 2024) ((received negative response May 2021)
3. Paul Makoni (PI), Jephias Gwamuri, Samson Mhlanga, S Moyo, (2012) Enhancing the livelihoods of marginalized communities in rural areas through the provision of sustainable Water and Sanitation solutions in Malawi, Zambia and Zimbabwe : 10th European Development Fund: The African Component of the ACP Research Programme for Sustainable Development, Ref: EuropeAid/132-331/M/ACT/ACP (budget € 885,059 for 3 years), (received negative response)

## 13.0 Publications

### 13.1 Book/Proceeding

1. Goriwondo W M (ed), Mhlanga S (Ed) and Mugwagwa L (Ed), The Sixth International Conference Proceedings on Manufacturing Processes, Systems and Operations Management held at Elephant Hills, Victoria Falls, Zimbabwe (24-25 March 2015)
2. Mhlanga S (Ed) and Trimble J (Ed), (2004), Proceedings from the First International Conference on Appropriate Technology, Rainbow Hotel, Bulawayo, Zimbabwe
3. Mhlanga S (Ed) and Kanhukamwe Q C (Ed) (2002), The Fifth International Conference Proceedings on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (May 2002)

### 13.2 Book Chapter

1. Norman Gwangwava, Khumbulani Mpofo and Samson Mhlanga (2015): Chapter 14: Big Data and Data Modelling for Manufacturing Information Systems. In *"Handbook of Research on Trends and Future Directions in big Data and Web Intelligence"* <http://www.igi-global.com/book/handbook-research-trends-future-directions/124160> (accepted in-print)

### 13.2 Scientific Journals (Refereed)

- 1 Mabvu N, Nyanga L, Matope S, Van de Merwe A F, Mhlanga S (2014), Towards The Implementation Of E-Manufacturing: Design Of An Automtic Tea Drying Control System, *South African Journal of Industrial Engineering* November 2014 Vol 25(3), pp 199-211
- 2 Mhlanga S, Goriwondo WM and Tapedzisa C, (2013), Cleaner Production Techniques for Mitigation of Tannery Waste: Case Study ABC, *Journal of Science, Engineering and Technology*, Vol.1, No. 2, pp 31-47.

- 3 Gwangwava N., **Mhlanga S.** and Goriwondo W., (2013), Implementation of a computerized balanced scorecard (BSC) system in a manufacturing organisation in Zimbabwe, *International Journal of Soft Computing and Engineering (IJSCE)* ISSN: 2231-2307, Volume-2, Issue-6, pp. **236 - 240**
- 4 William Msekiwa Goriwondo, **Samson Mhlanga**, Taonga Mutsambwa (2013), Agility for Sustainability in Zimbabwe: A Case Study for Manufacturing Companies in Bulawayo, *Journal of US-China Public Administration*, January 2013, Vol. 12, No. 1, 1187-1200, ISSN 1537-1514.
- 5 Lameck Mugwagwa, Lungile Nyanga, **Samson Mhlanga**, (2012), Neural Network Breakout Prediction Model For Continuous Casting, *International Journal of Engineering and Advanced Technology (IJEAT)* ISSN: 2249 – 8958, Volume-X, Issue-X, 8 pages
- 6 Goriwondo, W.M., Zimwara, D., **Mhlanga, S.**, Mutopa, C.T., Nkomo, F, Gutu, T and Ngweni, P., (2012), Challenges Faced by Manufacturing Companies in Sustaining Conformance to ISO9001:2008 in Zimbabwe: A Case Study of a Textiles Manufacturing Company, *International Journal of Innovative Technology and Exploring Engineering (IJITEE)* ISSN: 2278-3075, Volume-2, Issue-1, December 2012, pp 31-37
- 7 Zimwara, D., Goriwondo, W.M, **Mhlanga, S.**, Chasara, T., Chuma, T., Gwatidzo, O. and Sarema, B (2012), World Class Manufacturing status Assessment for a Margarine Producing Company in Zimbabwe, *International Journal of Innovative Technology and Exploring Engineering (IJITEE)* ISSN: 2278-3075, Volume-2, Issue-1, December 2012, pp 52-57
- 8 Genesis Murehwa, Davison Zimwara, Wellington Tumbudzuku, **Samson Mhlanga**, (2012), Energy Efficiency Improvement in Thermal Power Plants, *International Journal of Innovative Technology and Exploring Engineering (IJITEE)* ISSN: 2278-3075, Volume-2, Issue-1, December 2012, pp 52-57
- 9 Gwangwava N and **Mhlanga S.** (2011) "Automation of QFD an e-Learning Tool for Product Development with an Integrated Product Data Management Platform in e-Business ," *International Journal of e-Education, e-Business, e-Management and e-Learning* vol. 1, no. 5, pp. 384-389, 2011.
- 10 Gandure J. and **Mhlanga S.** (2009), Performance Analysis Of Immigration Operation By Discrete Event Modelling and Simulation, *Journal of Applied Science and Technology (JAST)*, Vol. 14, Nos. 1 & 2, , pp. 123 - 127
- 11 Gandure J. and **Mhlanga S.** (2009), Manufacturing Strategy - a Potential Competitive Tool for J&S Botswana (Pty) Ltd [Case Study], *Botswana Journal of Technology*, vol, 18, No 1, pp 10-19
- 12 Kanhukamwe QC., **Mhlanga S.**, Nyathi D. and Taruvinga S. (2003), Optimizing Productivity and Efficiency in a Zimbabwean Minibus Assembly Plant, *Zimbabwe International Journal of Science and Technology*, vol 3 no 1 November 2003, pp. 16-21
- 13 **Mhlanga S.**, Chitate W and Kanhukamwe QC (2002), Investigating The Effect Of Manufacturing Strategies On Financial Performance Of A Manufacturing Organisation Using Witness Simulation Package With A Case Study In A Decorated Can Making Environment, *ZIE Proceeding*, pp 19-26
- 14 Hindi K S and **Mhlanga S.**, (2001)Scheduling of Linearly deteriorating jobs on parallel machines: A Simulated Annealing Approach, *Production Planning and Control*, UK, vol. 12, no. 1, pp 76-80
- 15 **Mhlanga S.**(2000) Computer Applications: Small Library Cataloguing System Using Lotus 123, *Botswana Journal of Technology*, vol. 9, no 2, pp 31-34
- 16 **Mhlanga S.** and : Mkhwananzi V.,(1999) CAD/CAM and the way forward in Zimbabwe, *Botswana Journal of Technology*, vol. 8, no 2, pp 20-29,
- 17 **Mhlanga, S.**, and Onwubolu, G. C., (1997), A Highly Visual Production and Operations Management Environment, *Industrial Management & Data Systems*, vol. 97, no. 3, pp. 99-113, MCB University Press, ISSN 0263-5577.

- 18 **Mhlanga, S.**, and Onwubolu, G. C., (1996), Development of a Computer-Aided Production Management Course in industrial Engineering Curriculum, Production Planning and Control, vol. 8, no. 3, pp 297-306

### 13.3 Conferences (refereed)

1. **Mhlanga S**, Muusha P and Sarema B, (2022), Design of a small-scale solar maize dryer, Euro2022, ISES and IEA SHC International Conference on Solar Energy for Buildings and Industry 25 - 29 September 2022, Kassel, Germany 2022 (poster)
2. Kudakwashe Ndhukula and **Samson Mhlanga**, (2022) Solar Thermal Roadmap And Implementation Plan: From Start To Current: Casestudy Zimbabwe, 2nd International Sustainable Energy Conference (ISEC), Congress , Graz, Austria, 05-07 April 2022 pp 255-256 (poster)
3. Chirwa Mabasa, Blessed Sarema and **Samson Mhlanga** (2022), Design Of A Solar Thermal Driven Air Conditioning System For A Local Hospital In Zimbabwe, 2nd International Sustainable Energy Conference (ISEC), Congress , Graz, Austria, 05-07 April 2022 pp 515-518 (poster)
4. Oscar Muza, **Samson Mhlanga** and Blessed Sarema (2022) Design Of A Solar Heating System For A Hospital Martenity, Ward In Zimbabwe, 2nd International Sustainable Energy Conference (ISEC), Congress , Graz, Austria, 05-07 April 2022 pp 548-549 (poster)
5. **Mhlanga S** and Mpwaha, I, Sarema B, Schwarzmuller A, (2016), Design of a Low Cost Mobile Solar Powered Desalination Unit for Rural Areas Saline Groundwater ("Bringing Back the Smile to Gwanda"), International Conference on Solar Technologies & Hybrid Mini Grids to improve energy access Bad Hersfeld, Germany, September 21 – 23, 2016, pp 276-281
6. Sarema B., Goriwondo W. M., **Mhlanga S.** and Zimwara D., (2015), Scrap Metal Supply Chain Modelling For Economic And Environmental Sustainability In Zimbabwe Using The Case For Bulawayo Metal Industries, *6th International conference on Manufacturing Processes, Systems and Operations Management- MPSOM*, Elephant Hills, Victoria Falls, Zimbabwe, 24-25 March 2015. Pp 41-52
7. **Mhlanga S**, and Schwarzmuller A, (2014), Solar Energy Mobile Training Units (S.O.E.M.T.U.) and National Energy Policy of Zimbabwe, International Conference on Solar Energy Technology in Development Cooperation, November 6-7<sup>th</sup> 2014, Frankfurt, Germany, pp 198-203, [http://energie.ottti.de/SEE\\_2014/06\\_Solar%20thermal%20-%20heating%20and%20cooling,%20domestic%20hot%20water/04\\_MHLANGA%20Samson.pdf](http://energie.ottti.de/SEE_2014/06_Solar%20thermal%20-%20heating%20and%20cooling,%20domestic%20hot%20water/04_MHLANGA%20Samson.pdf)
8. **Mhlanga S**, Mutopa C T, Mushininga M, (2014), Analysis of Supply Chain as an effective Manufacturing Strategy Tool for a Textile Manufacturing Firm, SAIIE26 Proceedings, 14<sup>th</sup> – 16<sup>th</sup> of July 2014, Magaliesburg, South Africa © 2014 SAIIE, pp 1223-1 -1223-13
9. Msipa C, **Mhlanga S**, Chikowore T R, Mbohwa C, Goriwondo W, Gwangwava N (2014), Assessment of Enterprise Resource Planning implementation in Zimbabwean companies and readiness tool towards a strategic success framework, SAIIE26 Proceedings, 14<sup>th</sup> – 16<sup>th</sup> of July 2014, Magaliesburg, South Africa © 2014 SAIIE, pp 1183-1 -1183-15
10. Maradzano I., Nyanga L., Van der Merwe A. F., Dlodlo Z.B, Chikowore T.R, **Mhlanga S**, (2014), Design Of Cotton Ginning Dryer Control System, SAIIE26 Proceedings, 14<sup>th</sup> – 16<sup>th</sup> of July 2014, Magaliesburg, South Africa © 2014 SAIIE, , pp 1168-1 – 1168-12
11. Chindondondo B. , Nyanga L., Van der Merwe A F., Mupinga T. and **Mhlanga S**, (2014), Analysis Of A Time Based And Corrective Maintenance System For A Sugar Producing Company, SAIIE26 Proceedings, 14<sup>th</sup> – 16<sup>th</sup> of July 2014, Magaliesburg, South Africa © 2014 SAIIE, , pp 1170-1 – 1170-14
12. Gwebu A, Nyanga L., Nyadongo S.T., Van der Merwe A.F., **Mhlanga S** (2014), Effect Of Mould Temperature On The Filling Behavior Of Molten Resin In Plastic Injection Moulding

- Of High Density Polyethylene (HDPE), SAIIE26 Proceedings, 14<sup>th</sup> – 16<sup>th</sup> of July 2014, Magaliesburg, South Africa © 2014 SAIIE, pp 1167-1 – 1167-12
13. Chindondondo B. , Nyanga L., Van der Merwe A F., Mupinga T. and **Mhlanga S.** (2014), Development Of A Condition Based Maintenance System For A Sugar Producing Company, SAIIE26 Proceedings, 14<sup>th</sup> – 16<sup>th</sup> of July 2014, Magaliesburg, South Africa © 2014 SAIIE, , pp 1173-1 – 1173-14
  14. E Murena, **S Mhlanga**, N Tayisepi, C Mbohwa, (2014), Design of a Digital Imaging Programme and Machining System for Implants, International Conference on Mining, Mineral Processing and Metallurgical Engineering (ICMMME'2014) April 15-16, 2014 Johannesburg (South Africa), pp 1-6
  15. Moyo M, **Mhlanga S.**, Nyanga L, Chilumani K. (2013), Modelling And Prediction Of Polypropylene Tape Yarn Quality Properties Using Feed-Forward Backpropagation Neural Network, International Conference on Composite, Biocomposite and Nanocomposite Materials (ICCBN)2-3 December 2013 Durban, South Africa
  16. Sibanda V, **Mhlanga S.**, Mbohwa C, Pretorius J H C, Goriwondo W M, (2013), Freight Traffic Planning and Rolling Stock Scheduling Management Tool, International Multi-conference on IT, Computers, Electronics and Mechanical Engineering (IMITCEME'2013) Nov. 27-28, 2013 Johannesburg (South Africa)
  17. Mashonganyika I, Tumbudzuku W, Zimwara D, **Mhlanga S** and Pretorius JHC(2013), Design & Feasibility Assessment of Implementation of Single Wire Earth Return (SWER) Systems as a Potential Solution to Rapid Rural Electrification in Zimbabwe, ZIE 7<sup>th</sup> Congress Proceedings, 25<sup>th</sup> - 27<sup>th</sup> September 2013, Masvingo, Zimbabwe, 9pages
  18. Goriwondo W M., Sarema B and **Mhlanga S** (2013), Industrial and Manufacturing Engineering role in Industrial and economic revival, ZIE 7th Congress Proceedings, 25th -27th September 2013, Masvingo, Zimbabwe, \*pages
  19. MsipaC., **Mhlanga S.**, Chikowore T., Goriwondo W and Mbohwa C (2013), Assessment of Enterprise Resource Planning Implementation in Zimbabwean companies, , ZIE 7th Congress Proceedings, 25th -27th September 2013, Masvingo, Zimbabwe, 17pages
  20. Chiduwa A, Nyanga L, **Mhlanga S.**, Kanyemba G (2013), Investigation Of The Effects Of Lubricant Fat Content On Drawn Copper Wires, SAIIE25 Proceedings, 9<sup>th</sup> -11<sup>th</sup> July 2013, Stellenbosch, South Africa
  21. Mutangi T., Kanyemba G., Chikowore T., Nyanga L. , Merwe A V., **Mhlanga S** (2013), A Linear Programming Model For Blending, SAIIE25 Proceedings, 9th -11th July 2013, Stellenbosch, South Africa
  22. Rupare T, Nyanga L, Matope S, **Mhlanga S.** (2013), Design Of An Automated Grinding Media Charging System For Ball Mills, SAIIE25 Proceedings, 9th -11th July 2013, Stellenbosch, South Africa
  23. Garikayi T., Nyanga L., Mushiri T., **Mhlanga S.**, Kuipa P.K. (2013), Designing of an intelligent fuzzy logic system for accretion prevention in sponge iron SL/RN rotary kiln based 100TPD DRI process, SAIIE25 Proceedings, 9<sup>th</sup> -11<sup>th</sup> July 2013, Stellenbosch, South Africa
  24. Garikayi T., Nyanga L., Mushiri T., **Mhlanga S.**, Muzinda A. Mutangi T. (2013), "Model Reference Adaptive Control System For Moisture Regulation In Cotton Ginning", SAIIE25 Proceedings, 9<sup>th</sup> - 11<sup>th</sup> July 2013, Stellenbosch, South Africa
  25. Gunda L, Nkiwane F, **Mhlanga S.**, Nyanga L, Nyathi Z M, (2013) Telemetric Data Logger And Monitor For Mining Vehicles, SAIIE25 Proceedings, 9th -11th July 2013, Stellenbosch, South Africa
  26. **Mhlanga S.**, Mbohwa C and Pretorius JHC, (2013), Transportation Demand Analysis of Coal from Hwange Coal Fields, The 2013 International Conference of Manufacturing Engineering and Engineering Management [ICMEEM'13](#), London, U.K., 3-5 July 2013
  27. **Mhlanga S.**, Matope S, Mugwagwa L, Phuthi N, and Moyo VS. (2013). Academic staff development strategies in engineering fields of study: case study of Zimbabwe. Proceedings of the 2nd Biennial Conference of the South African Society for Engineering Education, Cape Town, 11-12 June, 2013: Full Paper, pp. 118-127

28. M Mutingi, C Mbohwa, **S Mhlanga** (2013), A Dynamic Simulation of a Lean and Agile Manufacturing System, International Conference on Competitive Manufacturing COMA '13, 30 January - 1 February 2013, Stellenbosch,, South Africa, pp 277-282, ISBN Nr.: 978-0-7972-1405-7
29. M Mutingi, C Mbohwa, **S Mhlanga**, H Mapfairs (2013), System Dynamics Simulation for Strategic Green Supply Chain Management, International Conference on Competitive Manufacturing COMA '13, 30 January - 1 February 2013, Stellenbosch,, South Africa, pp 399-406, ISBN Nr.: 978-0-7972-1405-7
30. M Mutingi, **S Mhlanga**, C Mbohwa, H Mapfairs (2013) A Framework for Developing Performance Measurement Systems for “Green” Supply Chain Management strategies, International Conference on Competitive Manufacturing COMA '13, 30 January - 1 February 2013, Stellenbosch,, South Africa, pp 407-414, ISBN Nr.: 978-0-7972-1405-7
31. R Nyakudya, **S Mhlanga**, T Chokowore, L Nyanga, (2013), A Decision Support Tool for Rural Electrification Grid Design, International Conference on Industrial Technology (IEEE ICIT 2013) 25 - 27 February 2013 CAPE TOWN, SOUTH AFRICA, 7 pages
32. Tayisepi N and **Mhlanga S**, (2012) Improving And Sustaining Rural Livelihoods Through Reconfigurable Marula Nut Decortications Machine Development, Proceedings Of The 5<sup>th</sup> International Conference on Appropriate Technology, 20-24 November 2012, Republic of South Africa, Pretoria, pp 171-178, ISBN 978-160725-562-8
33. Lungile Nyanga, Andre F. van der Merwe, **Samson Mhlanga**, and Bothwell Nhindiri, (2012), Implementation of an Energy Usage Optimization System on a Pharmaceutical Company, *Proceedings of the IASTED International Conference Power and Energy Systems (AfricaPES 2012) September 3 - 5, 2012 Botswana, Africa*, pp 71-78
34. Tayisepi N, **Mhlanga S**, (2012) Marula Nut Decortications Machine Development to Grow Industry and Sustain Rural Livelihoods in Chivi and Masendu Districts in Zimbabwe, The Third Annual International Conference for Centre for Small Business Development (CSBD) *Growing Industries In Townships And Under-Developed Neighbourhoods* 15–16 May 2012, Soweto Campus, Johannesburg, South Africa, pp 66-91, ISBN: 978-0-620-52889-4
35. Goriwondo, W M., Chipambwa, W, **Mhlanga, S**, Mutingi, M (2012). Product Scheduling in a multi-product colour processing facility. Case Study at TN Textiles (Pvt) Ltd. IEOM 2012, Istanbul, Turkey 3-6 July 2012, pp 201-210
36. Mutingi, M , Mbohwa C, Goriwondo, W M., **Mhlanga, S**, (2012). Integrated Cellular Manufacturing System Design: an Evolutionary Algorithm Approach. IEOM 2012, Instubul, Turkey 3-6 July 2012, pp 254-264 (Won Best Track Paper Award- Production Planning and Mangement)
37. Gunda L, **Mhlanga S**, Gonye R, Masuka L, Nyanga L, (2012) RFID Based Automatic Tollgate System, , [Computers and Industrial Engineering 42](#), CIE42 Proceedings, 16-18 July 2012, Cape Town, South Africa © 2012 CIE & SAIIE, pp 102\_1 – 102\_10,
38. **Mhlanga S**, Kambarami L, Chikowore T R. (2012), Evaluation of Enterprise Resource Planning Implementation Success: Case Study in Zimbabwe, [Computers and Industrial Engineering 42](#), CIE42 Proceedings, 16-18 July 2012, Cape Town, South Africa © 2012 CIE & SAIIE, pp 240\_1 – 240\_15,
39. Ndlovu J, **Mhlanga S**, Mbohwa C, Mutingi M, (2011), Design of Comminution Circuits for Improved Productivity Using a Multi-Objective Evolutionary Algorithm (MOEA), The IEEE, International Conference on Industrial engineering and Engineering Management (IEEM2011), 6-9<sup>th</sup> December 2011, Furama RiverFront Hotel, Singapore
40. **Mhlanga S**, Mbohwa C, Pretorius JCH and Gwangwava N, (2011), Review of Optimisation Applications in Rail Freight Logistics with a View to Identify Possible Applications in the

- Southern African Region, International Proceedings of Economics development and Research: Advanced Management Science, (3<sup>rd</sup> International Conference on Advanced Management Science (ICAMS 2011), 4-6<sup>th</sup> November 2011, Lanson Place Ambassador Row Residences, Kuala Lumpur, Malaysia, pp 119-125
41. Gwangwava N and **Mhlanga S**, (2011), Design of an Integrated CAD and Quality Function Deployment (QFD) Product Data Management System (PDM), International Proceedings of Economics development and Research: Advanced Management Science, (3<sup>rd</sup> International Conference on Advanced Management Science (ICAMS 2011), 4-6<sup>th</sup> November 2011, Lanson Place Ambassador Row Residences, Kuala Lumpur, Malaysia, pp 165-169
  42. Goriwondo W, Mutsambiwa T and **Mhlanga S** (2011), Agility for Sustainability in Zimbabwe: A Case study for Manufacturing Companies in Bulawayo, ZIE 6<sup>th</sup> Congress, 27<sup>th</sup> September -1<sup>st</sup> October 2011, Holiday Inn, Mutare, Zimbabwe.
  43. Gunda L, Bhero E and **Mhlanga S**, (2011), Computer-Based Heat Treatment Process Control System, ZIE 6<sup>th</sup> Congress, 27<sup>th</sup> September -1<sup>st</sup> October 2011, Holiday Inn, Mutare, Zimbabwe, 10 pages
  44. Tayisepi N, Madzudzo E, **Mhlanga S**, Zimwara D, (2011), Ergonomics, a platform for sustainable business, through mechanisation of Wire Product Bobbins loading Systems at the Wire Manufacturing Plants in Zimbabwe: Case study of the Barbed Wire Bobbins Stacker Conveyor Designed and Manufactured for Company X, ZIE 6<sup>th</sup> Congress, 27<sup>th</sup> September -1<sup>st</sup> October 2011, Holiday Inn, Mutare, Zimbabwe, 15 pages
  45. Moyo, M., Nyoni AB, Zimwara D, **Mhlanga S**, and Mashingaidze M M (2011), Challenges facing the Textile Manufacturing Industry in Zimbabwe and the Way Forward, ZIE 6<sup>th</sup> Congress, 27<sup>th</sup> September -1<sup>st</sup> October 2011, Holiday Inn, Mutare, Zimbabwe,
  46. **Mhlanga S**, Dlamini W, Mbohwa C and Pretorius JCH (2011), Planning and Monitoring Tool to Control Profitability in a Manufacturing Concern: A Case Study at CC Chemicals, International Conference on Industrial Engineering, Systems Engineering and Engineering Management for Sustainable Global Development (ISEM), 21-23 September 2011, Spiers Hotel, Cape Town
  47. Nyanga L and **Mhlanga S**, (2011), A Fuzzy Controller based Demand-Side Management System Design for Optimization of Induction Furnaces, The 10th IASTED European Conference on Power and Energy Systems (EuroPES 2011) , June 22 - 24, 2011, Crete, Greece.
  48. Goriwondo W and **Mhlanga S**, (2011), An EMS Approach to mitigation of Environmental pollution from Tannery operations utilizing proactive strategies: A case for Leather processing in Zimbabwe, Exchanging Knowledge on Climate Change Impacts and Vulnerability: The Role of Networking, The Fifth TWAS-ROSSA Young Scientists' Conference and Award Ceremony, 26-27 February 2011, Hilton Hotel, Nairobi, Kenya
  49. **Mhlanga S**, Goriwondo, W, Marecha A, (2011), Use of the Value Stream Mapping Tool for Waste Reduction In Manufacturing. Case Study For Bread Manufacturing In Zimbabwe, Proceedings of the 2011 International Conference on Industrial Engineering and Operations Management, Kuala Lumpur, Malaysia, January 22 – 24, 2011, pg 236-241
  50. Goriwondo W, **Mhlanga S** and Kazemba T, (2011), Optimizing a Production System Using tools of Total Productive Maintenance: Datlabs Pharmaceuticals as a Case Study, Proceedings of the 2011 International Conference on Industrial Engineering and Operations Management, Kuala Lumpur, Malaysia, January 22 – 24, 2011, pg 1139-1144
  51. Goriwondo W, **Mhlanga S** and Dewa M C, (2010), Research and Development capacity building at Higher Academic Institutions as an innovative solution to enhance economic growth: A case for NUST in Zimbabwe, Engineers Without Border Conference, Elephant Hills, Victoria Falls, Zimbabwe, , November, 2010.

52. **Mhlanga S**, Goriwondo W, and Tapedzisa C, (2010), Cleaner Production Techniques for Mitigation of Tannery Waste: Case Study ABC, EIZ-ZIE Engineers Without Border Conference, Elephant Hills, Victoria Falls, Zimbabwe, , November, 2010.
53. **Mhlanga S**, Matope S and Zimwara D, (2004), Employing cleaner production philosophy in increasing efficiency and reducing waste in plastic products manufacturing companies, 7<sup>th</sup> Science & Technology Symposium, (1<sup>st</sup> -3<sup>rd</sup> September 2004) held at Harare International Conference Centre, Harare, Zimbabwe, 10 pages
54. **Mhlanga S** and Chamakavinga K, (A test tube and test-tile rotator for medical applications, 7<sup>th</sup> Science & Technology Symposium, (1<sup>st</sup> -3<sup>rd</sup> September 2004) held at Harare International Conference Centre, Harare, Zimbabwe, 11 pages
55. **Mhlanga S** and Siziba I, (2004), Rapid Industrialization Through Flexible Specialization, Proceedings from the First International Conference on Appropriate Technology, (15<sup>th</sup> -17 July 2004) held at Bulawayo Rainbow Hotel, pp. 8-15
56. **Mhlanga S**, Dewa V M, Maphosa N., and Phuthi N, (2004), Design of a Flood Water Powered Water Pump, Proceedings from the First International Conference on Appropriate Technology, (15<sup>th</sup> -17 July 2004) held at Bulawayo Rainbow Hotel, pp. 129-135
57. **Mhlanga S**, Mugwinyi M, and Kanhukamwe Q C, (2002) Environmental Oriented Cost Management (EoCM), The Fifth International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (May 2002) pp 23-27, ISBN 0-7974-2456-3 (refereed)
58. **Mhlanga S**. and Mandikutse R. T., (2002), Manufacturing system analysis with an aim for Productivity improvement using simulation, The Fifth International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (May 2002) pp 33-43, ISBN 0-7974-2456-3 (refereed)
59. **Mhlanga S** and Tshabangu M M. (2002), Facility Layout in Cellular Manufacturing Systems Using Simulated Annealing, The Fifth International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (May 2002) pp 50-57, ISBN 0-7974-2456-3 (refereed)
60. **Mhlanga S**. and Andifasi C., (2000), Application of a modelling approach to design and analysis of manufacturing systems, The Fourth International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (May 2000) pp 54-72, ISBN 0-7974-2012-6
61. **Mhlanga S.**, and Onwubolu, G. C., (1996), Manufacturing management system for Manager Development, Advances in Manufacturing Technology, pp. 446-450, University of Bath, September 1996, Eds. Bramley, A. N., Mileham, A. R. and Owen, G. W., ISBN 185790-0316.
62. **Mhlanga S.**, and Onwubolu, G. C., (1996), Development of a Computer-Aided manufacturing Management System for Managers Development Scheme, world Congress of Engineering Educators and Industry Leaders, vol. II, July 1996, pp. 131-137, UNESCO, Paris, France.

#### **13.4 Conferences and Reports (non-refereed)**

1. Mushuku T N, **Mhlanga S**, **Tayisepi N**, **Goriwondo W**, (2011), Effective Maintenance and Production Planning using Linear Programming and Simulation at NF Oil Plant, 40<sup>th</sup> Annual Operations Research Society of Southern Africa (ORSSA) Conference, 18-21 September 2011, Elephant Hills, Victoria Falls, Zimbabwe
2. Lawrence N, **Tayisepi N** and **Mhlanga S** , (2011), Coordinating Price and Capacity Decisions in Inventory Systems with Stochastic Demand: Case Study Chemical Processing Plant in

Zimbabwe, 40<sup>th</sup> Annual Operations Research Society of Southern Africa (ORSSA) Conference, 18-21 September 2011, Elephant Hills, Victoria Falls, Zimbabwe

3. **Mhlanga S**, Zimwara D and Mhute T., (2003), Value Engineering And Its Application To Zimbabwe Through Six Sigma Quality System, Zimbabwe Institution of Engineers Second Congress (26<sup>th</sup> -27 June 2003) held at Bulawayo Rainbow Hotel (8 pages)
4. **Mhlanga S**, and Zimwara D, (2003), Industrial Engineering A Tool Box For The Nation, Zimbabwe Institution of Engineers Second Congress (26<sup>th</sup> -27 June 2003) held at Bulawayo Rainbow Hotel (3 pages)
5. **Mhlanga S**. and : Mkhwananzi V.,(1999) CAD/CAM and the way forward in Zimbabwe, The Sixth Symposium on Science and Technology held at HICC in Harare, Zimbabwe (3-5 August 1999), 23 pages,
6. Onwubolu G C, Dlodlo Z B, Nyathi D, **Mhlanga S** and Ngwenya E, (1998) Sustaining competitiveness through technological mechanisms. (Unpublished)

## 14.0 Short-Courses Conducted

1. Eng S Mhlanga, G Munhuwamabo, A Mnkandla (9-11<sup>th</sup> June 2021), SOLTRAIN-Solar Thermal Dissemination and Training @ Kwekwe Polytechnic, (31 participants)
2. Eng S Mhlanga, G Munhuwamabo, A Mnkandla (20-22<sup>nd</sup> May 2021), SOLTRAIN-Solar Thermal Dissemination and Training @ Bulwayo Polytechnic, (51 participants)
3. Eng S Mhlanga, (12-15Jan (online), 29-30<sup>th</sup> May 2021), Solar Thermal Dissemination and Training for Public Works Engineers @ Zimdef House, Harare, (12 participants)
4. Eng S Mhlanga, (26-28<sup>th</sup> May 2021), Solar Thermal Dissemination and Training for Women and Youth @ ESAM, Belgravia, Harare, (15 participants)
5. Eng S Mhlanga, Rudi Moschek (9-11<sup>th</sup> May 2021), SOLTRAIN-Solar Thermal Training for VTCs @ Kwekwe Polytechnic, (21 participants)
6. Eng S Mhlanga, B Sarema, and Third Year Students have ran three (3) workshops under SOLTRAIN – NUST solar trailer project for Science Teachers, Students (A'Level physic, O'level Science) and Technicians:

- i. Maranatha Adventist High School on Thursday 22<sup>nd</sup> January, 2015

	Number of students	Number of Teachers
Maranatha (host)	61	2
Mandwandwe	21	1
Ihlati	28	2
Nketa	46	1
Emganwini	25	2
Nkulumane	40	2
Installer (Capitol)		1
	221	11

- ii. St Bernard's High School on Thursday 5<sup>th</sup> February, 2015

	Number of students	Number of Teachers
St Bernard's (host)	60	6
Premier	36	3
Amhophe	44	2
Pumula	20	1
Magwegwe	43	2
	203	14

- iii. Sikhulile High School on Thursday 26<sup>th</sup> February, 2015

	Number of students	Number of Teachers
--	--------------------	--------------------

Sikhulile (Host)	51	2
Lobengula	22	2
Njube	46	2
Inyanda	32	1
CowdaryPark	0	1
	151	8

7. Goriwondo W and Mhlanga S were part of a facilitating team ran a short course entitled “Research Method and Proposal Development September 2011 (8 participants under Research & Innovation Office)
8. Mr W Goriwondo, D Zimwara and S Mhlanga ran a short course entitled “Modern Maintenance Management“, for Hwange Colliery Company Limited (HCCL) through the Center of Continuous Education on 14-18th November 2009. 16 participants)
9. Productivity Improvement through Facility Planning and Material Handling held at NUST through CCE 29th -31st August 2005 generated Z\$60million (Mhlanga S: Team Leader)
10. . Productivity Improvement through Work Study held at NUST through CCE 7-8th November 2005 (Mhlanga S: Team Leader)
11. Competitive Advantage through Supply Chain Management held at NUST through CCE (Mhlanga S: Team Leader)
12. Competitive Advantage through Production Planning and Control held at NUST through CCE 15-16th February 2006 (Mhlanga S: Team Leader)
13. CNC Part Programming Using Simulation Tool (with a budget of Z\$9000 for 3 candidates 20-07-99 to 22-07-99 Mhlanga S as Project Leader).
14. Co.-Instructor to the Winter AutoCAD School for Draughtpersons (NRZ) held in August 1996 in the Department of Industrial Engineering. Instructors Dr Onwubolu G. C., Mhlanga S Mapfaira H, and Mativenga P. T

## 15.0 Conferences, Workshops and Seminars Attended

1. SOLTRAIN Specialised course for professionals on Solar Heat for Industrial Applications, 22 – 24 November 2017, Conference Centre at the Faculty of Theology, Stellenbosch, South Africa.
2. International Conference on Solar Technologies & Hybrid Mini Grids to improve energy access Bad Hersfeld, Germany, September 21 – 23, 2016.
3. International Conference on Solar Energy Technology in Development Cooperation Frankfurt, Germany, November 6th/7th, 2014 (fully funded by AEE INTEC) plus a tour of AEE INTEC Austria on from 3<sup>rd</sup> to 5<sup>th</sup> November 2014.
4. SOLTRAIN 2: Theoretical and Practical Training Course for Lecturers, Teachers, Instructors, Technicians and Students: Agenda – Theoretical and Practical Training, May 22 - 23, 2014, National University of Science and Technology (NUST), Bulawayo, Zimbabwe (15 participants)
5. SOLTRAIN 2: Solar Heat for Industrial Applications, 3 and 4 February, 2014, University of Pretoria, Auditorium of Carl & Emily Fuchs Institute for Micro Electronics, bldg no 14, Hatfield Campus, South Africa
6. Southern African Solar Thermal Training and Demonstration by Austrian Development Agency (ADA), Tower Block, Bulawayo City Council, Bulawayo, 13<sup>th</sup> December 2012.
7. The Zimbabwe International on Energy and Power Conference (ZIEPC), 30<sup>th</sup> October 2012, Rainbow Towers, Harare (W Goriwondo, S Mhlanga, D Zimwara and W Tumbudzuku)
8. International Conference on Industrial Engineering, Systems Engineering and Engineering Management for Sustainable Global Development (ISEM), 21-23 September 2011, Spiers Hotel, Cape Town
9. 40<sup>th</sup> Annual Operations Research Society of Southern Africa (ORSSA) Conference, 18-21 September 2011, Elephant Hills, Victoria Falls, Zimbabwe

10. Research Method and Proposal Development Workshop sponsored by ACP-EU 11-20<sup>th</sup> April 2011 conducted in Francistown, Botswana in collaboration with University of Botswana.
11. International Conference on Industrial Engineering and Operations Management, Kuala Lumpur, Malaysia, January 22 – 24, 2011
12. EIZ-ZIE Engineers Without Border Conference, Elephant Hills, Victoria Falls, Zimbabwe, , November, 2010
13. First International Conference on Appropriate Technology, (15<sup>th</sup> -17 July 2004) held at Bulawayo Rainbow Hotel, (Presented papers)
14. Zimbabwe Institution of Engineers Second Congress (26<sup>th</sup> -27 June 2003) held at Bulawayo Rainbow Hotel (Presented papers)
15. The Fifth International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (May 2002) (Presented papers)
16. International Workshop on Sensors and Their Application sponsored by UNESCO held at NUST Bulawayo, Zimbabwe, 16<sup>th</sup> -23<sup>rd</sup> August 2002
17. The Fourth International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (May 2000) (Presented paper)
18. Mr S Mhlanga through the support by the university for membership with African Engineering Education Association (AEEA) presented a paper entitled “Opportunities in Science and Technology Training Partnership (Case study NUST)“ in Beijing China during a Seminar on Engineering Education and Project Management 26<sup>th</sup> November to 16<sup>th</sup> December 2009. Trip was full funded by the People’s Republic of China through their ministry of Commerce and hosted by Tsinghua University. This came up with an MOU between Tsinghua University and AEEA in which NUST put up a bid for scholarships, staff exchange and equipment for laboratories in the Faculty of Industrial Technology.
19. The Third International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe (20-22 April 1998)
20. Commonwealth In-Country Training Programme on information Technology for Manufacture Workshop sponsored by Management and Training Services Division, Commonwealth Secretariat, London, UK at Hilltop Motel, Bulawayo, Zimbabwe, (26 Jan-1 Feb 1998) (participated)
21. The Second International Conference on Manufacturing Processes, Systems and Operations Management in Less industrialised Regions held at ZITF in Zimbabwe April 1996)

## 16.0 Contact Visit

1. Contact visit to Department of Quality & Operation Management, University of Johannesburg, SA, (27 September – 25<sup>th</sup> October 2010), Contact person Mr John Agwa-Ejon & Prof C Mbohwa
2. Contact visit to University of Witwatersrand –SA, (15<sup>th</sup> -26<sup>th</sup> March 2010, 10<sup>th</sup> -21<sup>st</sup> May 2010) funded by SARUA
3. Contact visit to Tsinghua University, Beijing, China, (23<sup>rd</sup> November – 18<sup>th</sup> December 2009), fully funded by Chinese Government.
4. Contact visit to Department of Mechanical Engineering, University of Cape Town (23<sup>rd</sup> August- 11<sup>th</sup> September 2004). Contact person: Prof. A Sass (since retired)
5. Contact visit to Department of Industrial and Systems Engineering. University of Pretoria (23<sup>rd</sup> January- 11<sup>th</sup> February 2001, 04<sup>th</sup>- 11<sup>th</sup> March 2001). Contact person: Prof. S J Claasen
6. Contact visit to Rhodes University (October 2002) (Data gathering for NUST ICTS strategic plan)
7. Contact visit to Pretoria University (Nov 2002) (Data gathering for NUST ICTS strategic plan)

## 17.0 Community Held Positions

1. 2009 to 2012 **External Examiner** for Department of Agricultural Engineering (B Tech at Chinhoyi University of Technology
2. 2004 to 2011 **External Examiner** for Department of Industrial and Manufacturing (B Tech) at Harare Institute of Technology
3. 2003 to Date **Council Member** for Standards Association of Zimbabwe (SAZ) (NUST representative)

## 18.0 University Outreach

Was in the team involved in:

- Setting up of the Harare Institute of Technology Degree Programmes
- Setting up of the Bachelor of Technology Degree Programmes
  - B Tech in Industrial and Manufacturing Engineering (Kwekwe Polytechnic)
  - B Tech in Wood Technology (Mutare Polytechnic)
  - B Tech in Water Resources (Bulawayo Polytechnic)

## 19.0 Strategic Formulation Seminars

Was in the team involved in:

- Setting up of the ICTS Strategic Plan for NUST (Team Member)
- Setting up of the NUST Strategic Plan for 2005-2010 (Team Member)

## 20.0 Innovation and Industrialisation

Over the year one has developed an interest to register and commercialise projects with my students and some of these project are at prototype level and will be pursued to commercialisation level and will not be listed here for IP protection reason. To support this I was involved in IP training with WIPO and certificate is Appendix.

## 21.0 Referees

Professor M E Dlodlo (Vice Chancellor) National University of Science & Technology P O Box 939 Ascot Bulawayo, Zimbabwe Email: <a href="mailto:mqhele.dlodlo@nust.ac.zw">mqhele.dlodlo@nust.ac.zw</a> Tel: 263-9-282842	Eng Q C Kanhukamwe (Vice Chancellor) Harare Institute of Technology P.O. Box Be 277, Ganges Rd. Belvedere Harare, Zimbabwe Email: <a href="mailto:qckanhukamwe@yahoo.com">qckanhukamwe@yahoo.com</a> Tel : 04-741626-36
Prof P K Kuipa (Vice Chancellor) Lupane State University Zimbabwe Email: <a href="mailto:pardonkkuipa@hotmail.com">pardonkkuipa@hotmail.com</a> Cell: 011889432	Dr Eng W Goriwondo (PVC-IDB) National University of Science & Technology P O Box 939 Ascot Bulawayo, Zimbabwe Email: <a href="mailto:William.goriwondo@nust.ac.zw">William.goriwondo@nust.ac.zw</a> <a href="mailto:wgoriwondo@gmail.com">wgoriwondo@gmail.com</a> Tel: 0773 715281