

## AN ECONOMIC ANALYSIS OF HUMAN DEVELOPMENT INDEX WITH SPECIAL REFERENCE TO TIRUNELVELI DISTRICT

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### **Abstract**

According to the Human Development Report 1990, “human development is the process of enlarging people’s choices. The most critical ones are to lead a long and healthy life, to be educated and to enjoy a decent standard of living.” The idea of Human Development focuses directly on the progress of human lives and well-being. The basic objective of the development is to improve the welfare of the people, and every nation strives hard not only to increase her wealth and productive resources but also to ensure better standard of living for her citizens by making available to them with adequate food, clothing, housing, medical facilities and education etc. This paper is attempt to analysis the human development index in Tirunelveli district during 2017. The data were collected from both primary and secondary.

### **Introduction:**

According to the Human Development Report 1990, “human development is the process of enlarging people’s choices. The most critical ones are to lead a long and healthy life, to be educated and to enjoy a decent standard of living.” The idea of Human Development focuses directly on the progress of human lives and well-being. The basic objective of the development is to improve the welfare of the people, and every nation strives hard not only to increase her wealth and productive resources but also to ensure better standard of living for her citizens by making available to them with adequate food, clothing, housing, medical facilities and education etc. While the HDI measures average achievements, the GDI adjusts the average achievement to reflect the inequalities between the following dimensions.

1. A long and healthy life, as measured by life expectancy at birth.
2. Knowledge, as measured by the adult literacy rate and combined gross enrolment ratio.
3. A decent standard of living, as measured by estimated earned income.

Health, education and income indicators will be separately computed for male and female to measure GDI.

### **Objective of the Study:**

- To evaluate the highest education between male and female in palayamkottai and manur block.
- To analysis the human development index in Tirunelveli district during 2017.

### **Review of Literature:**

- **Hilary Graham(2000)** has emphasized the consequences of fast economic and social change on inequalities in health among men and women. Using the data of UK, she describes socio economic inequalities in health, the factors which contribute to these health differences, and the ways in which they cluster together and accumulate through the life course. She goes on to describe changing patterns of inequalities in wealth. She argues that little is known about the ways in which gender mediate the underlying inequalities in health. Yet, she argues, social class ‘expresses itself in a gendered form’ and is ‘written on the body’.
- **Jennifer Roth Child(2006)** has revealed gender inequality in schools and in societies as a whole. According to Jennifer, what is needed is an exploration of how gender is socially constructed and maintained in both the school and the home. She explains educational experiences of girls and boys as they were affected and influenced by attitudes are mainly related with social constrains.

### Methodology

In this analysis paper used both primary and secondary information. The data are collected from totally different census report, various websites, and different journals. The researcher used ANOVA tool to determine the human development index in Tirunelveli district.

### Block wise Education level of the Respondents:

Education is a crucial factor for personal, social, and economic development. Life throws several challenges to every human but the education enlightens man’s mind to fight failure by overcoming it and succeeding in life. The chi square test has been used for this analysis.

**Table 1.1**  
**Block wise Education level of the Respondents**

Level of Education		Palayamkottai	Manur	Total No of Respondents
<b>Illiterate</b>	No of Respondents	2	15	17
	% with Education	1.2%	8.8%	5%
<b>Primary Level</b>	No of Respondents	8	19	27
	% with Education	4.7%	11.2%	8%
<b>Secondary level</b>	No of Respondents	25	44	69
	% with Education	14.7%	25.9%	20%
<b>Higher secondary</b>	No of Respondents	36	35	71
	% with Education	21.2%	20.6%	21%
<b>Degree</b>	No of Respondents	67	42	109
	% with Education	39.4%	24.7%	32%
<b>Post Graduate</b>	No of Respondents	23	12	35
	% with Education	14.7%	7.1%	10%
<b>Others</b>	No of Respondents	9	3	12
	% with Education	5.3%	1.8%	4%
<b>Total</b>	No of Respondents	170	170	340

	% with Education	100 %	100 %	100%
Chi-Square Value : 31.860				
Degrees of freedom: 6				
Sig: 0.000				

Source: Primary data

The above table contains the information regarding education level of Palayamkottai and Manur. 32 per cent of the respondents are degree holders who are maximum in number with 39.4 per cent Palayamkottai residents and the 24.7 per cent Manur residents. Next to this, the second highest respondents are senior school graduates of higher secondary education with 21 per cent of respondents and among these respondents 21.2 per cent of them are from Palayamkottai and 20.6 per cent of them are from Manur. The third highest with 20 per cent respondents belong to junior school graduates of secondary level and 25.9 per cent of them belong to Manur and 14.7 per cent of them belong to Palayamkottai. Among them 10 per cent respondents of post graduates, 14.7 per cent are from Palayamkottai and 7.1 per cent are from Manur. 8 per cent of the respondents has completed primary level education. Among them 11.2 per cent are the respondents are the residents of Manur and 4.7 per cent are the residents of Palayamkottai. There are 5 per cent of respondents who are illiterate constitute 8.8 per cent of Manur respondents and 1.2 per cent of Palayamkottai respondents. Finally, 4 per cent of the respondents are categorized under other like, IT, Diploma. Among them 5.3 per cent are Palayamkottai residents and 1.8 per cent are Manur residents.

The Chi- Square test reveals that the calculated value of 31.860 is greater than table value of 12.592. Therefore, there are significant differences in the education level between the blocks such as Palayamkottai and Manur.

### Highest Education Qualification of the family in Palayamkottai and Manur

Many families in Palayamkottai and Manur, have more educated men whereas some families have more educated women. In some families, both men and women have obtained the same level of highest education qualification without any discrimination.

**Table 1.2**

#### Block wise Highest Education Qualification of the family in Palayamkottai and Manur

Highest Qualification of the Family		Palayamkottai	Manur	Total No of Respondents
<b>Male</b>	No of Respondents	62	60	122
	% with Highest Qualification	36.5 %	35.3 %	36 %
<b>Female</b>	No of Respondents	67	78	145
	% with Highest Education	39.4 %	45.9 %	43 %
<b>Both</b>	No of Respondents	41	32	73
	% with Highest Qualification	24.1 %	18.8 %	21 %
<b>Total</b>	No of Respondents	170	170	340
	% with Highest Education	100 %	100 %	100%
Chi-Square Value : 1.976				

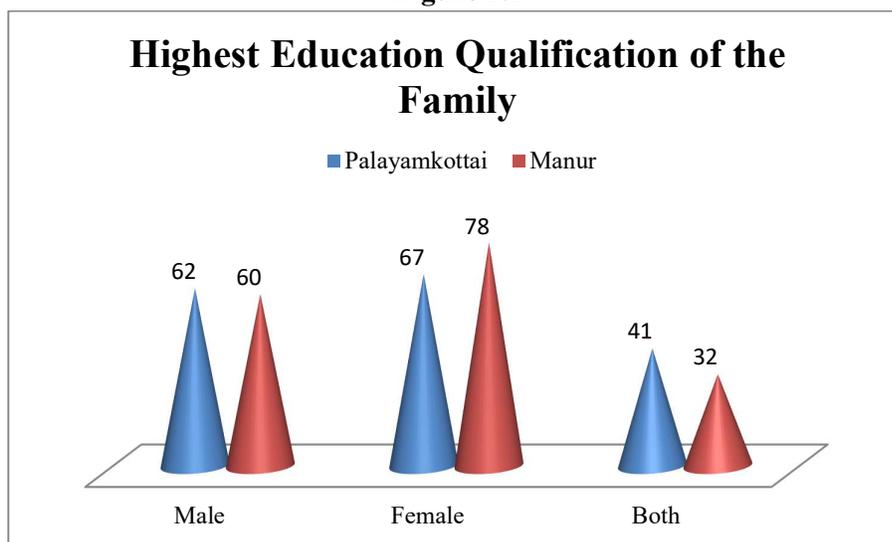
Df:  
Sig: 0.372

Source: Primary data

In this above table, 43 per cent of female respondents are succeeded in attaining highest education qualification in their family, of whom 45.9 per cent of female are from Palayamkottai block and 39.4 per cent of female are from Manur block. Then the 36 per cent of male respondents are succeeded in attaining highest education qualification in their family, of whom 36.5 per cent of male are from Palayamkottai block and 35.3 per cent of male are from Manur block. Finally, 21 per cent of both male and female respondents have equally obtained the highest education qualification in their family, of whom 24.1 per cent of them belong to Palayamkottai block and 18.8 per cent of them belong to both Manur block.

Then the Chi- Square test reveals that the calculated value of 1.976 is less than table value of 3.841 at .05 significant levels. It demonstrates that there is no significant difference between male and female on getting highest education qualification.

**Figure 1.1**



#### **Human Development in Tirunelveli District:**

In this section, an attempt has made to analyze the disparities in human development among the districts of Tirunelveli. In this study, district of Tirunelveli has 19 blocks and a corporation. In this study, Tirunelveli district includes tenkasi as a block because tenkasi has been recently separated as a district. In this reason, human development data is not available for tenkasi district, the human development index values have been taken from the Human Development Report of 2017. This section also includes the analysis of disparities in income, health and education among Tirunelveli district.

**Table 1.3**

**Human Development in Tirunelveli District**

S.No	District	2017	Level of HDI
		HDI Index Value	

1	Alangulam	0.53	Medium
2	Ambasamudram	0.45	Medium
3	Cheranmahadevi	0.47	Medium
4	Kadayam	0.45	Medium
5	Kadayanallur	0.60	High
6	Kalakadu	0.67	High
7	Keelapavoor	0.61	High
8	Kuruvikulam	0.41	Low
9	Manur	0.41	Low
10	Melaneelithanallur	0.38	Low
11	Nanguneri	0.53	Medium
12	Palayamkottai	0.60	High
13	Pappakudi	0.42	Low
14	Radhapuram	0.58	Medium
15	Sankarankoil	0.52	Medium
16	Shencottai	0.57	Medium
17	Tenkasi	0.75	High
18	Valliyoor	0.69	High
19	Vasudevanallur	0.61	High
20	Corporation	0.88	High
	<b>Average</b>	<b>0.556</b>	
	<b>Standard Deviation</b>	<b>0.127</b>	

Source: Tirunelveli District Human Development Report 2017.

In 2017, human development of selected blocks of Tirunelveli district has the average human development index of 0.556 and standard deviation of 0.127. The categories of high, medium and low level of human development were calculated based on this average and standard deviation values. The above table clearly shows that Tenkasi, Valliyoor, Kalakadu, Vasudevanallur, Keelapavoor, Palayamkottai, Kadayanallur blocks have the high level of human development index. Pappakudi, Kuruvikulam, Manur and Melaneelithanallur blocks have the low level of human development index. Remaining blocks are having the medium level of human development index among the selected blocks of Tirunelveli district.

**Table 1.4**  
**Comparison of Human Development in Tirunelveli district**

<b>Groups</b>	<b>Sum of Square</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig</b>
<b>Between Groups</b>	0.222	2	0.111	21.782	0.000
<b>Within Groups</b>	0.087	17	0.005		
<b>Total</b>	0.309	19			

The above ANOVA table gives the information about comparison of Human Development Index value for selected blocks of Tirunelveli district during the year 2017. The P value of the variable Human Development Index 2017 is lower than 0.05. Hence null hypothesis is rejected and the alternative hypothesis is accepted. It concludes that the blocks and the corporation of Tirunelveli district are not having same level of human development in the year 2017.

**Suggestions:**

- ❖ The present study found that some of the male and female children are not gaining for college education properly; they are forced to do part time job for family situations or any other personal reasons.
- ❖ Education institutions should take action to reduce fees for this kind of male and female students.
- ❖ The government should take proper action for equal level of education, health facilities to all the people.

**Conclusion:**

The study has observed that there are significant gender disparities in education, health, work and decision making between male and female. Disparities in opportunities, accessibilities and utilization of education were the major reasons for all kinds of disparities. Hence, it is the responsibility of respective governments and policy makers to develop the policies and programmes to create equal opportunities to both male and female. It is also equally important to create awareness in order to access and utilize the facility.

**Reference:**

- 1) Kenneth Harttgen and Stephan Klasen, (2011): "A Human Development Index at the Household Level." Poverty, Equity and Growth, Courant Research Centre, from Courant Research Centre PEG No. 75.
- 2) Kugler, A. D., & Kumar, S (2017). "Preference for Boys, Family Size, and Educational Attainment in India". Demography. 54 (3): 835–859.

- 3) Lopez-Claros, A. and Zahidi, S. Women's Empowerment: Measuring the Global Gender Gap, Geneva: World Economic Forum, 2005, available at accessed on March 23, 2011
- 4) Mahbub ul Haq. Cited in Purnachandra Rao (2007): Human Development in India: Analysis of Andra Pradesh, Labour and Development, Vol. 12, No. 2 and Vol. 13, No. 1, June 2007, p. 47.
- 5) Muralidharan, K., & Prakash, N. (2017). "Cycling to school: increasing secondary school enrollment for girls in India". American Economic Journal: Applied Economics. 9 (3): 321–350.
- 6) Bhattacharya, K., Shamkh, I. M., Khan, M. S., Lotfy, M. M., Nzeyimana, J. B., Abutayeh, R. F., ... & Basalious, E. B. (2022). Multi-Epitope Vaccine Design against Monkeypox Virus via Reverse Vaccinology Method Exploiting Immunoinformatic and Bioinformatic Approaches. Vaccines, 10(12), 2010.
- Ahmed, S., Raza, B., Hussain, L., Aldweesh, A., Omar, A., Khan, M. S., ... & Nadim, M. A. (2023). The Deep Learning ResNet101 and Ensemble XGBoost Algorithm with Hyperparameters Optimization Accurately Predict the Lung Cancer. Applied Artificial Intelligence, 37(1), 2166222.
- 7) Nawaz, S., Rasheed, S., Sami, W., Hussain, L., Aldweesh, A., Salaria, U. A., & Khan, M. S. (2023). Deep Learning ResNet101 Deep Features of Portable Chest X-Ray Accurately Classify COVID-19 Lung Infection. Computers, Materials & Continua, 75(3).
- 8) Gangurde, R., Jagota, V., Khan, M. S., Sakthi, V. S., Boppana, U. M., Osei, B., & Kishore, K. H. (2023). Developing an Efficient Cancer Detection and Prediction Tool Using Convolution Neural Network Integrated with Neural Pattern Recognition. BioMed research international, 2023.
- 9) Shamkh, I. M., Al-Majidi, M., Shntaif, A. H., Deng Kai, P. T., Nh-Pham, N., Rahman, I., ... & Karpinski, T. M. (2022). Nontoxic and Naturally Occurring Active Compounds as Potential Inhibitors of Biological Targets in *Liriomyza trifolii*. International Journal of Molecular Sciences, 23(21), 12791.
- 10) Mohammed, N. J., & Hassan, M. M. U. (2023). Cryptosystem in artificial neural network in Internet of Medical Things in Unmanned Aerial Vehicle. Journal of Survey in Fisheries Sciences, 10(2S), 2057-2072.
- 11) Mohammed, N. J. (2023). Quantum cryptography in Convolution neural network approach in Smart cities. Journal of Survey in Fisheries Sciences, 10(2S), 2043-2056.
- 12) Mohammed, N. J., & Hassan, M. M. U. Cryptosystem using Artificial Neural Networks for UAV.
- 13) Mohammed, N. J. (2020). Neural Network Training by Selected Fish Schooling Genetic Algorithm Feature for Intrusion Detection. International Journal of Computer Applications, 175(30), 7-11.
- 14) Mohammed, N. J., & Hassan, M. M. U. (2021). Robust digital data hiding in low coefficient region of image. International Journal of Innovative Research in Computer Science & Technology (IJIRCST) ISSN, 2347-5552.

- 15) Hassan, M. M. U. (2021). A Robust Multi-Keyword Text Content Retrieval by Utilizing Hash Indexing. *International Journal of Innovative Research in Computer Science & Technology* (IJIRCST) ISSN, 2347-5552.  
Nandankar, P. V., Bedekar, P. P., & Dhawas, P. V. (décembre 2021). Efficient DC-DC converter with optimized switching control: A comprehensive review. *Sustainable Energy Technologies and Assessments*, 48, 101670. <https://doi.org/10.1016/j.seta.2021.101670>.
- 16) Nandankar, P. V., Bedekar, P. P., & Dhawas, P. K. V. (2022). Variable switching frequency control for efficient DC-DC converter. *Materials Today: Proceedings*, 51, 515–521. <https://doi.org/10.1016/j.matpr.2021.05.594>
- 17) Nandankar, P., Dasarwar, A., & Kachare, G. (2018). Comparison of improved converter topologies for high voltage gain International Conference on Communication Information and Computing Technology (ICCICT), IEEE, 2018 (pp. 1–6). <https://doi.org/10.1109/ICCICT.2018.8325893>.
- 18) Murugan, G., Moyal, V., Nandankar, P., Pandithurai, O., & John Pimo, E. S. (2021). A novel CNN method for the accurate spatial data recovery from digital images. In *Materials Today: Proceedings*
- 19) Nandankar, P.; Thaker, R.; Mughal, S.N.; Saidireddy, M.; Linda, A.; Kostka, J.E.; Nag, M.A. An iot based healthcare data analytics using fog and cloud computing. *Turk. J. Physiother. Rehabil.* 2021, 3, 32.
- 20) Nandankar, P.; Rothe, J.P. Design and Implementation of Efficient Three-Phase Interleaved DC-DC Converter. In *Proceedings of the 2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT)*, Mumbai, India, 26–27 February 2016; pp. 1632–1637.
- 21) Dhawas, P.V.; Bedekar, P.P.; Nandankar, P.V. Advancement in Radial Power Distribution Network Using High impedance fault Relay. In *Proceedings of the 2020 IEEE 17th India Council International Conference (INDICON)*, New Delhi, India, 10–13 December 2020; pp. 1–6.
- 22) Chandramma, C., Prakash, P., Nandankar, P., Roopa, H., Kathir, I., & Singh, P. (2023, March). Automation of camel race by controlling DC motor speed using Blynk application through IoT. In *AIP Conference Proceedings* (Vol. 2690, No. 1). AIP Publishing.
- 23) Nandankar, P. V., Bedekar, P. P., & Dhawas, P. V. (2022). Genetic Algorithm based adaptive frequency optimal control for buck converter. *Computer Integrated Manufacturing Systems*, 28(12), 2710–2720.
- 24) Nandankar, P., Geetha Devi, A., Jaya Lakshmi, A. J., & Hari Babu, V. V. (2021). Implementation of CMOS-based Photo Diode for High-Efficiency end-to-end Communication and Enhanced Bit Error Rate International Conference on Artificial Intelligence and Smart Systems (ICAIS), Coimbatore, India, 2021 (pp. 1541–1548). <https://doi.org/10.1109/ICAIS50930.2021.9395947>.
- 25) Pagar, Y. S., Nandankar, P. V., Rao, K. B. V. B., Choubey, S., Arumugam, J., Salome, J., & Sivaramkrishnan, M. (2022). IoT based Garbage Classification and Monitoring System 4th International Conference on Inventive Research in Computing Applications

- (ICIRCA), Coimbatore, India, 2022 (pp. 429–435).  
<https://doi.org/10.1109/ICIRCA54612.2022.9985760>.
- 26) Nandankar, P. V., Bedekar, P. P., & Dhawas, P. V. (2020). Efficient DC-DC converter using variable switching frequency digital controller 5th IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE), Jaipur, India, 2020 (pp. 1–6). <https://doi.org/10.1109/ICRAIE51050.2020.9358294>.
- 27) Merugula, S., Dinesh, G., Kathiravan, M., Das, G., Nandankar, P., & Karanam, S. R. (2021). Study of blockchain technology in empowering the SME International Conference on Artificial Intelligence and Smart Systems (ICAIS), Coimbatore, India, 2021 (pp. 758–765). <https://doi.org/10.1109/ICAIS50930.2021.9395831>.
- 28) Nagila, A., Mg, S., Deepak, F. D., Kumar, R., Nandankar, P. V., Hemavathi, & M, S. R. (2022). Ultra-fast charging E-vehicle batteries from PV using DC-DC converter International Conference on Edge Computing and Applications (ICECAA), Tamil Nadu, India, 2022 (pp. 711–716). <https://doi.org/10.1109/ICECAA55415.2022.9936098>.
- 29) Sarode, N., Ghugal, P., Yadav, S., Dantule, S., & Nandankar, P. (2023, April). A comprehensive review on solar panel cleaning robot technologies. In AIP Conference Proceedings (Vol. 2753, No. 1). AIP Publishing.
- 30) Khan, N. R., Raghorte, A. V., Nandankar, P. V., & Waware, J. A. (April 24, 2023). Solar powered UAV: A comprehensive review. AIP Conference Proceedings, 2753(1), 020016. <https://doi.org/10.1063/5.0127815>
- 31) Dhawas, P. V., Bedekar, P. P., & Nandankar, P. V. (2023). Review on high-impedance fault detection techniques. Journal of the Institution of Engineers (India): Series C. <https://doi.org/10.1007/s40032-023-00932-1>.
- 32) Divyabharathi, A. P., Balaji, S. R., Kumareshan, N., Veeramanikandan, P., Naitik, S. T., Shaik Mohannad, R., & Nandankar, P. V., G. Manikandan,— face recognition based vehicle starter using machine. Learning, Measurement: Sensors 24, 2022, 100575. KodiRaghunath, CharankumarGanteda, AbhishekDasore, M. Logesh Kumar, GLaxmaiah, MohdAbulHasan, Saiful Islam, Abdul razak “Influence of MHD Mixed Convection Flow for Maxwell Nanofluid through a vertical cone with porous material in the existence of Variable Heat Conductivity and Diffusion, Case Studies in Thermal engineering, Volume 44, April 2023, page 1-16, ELSEVIER DOI: <https://doi.org/10.1016/j.csite.2023.102875>
- 33) Dr. G. Laxmaiah, Dr. P. V. R. Ravindra Reddy, Dr. S. Solomon raj “Experiemental Studies On Optimization Of Molding Sand Composition With Tamarind Kernel Powder As Additive” International Journal of Mechanical and Production Engineering Research and Development (IJMPERD) ISSN(P): 2249-6890; ISSN(E): 2249-8001 Vol. 9, Issue 3, June 2019, pp939-946, DOI : 10.24247/ijmperdjun2019102
- 34) Dr. S. Solomon Raj , Dr. G. Laxmaiah , V. Ravi Kumar “Design And Analysis Of Fuselage Skin Repair Joint” International Journal of Mechanical and Production Engineering Research and Development (IJMPERD),ISSN (P): 2249-6890; ISSN (E): 2249-8001, Vol. 9, June 2019, Issue 3, pp887-894, DOI : 10.24247/ijmperdjun201997

- 35) A ASrirama Krishna, G Laxmaiah, Siva priya A (2016) "Finite Element Analysis of Metal Removal Rate on AL/SIC-MMC Using EDM Process".Manufacturing Technology Today, Central Manufacturing Technology Institute ,ISSN 0972-7396, July 2016, pp21-26
- 36) Dr G Laxmaiah, P Anjani Devi, Dr Ch Indira Priyadarshini, AnirudhKishan K, V Karthikeya Reddy, S VijayaBhanu Deepak " Design and Analysis of Semi-Recumbent Bicycle"International Research Journal of Engineering and Technology (IRJET) p-ISSN: 2395-0072 ,e-ISSN: 2395-0056, Volume: 09 Issue: 06, June 2022, pp 2498-2505
- 37) P. Anjani Devi, DrG.Laxmaiah, V Jaipal Reddy"Static And Dynamic Analysis of High Speed Motorized Spindle"International Research Journal of Engineering and Technology (IRJET) p-ISSN: 2395-0072e-ISSN: 2395-0056 Volume: 09 Issue: 05, May 2022, pp 3573-3578
- 38) S. Solomon Raj, VenkataSushmaChinta, G. Laxmaiah, ManthriNeelima "Experimental Charactrization of Hybrid Composite Materials for Tension, Flexural and Impact Behaviour, International Research Journal of Engineering and Technology (IRJET) p-ISSN: 2395-0072 ,e-ISSN: 2395-0056, Volume: 09 Issue: 06, June 2022, pp 3148 – 3160.
- 39) Dr. G. Laxmaiah, P Anjani Devi, Dr.Ch. Indira Priyadarshini, Dr. SateeshNagri "Optimization of Cross Section in spring design for Two Wheeler Shock Absorber" Turkish Journal of Computer and Mathematics Education, e-ISSN 1309-4653, Vol.12 No.13,June 2021, pp 685-690
- 40) P Anjani Devi, Dr G Laxmaiah ,K Y Sreeram, Dr V VSheshagiri Rao "Fatigue and Dynamic Analysis of Control Arm"NOVIY MIR Research Journal,ISSN NO: 0130-7673, Volume6, Issue6, June 2021,pp234-246.
- 41) (DOI:16.10098.NMRJ.2021.V6I6.256342.1888)
- 42) Dr.Ch.IndiraPriyadarsini,Dr.T.Ratna Reddy ,Dr.G.Laxmaiah, M.SubhaPradha "Study of Heat Transfer in Solar collector with Water-Nano Fluid Mix" NOVIY MIR Research Journal,ISSN NO: 0130-7673,Volume6, Issue6,June 2021,pp73-79.
- 43) (DOI:16.10098.NMRJ.2021.V6I6.256342.1872)
- 44) Dr. S. Solomon Raj, Dr. G. Laxmaiah, Mr. N. Sandeep , "Design, Analysis and Optimization of 6 DOF Robotic ARM", International Journal of Mechanical and Production Engineering Research and Development(IJMPERD),ISSN(P): 2249-6890; ISSN (E): 2249-8001Volume 10,Issue 3,June 2020,pp 5493–5500.DOI : 10.24247/ijmperdjun2020523
- 45) Dr. G. Laxmaiah, Dr. S. Solomon raj, Dr P.V.R Ravindra Reddy "Experimental stress Analysis of Rocket Motor Casing Using Elasto-Plastic Strain Theory", International Journal of Mechanical and Production Engineering Research and Development(IJMPERD),ISSN(P): 2249-6890; ISSN (E): 2249-8001,Volume 10,Issue 3,June,2020,pp 4027–4038.DOI : 10.24247/ijmperdjun2020381
- 46) P.V.R Ravindra Reddy, G.Chandra Mohan Reddy, B.V.S Rao, G.Laxmaiah "Effect of Various Parameters on the Bead Geometry and Flexural Strength of MIG Welded Joint"

- International Journal of Innovative Technology and Exploring Engineering (IJITEE)  
ISSN: 2278-3075, Volume-9 Issue-3, January 2020, pp555-559,  
47) <http://doi.org/10.35940/ijitee.C8098.019320>
- 48) G Laxmaiah, Rishi tejaMadduri“Design and implementation of autonomous 2D mapping robots using the principles of swarm intelligence”.IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE), ISSN: 2278-1684, Volume 14, Issue 5 Ver.V , Sep-Oct 2017, pp 63-70
- 49) G Laxmaiah, M V S Murali Krishna “Experimental Investigations on Exhaust Emissions of DI Diesel Engine with Tobacco Seed Biodiesel with Varied Injection Timing and Injection Pressure”. International Journal of Current Engineering and Technology(IJCET), ISSN 2347-5161 ,Vol 6,No 6 ,Dec 2016,pp2110-2115
- 50) G.Laxmaiah, Dr P Ravinder Reddy, MNSVKirankumar“Optimization of Parameters Effecting the Noise in Hermitically Sealed Reciprocating Compressor Using Taguchi Technique”.International Journal of Multidisciplinary Research and Advances in Engineering(IJMRAE),ISSN 0975-7074, Volume 4, Number IV, October 2011, pp 383-394
- 51) G.Laxmaiah, Dr P Ravinder Reddy, MNSVKirankumar“Experimental Investigation of Parameters Effecting the noise Reduction in hermetically sealed Reciprocating Compressor” International Journal of Engineering Science and Technology (IJEST),ISSN 0975-5462,Volume 3, Number 7, July 2011,pp 5948- 5953
- 52) G.Laxmaiah, Dr P Ravinder Reddy, MNSV Kirankumar“Effect of Configuration on Noise in Hermetically sealed Reciprocating Compressor”, International Journal of Engineering research and Technology (IJERT).ISSN 0974-3154,Volume4, Number 1, 2011, pp161-166.