

Figure 7. ISO/IEC 27001 certification in Bangladesh

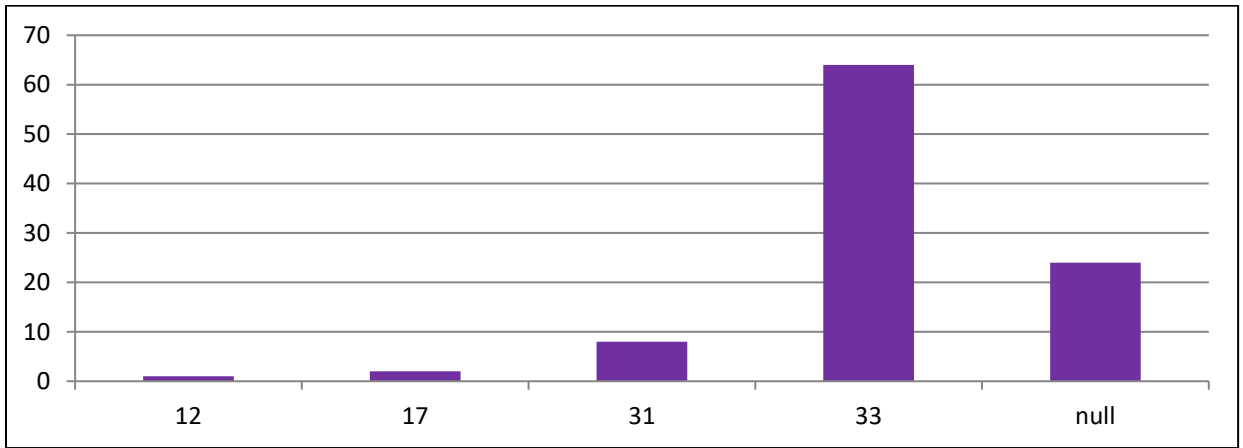


Figure 8. ISO/IEC 27001 certification in Bangladesh by Sector

Figure 8 displays that, ISO/IEC 27001 has been implemented mainly in Information technology (sector: 33). But the amount of certification is not much.

5.2.4 ISO 45001 certification in Bangladesh:

ISO 45001 was published in March 2018 as the new standard after the replacement of OHSAS 18001. Before the publication of ISO 45001, British standard for Occupational Health and Safety Management (OHSAS 18001) had been widely adopted by various organizations in Bangladesh. Some organizations migrated from OHSAS 18001 to ISO 45001 for Occupational Health and Safety Management within the organization. Figure 9 displays that the overall certification for ISO 45001 is still growing fast in Bangladesh since its publication.

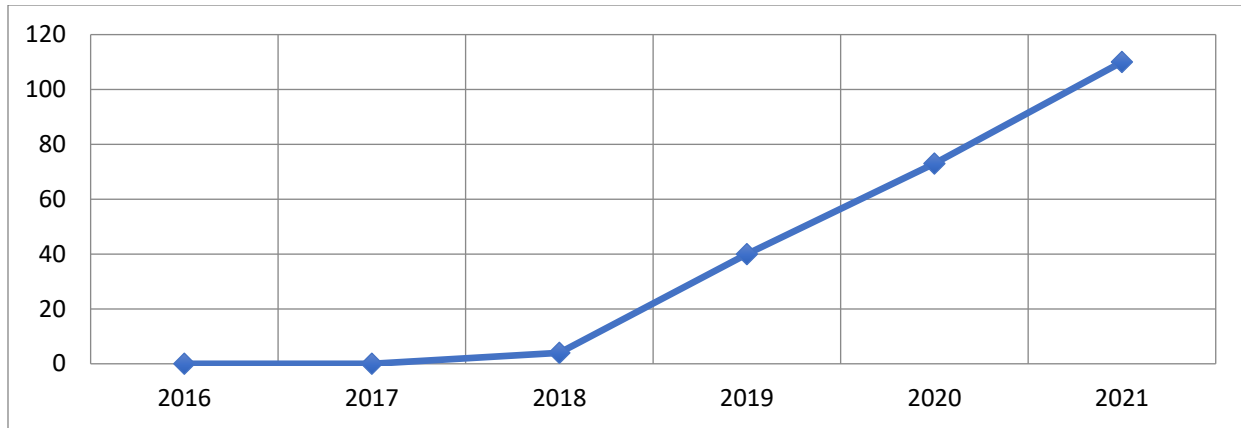


Figure 9. ISO 45001 certification in Bangladesh

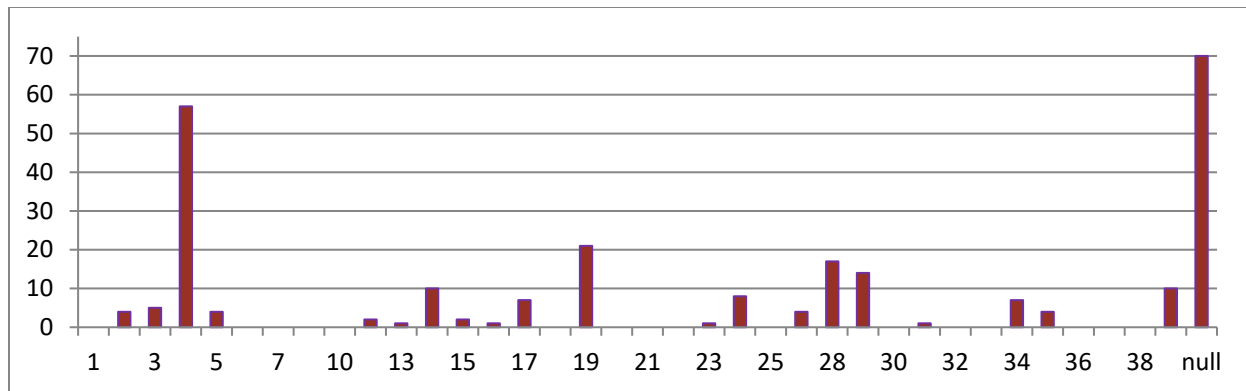


Figure 10. ISO 45001 certification in Bangladesh by Sector

As illustrated in Figure 10, ISO 45001 is most often implemented to the other industrial sector (sector: null), but ISO 45000 implementation in Textiles and textile products (sector:4), Electrical and optical equipment (sector:19), Construction (sector:28), Wholesale & retail trade, repairs of motor vehicles, motorcycles & personal & household goods (sector:29) are also increasing.

5.2.5 ISO 22000 certification in Bangladesh:

Figure 11 represents that, ISO 22000 certification for food safety management has frequent growth in recent years but still comparatively low compared to other common management system standards. The maximum certification was done in the year 2018. This standard does not contain data on sectors.

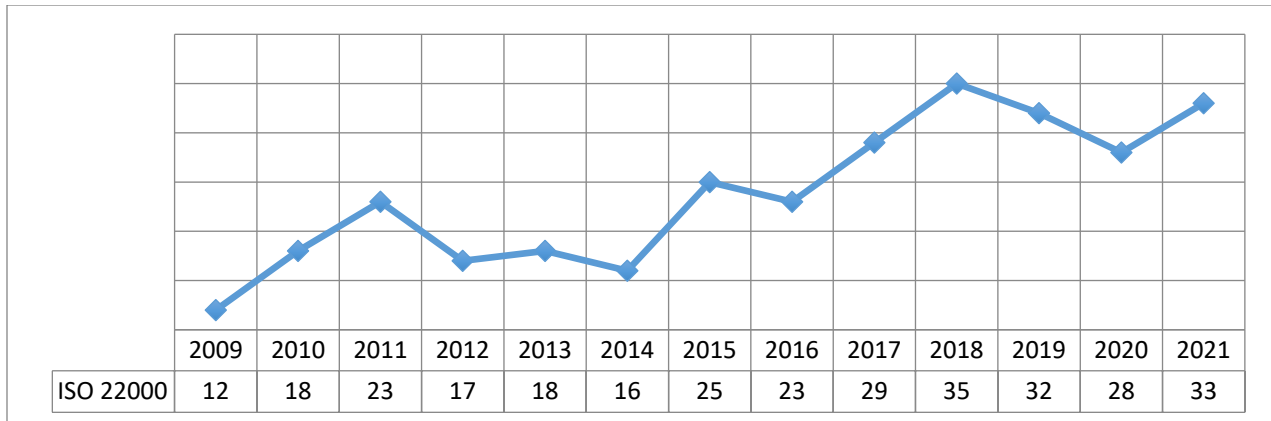


Figure 11. ISO 22000 certification in Bangladesh

5.2.6 ISO 13485 certification in Bangladesh:

As indicated in Figure 12, the certification of ISO 13485 has been implemented since 2012 in Bangladesh but the rate of certification is not so significant. This standard does not contain data on sectors.

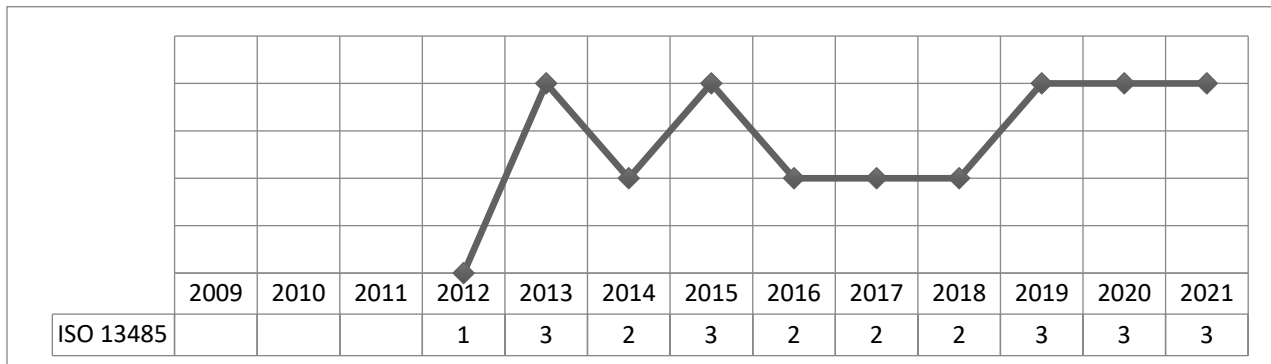


Figure 12. ISO 13485 certification in Bangladesh

5.2.7 ISO 20000-1, ISO 22301 & ISO 39001 certification in Bangladesh:

Figure 13 show that, there is no growth in the implementation of the standards ISO 20000-1 (for IT service management), ISO 22301 (for security, resilience and business continuity management) and ISO 39001 (for road traffic safety management) in recent years. The number of certification regarding these standards is significantly very low.

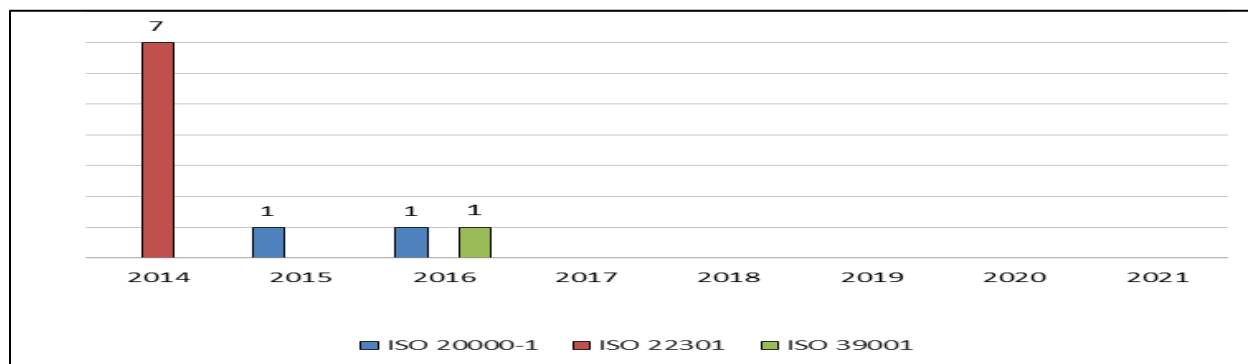


Figure 13. ISO 22000 certification in Bangladesh

5.3 Overall findings on ISO certification in Bangladesh:

Figure 14 shows that ISO 9001 and ISO 14001 have covered 80% and 13% of the total certification in Bangladesh respectively since 1996.

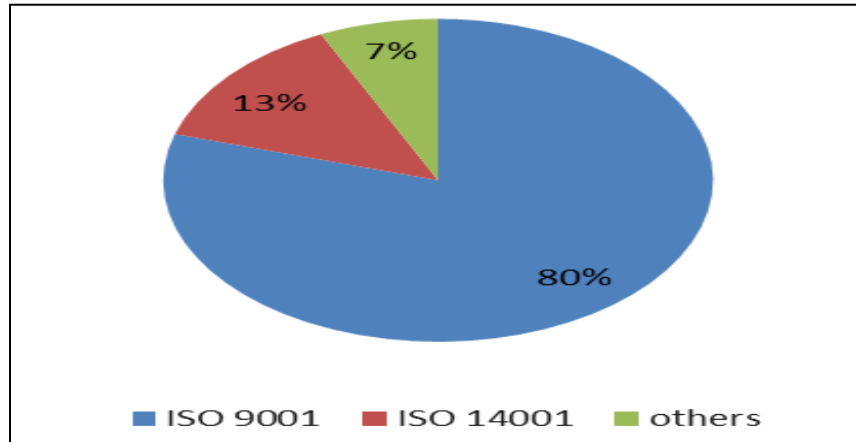


Figure 14. Overall rate of ISO certification in Bangladesh

The table below displays the total number and percentage for valid certificates highly certified standards in Bangladesh for the period 2018-2021 compared to the data across the world covered by the ISO survey.

Table 2. Total number and percentage of valid certificates for top standards in Bangladesh(2018-2021)

Management System	Standards	Year of publication (1 st edition)	Worldwide total valid certificates		Total valid certificates in Bangladesh	
			Number	% of total	Number	% of total
QMS	ISO 9001	1987	3,756,911	60.46%	2208	64.75%
EMS	ISO 14001	1996	1,388,545	22.35%	733	21.50%
OHSMS	ISO 45001	2018 (Replacing OHSAS 18001)	535,507	8.62%	227	6.66%
FSMS	ISO 22000	2005	38,507	0.62%	128	3.75%
ISMS	ISO/IEC 27001	1999	171,458	2.76%	103	3.02%
QMS-Medical Devices	ISO 13485	1996	30,240	0.49%	11	0.32%
EnMS	ISO 50001	2011	121,270	1.95%	0	0.00%

Figure 15 illustrates the overall ISO certification among the 39 sectors specified in ISO survey in Bangladesh, which represents textiles and textile products (sector: 4) is in the leading position. As reflected in figure 16, companies operating in the textiles and textile products (sector: 4) have had the leading role for years 2017-2020, whereas other industrial sectors (sector: null) has reached the leading position in the year 2021. Moreover, Electrical and optical equipment(sector: 19), Electricity supply(sector: 25), Rubber and plastic products (sector: 14)along with are showing importance of having ISO implementation for certain sectors and their businesses.

5.4 Contribution of South Asian countries to the ISO certification:

Table 3 represents the regional share of South Asian countries for most commonly used seven management standards to the worldwide ISO certification from the year 2018 to 2021. From the table, it is observed that Food Safety Management System (ISO 22000) and Information Security Management System (ISO/IEC 27001) have increased regional share compared to other management standards in South Asia.

Table 3. Regional share scenario of South Asian countries

South Asian Countries	Regional share (%) (2018-2021)							Total	Rank
	ISO 9001	ISO 14001	ISO 45001	ISO/IEC 27001	ISO 22000	ISO 13485	ISO 50001		
Afghanistan	0.001%	0.0003%	0.0030%	0.200%	0.005%	0.000%	0.026%	0.235%	5
Bangladesh	0.059%	0.053%	0.0424%	0.060%	0.094%	0.012%	0.000%	0.320%	4
Bhutan	0.002%	0.003%	0.0039%	0.007%	0.044%	0.000%	0.000%	0.060%	8
India	3.595%	2.417%	3.0629%	6.108%	5.598%	2.276%	3.887%	26.943%	1
Maldives	0.001%	0.002%	0.0017%	0.000%	0.092%	0.000%	0.000%	0.097%	7
Nepal	0.016%	0.007%	0.0064%	0.014%	0.070%	0.001%	0.012%	0.125%	6
Pakistan	0.264%	0.174%	0.1541%	0.107%	0.602%	1.161%	0.073%	2.537%	2
Sri Lanka	0.116%	0.088%	0.0669%	0.127%	1.485%	0.023%	0.071%	1.976%	3
Total	4.05%	2.74%	3.34%	6.62%	7.99%	3.47%	4.07%	32.29%	

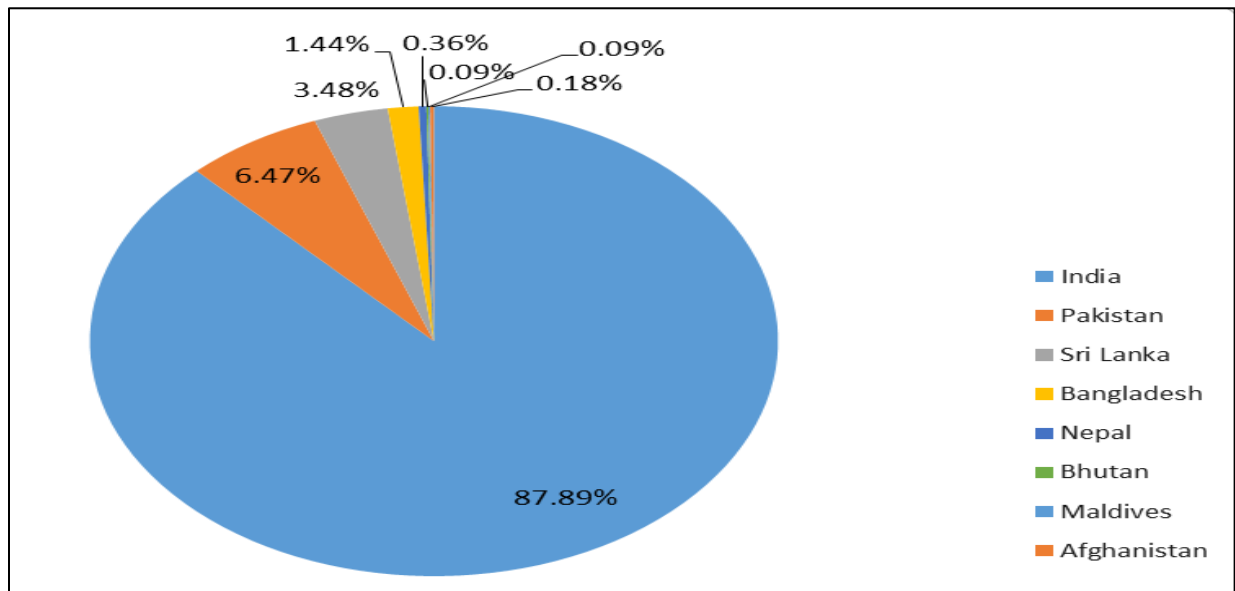


Figure 18. ISO certification rate among South Asian countries (2018-2021)

Figure 18 highlights the rate of ISO certifications among South Asian countries. These analyses have been carried out for the period 2018-2021. From table 3 and figure18, it is clear that India is the leading country in this regard (87.89%) and regional share among the South Asian countries. However, ISO certification rate in Pakistan, Sri Lanka and Bangladesh are also increasing (6.47%, 3.48%, 1.44% respectively) compared to Nepal, Afghanistan, Bhutan and the Maldives (0.36%, 0.18%, 0.09% and 0.09% respectively).

5.5 Driving Forces for Positive Trends and Scope of Certification in Bangladesh

5.5.1 Globalization and trade:

Globalization and trade liberalization have led to tremendous growth in international trade over the past decade. In spite of limited resources Bangladesh contributes to international imports and export. Organizations in Bangladesh started adopting ISO certifications as key success factor to compete in international market.

5.5.2 Role of National bodies:

Bangladesh Standards and Testing Institution (BSTI) is the national standards body of Bangladesh (BSTI-BDS, n.d.). BSTI has got the membership of ISO. BSTI as the only Govt. organization, operates Management Systems Certification through Management Systems Certification (MSC) Wing against ISO 9001 (Quality Management System), ISO 14001 (Environmental Management System), ISO 22000 (Food Safety Management System) to different Industry, Business and Service Organization (*Bangladesh Standards and Testing Institution (BSTI)*, n.d.). There are number of private certification agencies working for issuing management systems certification, but, Business and Service organization achieves ISO certificate in low cost from BSTI other than private and foreign certification organization (*Bangladesh Standards and Testing Institution (BSTI)*, n.d.).

5.5.3 Prospect of ISO implementation:

ISO certification has become increasingly important for different business sectors in recent years. It is important to note that Bangladesh has fallen far behind developed countries in terms of implementation of ISO standards and the practices associated with them. Although increasing awareness and growth of ISO Certifications in few business sectors have been found satisfactory in Bangladesh recently, which has led to the implementation of ISO management systems. There exists a huge potential for all ISO certifications. With passage of time, increasing competition and empowerment of regulatory agencies, focus on these certifications is increasing. Government of Bangladesh has also taken initiative to implement the standards as well as to improve the quality of products and services to comply with international trade requirements and ensure sustainable & inclusive business growth. As a consequence, it is asserted that there could be good future for ISO Certification and positive trends and expansion in scope of application is very predictable for coming years.

6. Conclusion

The international management standards have become very essential to cope with the modern way of business. This study intended to focus on the implementation trends of ISO standards in Bangladesh along with the comparison with other South-Asian countries. From the study, it is explored that various organizations of Bangladesh have implemented ISO standards either individually or as an integrated management system. Based on the above-mentioned information, highly adopted management standards in Bangladesh are ISO 9001, ISO 14001, ISO 45001, ISO 22001 and ISO/IEC 27001, where the growth of ISO 9001 is in leading position. Furthermore, it has been observed that textiles and textile products is the sector with high growth of ISO certification. This study also indicates a growth for adoption of different management standard in future. The outcome of the study will contribute to add value to the existing literature as well as guide managers and policy makers to improve management practice in terms of quality, safety, environment etc. This study recommends conducting an in-depth future analysis in different context, location and culture to analyze the influence of the geographical variable. Moreover, future study could identify the challenges and scopes during implementation and integration of different management system standards in context of Bangladesh.

References

- Bangladesh Power Development Board (2020-21). (n.d.). *Annual Report 2020-21* ((2020-21)). https://bdcom.bpdb.gov.bd/bpdb_new/resourcefile/annualreports/annualreport_1640756525_Annual_Report_2020-2021_latest.pdf
- Bangladesh Standards and Testing Institution (BSTI)*. (n.d.). Retrieved November 30, 2022, from <http://www.bsti.gov.bd/site/page/43432463-1e2d-4788-95c5-2e252ae86083/http%3A%2F%2Fwww.bsti.gov.bd%2Fsite%2Fpage%2F43432463-1e2d-4788-95c5-2e252ae86083%2F->
- BSTI-BDS*. (n.d.). Retrieved November 30, 2022, from <https://bstibds.com/>
- Electricity sector in Bangladesh. (2022). In *Wikipedia*. https://en.wikipedia.org/w/index.php?title=Electricity_sector_in_Bangladesh&oldid=1123068890
- ISO - The ISO Survey*. (n.d.). ISO. Retrieved November 30, 2022, from <https://www.iso.org/the-iso-survey.html>
- Overview*. (n.d.). [Text/HTML]. World Bank. Retrieved November 30, 2022, from <https://www.worldbank.org/en/country/bangladesh/overview>
- Power Division, M. of P., Energy and Mineral Resources (MPEMR), Government of the People's Republic of Bangladesh. (n.d.). *Annual Report 2020-2021* ((2020-2021)). https://powerdivision.gov.bd/sites/default/files/files/powerdivision.portal.gov.bd/annual_reports/c40654b2_d714_473d_ae5d_5d2b8f3b1e9a/AR%202020-21_ver%2010%2010%2021_compressed.pdf

- Samad, A. F., Banik, A., Rahman, J., & Ghosh, D. (n.d.). *QUALITY ASSURANCE PROGRAM & IMPLEMENTATION OF ISO, A CASE STUDY*. 6.
- Talapatra, S., Uddin, Md. K., Antony, J., Gupta, S., & Cudney, E. A., An empirical study to investigate the effects of critical factors on TQM implementation in the garment industry in Bangladesh. *International Journal of Quality & Reliability Management*, vol. 37, no. 9/10, pp. 1209–1232, 2020.
- What Is the International Organization for Standardization (ISO)?* (n.d.). Investopedia. Retrieved November 30, 2022, from <https://www.investopedia.com/terms/i/international-organization-for-standardization-iso.asp>
- Yeung, G., and Mok, V., What are the impacts of implementing ISOs on the competitiveness of manufacturing industry in China? *Journal of World Business*, vol. 40, no. 2, pp. 139–157, 2005.

Biographies

Faria HaquePushpois Ph.D student in the Department of Mechanical Engineering at Khulna University of Engineering and Technology (KUET). Her research activities include the area of Operations Research and Engineering Management. She obtained her B.Sc. Engineering (Mechanical) and M.Sc. Engineering (Mechanical) from Khulna University of Engineering and Technology (KUET). She is currently serving as Assistant Engineer in West Zone Power Distribution Company Limited (WZPDCL). She has affiliations with The Institution of Engineers, (IEB), Bangladesh.

Md. Kutub Uddin is a Professor of Department of Mechanical Engineering at Khulna University of Engineering and Technology (KUET). He obtained his B.Sc. Engineering (Mechanical) from Bangladesh University of Engineering and Technology (BUET). He received his Master of Engineering from Asian Institute of Technology (AIT), Thailand and received his PhD from Indian Institute of Technology Kanpur (IITK), India. He has published articles in several journal and conferences. His research activities include Operation Research, Operation Management, Product quality Management and warehouse management. He is actively involved with the activities of different professional organizations like IEOM Society International and The Institution of Engineers, (IEB), Bangladesh.