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# Use of Technology and Its Management Issues in Nepalese Industries and Businesses

**Dr. Prakash Shrestha**
Lecturer, Nepal Commerce Campus, Tribhuvan University
Kathmandu, Nepal
*mrprakashshrestha@gmail.com*

## ABSTRACT

This paper presents some of the facts regarding the use of technology in Nepalese industries and businesses. This is a research of paper. It uses a set of questionnaires to collect the responses regarding technology management issues. It also reviews and describes scholarly papers, professional research works, and research reports of different national and international organizations to answer the research questions and draw results. Results show that Nepal is rich in many types of traditional technologies. Most of rural businesses are dependent on traditional technology for their activities. The contribution of traditional technology is still important in Nepal's social-economic sphere and it cannot altogether be neglected. The results also show that the uses of modern technologies are also increasing in Nepal. Regarding modern technologies, information technology (IT), sophisticated technology, biotechnology and tissue culture technology, solar power, computer technology, automation, e-banking, mobile banking, locker facilities, telephone and television, and e-business become popular in Nepalese industries and businesses. The results reveal that lack of political commitment, lack of interactions, the gap between policies and practices, lack of coordination, lack of need assessment, low quality of practical education, low investment in research & development (R&D), inadequate maintenance facilities, the rapid pace of technological change, and non-involvement in decision-making are the key issues related to the management of technology in our context. The focus on R&D is essential for the development of new technologies in Nepal.

**Keywords:** Businesses, Industries, Issues, Status, Technology

## 1. Introduction

Technology includes all aspects of applied sciences for achieving a practical purpose. It deals with the information, equipment, techniques, and processes required achieving the objectives of transferring organizational inputs into desired outputs (Pant, 2014). Technology is a key factor in productivity improvement (Agrawal, 2014). According to the Department of Industry, there are agriculture-based and forestry, manufacturing industries, export-oriented industries, energy-oriented industries, mining industries, tourism industries, construction industries, information, and communication technology industries and services industries in Nepal (DOI, 2019). All these industries use some form of technology to convert their inputs into outputs.

Going to history, Nepal remained untouched until the middle of the twentieth century from the science and technology (S&T) development. Because of the isolation of the country for over a century, it had made a late entry to the modem era of development of the S&T (Singh and Bhuju, 2001). However, with the beginning of democracy in 1950, the country started up to the outside world. This opening also marked the initiation of activities in S&T (Bajracharya, Bhuju, and Pokhrel, 2006).

The Nepalese industrial sector has a history of pubic sector-led import substitution. Over the decades, except in some public enterprises, the overall technological system in manufacturing units has remained relatively simple. The private industrial sector is largely in technologically simple activities, primarily those with a strong local resource base. Most of these small industrial units depended largely on indigenous technology and the technology imported from India.

Bajracharya et al. (2006) reported that six decades of effort have brought a number of S&T infrastructures into existence in Nepal. Policy formulation institutions, education and training, consultancy services, testing and standardization, research and development, extension services, promotion, and dissemination at different levels have initiated to build some basis for the development of technological status in Nepal. Likewise, the establishment of S&T non-governmental organizations and professional societies of many disciplines have also promoted the environment for technological development in the country. Based on these grounds this paper

tries to presents some of the facts regarding the current status of technology used in Nepalese industries and businesses.

## Research Questions

This study raises the following research questions to examine the current status of technology used in our industries and businesses.

RQ1: What is the status of technology in Nepalese industries from the point of view of traditional technology?

RQ2: What is the status of technology in Nepalese industries from the point of view of modern technology?

RQ3: What are the issues related to the management of technology in Nepal?

## Research Methods

This is a research paper. It employs both primary and secondary sources of data. To address the above two research questions and draw conclusions, it analyses and presents academic articles, technical research works, and research reports from various national and international organizations. The first section of this paper explains the status of traditional technology used in Nepalese industries and the next section discusses the status of modern technology used in our industries and businesses. Such a study is conducted on the basis of published data from various sources. A questionnaire survey was performed to provide answers to the final research questions. 280 structured questionnaires were distributed for this purpose to various intellectuals engaged in the Nepal Academy of Science and Technology (NAST), Tribhuvan University's Engineering and Management campuses, and affiliated engineering colleges.

**Table 1. Response rate from selected institutions**

| Institutions | Response rate (percent) |
|---|---|
| NAST | 7.86 |
| Pulchowk Campus | 11.07 |
| Thapathali Engineering Campus | 9.64 |
| Nepal Commerce Campus | 11.43 |
| Shankar Dev Campus | 10.36 |
| Kantipur Engineering College | 5.36 |
| Kathmandu Engineering College | 6.07 |
| Note: *n = 173* | |

173 (61.79 percent) answers were returned and used for the purposes of research. The response rate is set out in Table (1).

## Results and Discussions

This section presents the Status of Technology Used in Nepalese Industries and Businesses and the key issues related to the management of technology in our context.

### *Status of Technology Used in Nepalese Industries and Businesses*

In this section, the present status of technology used in the Nepalese industries and businesses has been examined from the point of traditional and modern technology.

*(A) Use of Traditional Technology*

Nepal is rich in many types of traditional technologies. Some traditional technologies are more than 2,000 years old. In the present time, since modern technologies are increasingly being used, particularly in urban areas, traditional technologies are being displaced. However, in rural areas, modern technologies do not seem to have a significant effect. Most of the rural businesses are dependent on traditional technology for their activities. Historical events have recorded the employment of some advanced knowledge domain and therefore the adoption of some innovative technologies in areas such as metallurgy, pottery, architecture and construction, textile manufacture, dyeing, and printing, paper manufacturing, food technology, agriculture, water management,

and medicine (Singh and Bhuju, 2001; Bajracharya et al., 2006):

Besides these, the different types of traditional technologies used by Nepalese industries and businesses are given below:

- Nepalese craftsmen are experts in making the idols of copper, gold, iron, and silver, which can be seen in Nepalese temples. The old metal workers had also the skill of metal extraction and procession. For example, Bhojpur was famous in iron extraction and purification, whereas Western Nepal was famous in producing gold from the sand of the Kaligandaki River. The metal workers, in addition to making idols, are also used to produce domestic consumer goods such as Karuwa, dadu, Panue, khukuri, and agricultural implements such as spade, agricultural tools, etc. Patan, Bhojpur, Chainpur, and Palpa are the places famous for metal works. Till today, there is a great demand for handicraft goods produced in Nepal. Handicraft goods have been an important item exported to third countries (Joshi, 2069).
- The potters of Nepal are famous for making soil utensils. They make brick, tile, flower pot, and utensils of domestic use. They provide different shapes to the soil by using 'potter's wheel'. Like the technology of making metal utensils, this technology has also not changed for a long time (Agrawal, 2014).
- Nepalese people have also been found to be experts in architecture and engineering works. The use of this technology can be seen in the construction of temples, pagodas, and stupas. Kathmandu, Patan, and Bhaktapur, all three cities of the valley are famous in architecture and engineering works. Due to the unique features, these areas have been included in the list of world heritage. The craftsmanship had extended up to China. The pagoda made by Arniko of Nepal in about the 13$^{th}$ century can still be seen in Beijing of China. The basic concept of the pagoda-style temples seen all over the world is regarded to have originated in Nepal (Joshi, 2061).
- Nepalese people are traditionally expert in weaving cloth by preparing woolen and cotton yarn. Foreigners like Nepalese woolen products such as carpet, radi, pakhi, sawl, muffler, and pashmina very much. Due to this, woolen carpet and pashmina have been the important sources of foreign exchange earnings (Shrestha, 2020).
- In foreign countries, there is also a great demand for Nepalese hand-made paper. The raw materials for Nepalese paper are also available in Nepal. Due to durability and cheapness, Nepalese papers are widely used in making legal documents, an ancient manuscript, thanka, etc (Bajracharya, 2001).
- In Nepal dying in cloth and paper is also equally in vogue. The traditional technology of dying cloth is still in use. Nepalese people are expert also in food technology. The traditional technology itself is in much use in the production and processing of food, fruits, wine, local beer, etc. Likewise, Nepalese people have been making and using water mill, dhiki, jaato, tiller, and so on from traditional technology for the solution of their problems (Bajracharya et al., 2006).

Nepal is rich in the traditional technology. They still dominate the rural areas and villages. The contribution of traditional technology is still important in Nepal's social-economic sphere and it cannot altogether be neglected.

*(B) Use of Modern Technology*

The growth of industries and the business sector in Nepal had started only after the establishment of the Council of Industry in 1936. Biratnagar Jute Mill established by some of the Indian entrepreneurs is Nepal's first modern industry. The Company Act was passed in 1936 and only after that cigarette, match, cloth, paper industries were established. At that time industries had flourished in Nepal due to the significant rise in price and scarcity of goods on account of the Second World War (Shrestha, 2018a).

Most of our industries and businesses are in the Terai region (Agrawal, 2013). Grain mill using seller-type modern technology survived. The number of industries using modern technology in bakery, textiles, medicines, soap, vegetable oil, printing, plastics, metal, and sugar is increasing. The power-loom revolution in textiles has been powerful. Our public enterprises are instrumental for the import of modern technology in Nepal for import-substitution.

Nowadays, the private sector has enjoyed fairly free access to modern equipment and know-how from outside the country. They can collaborate with foreign firms and build up reasonable mastery of the simple technologies they enjoy. The evidence so far does not, however, suggest that he Nepalese business sector is

gaining strength (Pant, 2005). In this regard, the current status of modern technology in Nepal can be assessed based on the following scenarios:

- ***Growing Use of Modern Technology***. Nowadays, the use of modern technology is increasing in Nepalese industries and businesses. Information technology (IT) industries are growing in Nepal (Pradhan, 2002). Telecommunications and internet providers are using satellite-based technologies. The use of sophisticated technology is increasing in the hydropower industry of Nepal. Improved cooking stoves are used to save energy. Biotechnology and tissue culture technology are used in agro-based industries.

  Health-related service industries use highly sophisticated technology. The use of solar power is also in increasing trends. The use of computer technology is also becoming common for teaching purposes.

  Automation is increasing in Nepal. The use of ATM by banks is a very healthy development in Nepal (Shrestha, 2019). Nepalese banks and financial institutions are offering banking services through the use of ATM Card, Debit Card, Credit Card, E-banking, Mobile banking, locker facilities, etc. Business houses are increasingly using electronic communications through the Internet. Technology has effectively touched the product packaging system in Nepal.

  Manufacturers are found to use more plastic, paper, and tetra (metallic paper) packages in places of glass and tin package. Nepal's Transport and communication system has achieved rapid growth in the last two decades.

  Nepalese business firms have also benefited from new technology in a promotion (advertising) of their products. Telephone and television marketing is already in use. Nepalese firms also have started e-business (Shrestha, 2018b).

- ***Basic Skills for Modern Technology***. The skills base for modern technology is low. Most industries are using foreign labor for highly skilled jobs. However, the demand for technical education is growing fast in Nepal. The most critical demand in the country is for mechanical skills, electricians and electrical engineers, IT professionals, chemical technicians, and entrepreneurial and managerial skills.

  However, the supply of these human resources is much below the level of the required quantity (Pant, 2014). That is why different colleges are offering technical education. Tribhuvan, Kathmandu, Pokhara, and Purvanchal Universities offer technical degrees in higher education (UGC, 2017-2018).

- ***Research and Development Budget***. Nepalese companies allocate very little budget for research and development in their business plans because they want to make money fast and they do not see the necessity to spend anything on research and development activities.

  R&D activities are dominated by universities and government research agencies in Nepal. But, these activities have little relation with the technological efforts in the industrial sector.

  Most of the industrial units remain passively dependent on imported and low-graded technologies. Business firms in Nepal show little awareness of the need for formal research as an absorptive base for new technologies.

- ***Technology Transfer***. Technology transfer is growing in Nepal. The typical patterns of technology transfer in Nepal are foreign direct investment (FDI), joint ventures, turnkey projects, licensing and capital transfers, contract manufacturing, and franchising. Unilever Nepal, Colgate-Palmolive, Tuborg beer, Joint Venture Banks, etc. are some examples that have transferred modern technology in Nepal. Likewise, donor-funded projects and foreign consultants have also facilitated technology transfer in Nepal.

***Technology Management Issues in Nepal***

In this section, some of the key issues of technology management (see table 2) in our context are presented based on the views of different intellectuals engaged in the above-mentioned institutions.

**Table 2. Technology Management Issues in Nepal**

| S. No. | Issues | Percent | Rank |
|---|---|---|---|
| 1 | Lack of political commitment | 13.87 | 3 |
| 2 | Lack of interactions | 8.67 | 6 |
| 3 | Gap between policies and practices | 9.83 | 5 |
| 4 | Lack of coordination | 6.94 | 8 |
| 5 | Lack of need assessment | 8.09 | 7 |
| 6 | Low quality of practical education | 15.03 | 2 |
| 7 | Low investment in research & development | 19.65 | 1 |
| 8 Inadequate maintenance facilities | | 2.89 | 10 |
| 9 | Rapid pace of technological change | 11.56 | 4 |
| 10 | Non-involvement in decision-making | 3.47 | 9 |
| Note: *n = 173* | | | |

The results show that the desirable priority is not found to have been given to science and technology in Nepal. The investment in R & D is very low. There is a lack of proper environment for research. Higher education has been producing only science teachers instead of scientists. Such manpower is also very low in the country due to less research programs. Therefore, it is necessary to set up an independent agency for promoting, coordinating, and financing R & D. The political commitment for the development of science and technology is not found on the part of the government. The promises made are rarely translated into action. Technology is changing at a rapid pace. Nepal has not been able to keep with technological changes. Although there are programs of government relating to science and technology, they are rarely implemented. The interaction between policy-makers and lawmakers and scientists/technologists is lacking. Long-term technical human resource development strategy is lacking. There is a lack of coordination and assistance between the institutions related to science and technology. These institutions have been doing works alone. The system of not involving scientists and technicians in the decision making process regarding science and technology is found in Nepal. There is lacking adequate workshop facilities for repair and maintenance of equipment and machinery in Nepal. Outdated technology has made repairs difficult.

## Conclusion

During recent years, significant changes have been observed in the growth of the industrial sector (Pant, 2011). New sub-sectors are being established and others rapidly expanding in the manufacturing sector. New technology is being introduced and the product range of goods and services is widening. The village and cottage industry is being encouraged to grow and become more skillful.

In the same way, transport, communication, electricity, and electronics are the major areas in which technological changes are taken place. Despite these changes, most of our industries, comprised of small and medium enterprises, have not yet reached even the level of efficient mastery. They continue to use technologies at low levels of technical efficiency, lagging well behind international frontiers of productivity. They generally focus on serving local markets with low-price and low-quality products, investing little in training or upgrading process or product technologies (Pant, 2014).

As discussed earlier, traditional technology is still making a significant contribution to Nepal's development. However, enough efforts are lacking to preserve, promote, and improve traditional technologies. Such technologies are fast disappearing.

Technology plays an important role in company operations. Nearly every company and industry wants to use some kind of technology in its business operations. It plays a key role in manufacturing, commercial, and

trade development. But proper technology usage and management is a key issue in Nepal. Such an issue is needed to correct for taking benefits of using appropriate technologies in our industries and businesses. Research and development (R&D) are very low in traditional technologies. In recent years, foreign direct investment by multinational companies has transferred modern technology in Nepal. Since R & D play major roles in the development of new technology, it is necessary to make our industries; businesses, and even the government understand that such efforts yield large benefits. It is also necessary to build a favorable environment in order to make an increase in such efforts.

## REFERENCES


Agrawal, G. R. (2014). *Business Environment in Nepal*. Kathmandu: M.K. Publishers.

Agrawal, G.R. (2013). *Principles of Management in Nepal*. Kathmandu: M.K. Publishers.

Bajracharya, D. (2001). *Science and Technology in Nepal*. Kathmandu: NAST.

Bajracharya, D., Bhuju, D.R. and Pokhrel, J.R. (2006). *Science, Research, and Technology in Nepal*. Kathmandu: United Nations Educational, Scientific and Cultural Organization Office (UNESCO).

Department of Industry (DOI) (2019). *Industrial Statistics, 2018/2019*. Government of Nepal, Ministry of Industry, Commerce and Supplies, Department of Industry, Kathmandu, Nepal.

Joshi, S. (2061). *Business Environment*. Kathmandu: Taleju Prakashan.

Joshi, S. (2069). *Business Environment*. Kathmandu: Taleju Prakashan.

Pant, P.R. (2005*). Business Environment in Nepal*. Kathmandu: Buddha Academic Publishers and Distributors Pvt. Ltd.

Pant, P.R. (2011). *Principles of Management*. Kathmandu: Buddha Academic Publishers and Distributors Pvt. Ltd.

Pant, P.R. (2014). *Business Environment in Nepal*. Kathmandu: Buddha Academic Publishers and Distributors Pvt. Ltd.

Pradhan, J. (2002). Information technology in Nepal: What role for the government? *The Electronic Journal of Information Systems in Developing Countries*, *8*(3): 1-11.

Shrestha, P. (2018a). *Principles of Management*. Kathmandu: Oasis Publication Pvt. Ltd.

Shrestha, P. (2018b). *Business Environment in Nepal*. Kathmandu: Oasis Publication Pvt. Ltd.

Shrestha, P. (2019). Banking customer attitudes toward ATM service in Nepal. *International Journal of Advances in Scientific Research and Engineering*, *5*(12): 88-93.

Shrestha, P. (2020). *Business Environment*. Kathmandu: Kriti Publication Pvt. Ltd.

Singh, R.M. and Bhuju, D.R. (2001). Development of Science and Technology in Nepal. *Science, Technology & Society*, *6*(1), 159-178.

University Grants Commission (UGC) (2017-2018), *Education and Management Information System: Report on Higher Education*, University Grants Commission (UGC), Bhaktapur, Nepal.