



SIGNIFICANCE OF 'SIX SIGMA' IN VETERINARY LIBRARY FOR ENHANCING THE QUALITY EXTENSION PROGRAMMES

P.W. Naik, M.R. Burande & J.S. Hatmode
Maharashtra Animal & Fishery Sciences University,
Futala Lake Road, Nagpur- 440 001

ABSTRACT :

Animal husbandry, dairying and fisheries sectors play a significant role in supplementing family incomes and generating gainful employment in the rural sector. The needs and environment of veterinary professionals are transforming and this has made the environment more competitive and complex. The impact of the internet and digital products on veterinary education, research and extension activities are worthy praising. Amazing growth of electronic resources changed the veterinary extension activity dynamically and effectively. The application of e-resources has completely transformed the outlook of traditional veterinary education, research and extension in to modern one. Quality in extension service is a vital aspect in today's competitive time. And **Veterinary Library and Information Centre facilitates the veterinary extension with ultramodern facilities for easy access to e-resources, intranet and digital library facilities.** It is only quality information service that decides the status and future of the development of extension programme in agriculture, fisheries, dairy and animal husbandry. **This paper deals with 'six sigma' and its application in extension programme in collaboration with Library and Information Centre.** 'Six sigma' is a method of reducing errors and improving quality. It is a methodology to define a problem from the view point of manager or users as defect and ascertain its causes in order to solve it. This method was developed three decades ago for manufacturing process, but now it is being implemented in service industry too and Libraries at veterinary universities is not an exception to that. The process aims to understand strategies of six sigma and its applications in extension programme powered by Library & Information Centre which could facilitate the farmers to broaden their horizon of perception. **This paper illustrates features, steps used, advantages and the use of 'six sigma' in the management of the extension programme supported by Library and Information Centre in rural are.**





INTRODUCTION :

Veterinary Libraries in the modern or digital era are treated as gateway to the information. The main role of the library and library professionals is to acquire the required and qualitative information resources, which suits the needs of user centric service to the users to satisfy their requirements. The face of the information services is changing due to the application of the information technology in the library. The responsibility to invent the things which would augment the live-stock production is bestowed with veterinarian. The information has a commercial value and same is required while running the various activities of veterinary Education, Research and Extension. ***The Library and Information centre is one of the important components of veterinary education. The librarian provides various services to the veterinarian to foster the better perform. In view of this it a matter of great importance to use the modern tool for the management of the Veterinary Library and Information Centre.***

The six sigma encourages the every component of the team to work 'smart' instead of merely emphasizing hard-work. It does not demand high standard improvement immediately but it prompts the every factor of the team to explore and realize the problems to be improved. It can be one of the important factors of the successful management of the extension programme. At first Japanese had invented and implemented this concept in 1960. Motorola, general Electric started to implement six sigma in 1980. Motorola saved 15 million American dollar by implementing six sigma concept for five years (Jagdish Vyas).

By the application of the modern methods of dissemination of information the extension workers made the livestock owner realize the importance of quality changes and value addition in livestock sector. To address the several issues regarding the management of the veterinary library 'Six Sigma' could be a lucrative option.





What is Six Sigma (σ) ?

It is a systemic and innovative activity that assesses the causes for the defects and an error occurred in every sector of the management based on the statistical measure, analyzes the causes and ultimately eliminates them. Definition of the 'defects' in the six sigma management includes all factors that hinder process or service. Unlike the conventional innovation methodology which focuses on minimizing defects in the manufacturing venue or on the problem-solving in the specific field. Accordingly, the Six Sigma as a management technique is a long-term corporate strategy in which a superior goal of the minimum defect or error ratio is set to the level of 3.4/1,000,000 and the company / organization strives to achieve such high standard. Levels of Six Sigma are as follows (Jagdish Vyas).

Sigma Level	Total defect (per million opportunities)	Perfection (%)
0.5 σ	841000	16
1 σ	690000	31
1.5 σ	500000	50
2 σ	308000	69.2
2.5 σ	159000	84.1
3 σ	66801	93.3
3.5 σ	22800	97.72
4 σ	6210	99.4
4.5 σ	1350	99.865
5 σ	230	99.97
5.5 σ	32	99.9968
6 σ	3.4	99.99966

Antony (2004) defines it as "a strategy that seeks to improve the quality of processes through identifying and removing the causes of defects by focusing on outputs that are critical to customers". Thus, in one way 'six sigma' refers to a measure of process consistency and aims at achieving the same.

'Six Sigma' is a rigorous concept made of two words, i.e. 'Six' and 'Sigma'. Sigma (σ) is a Greek letter used in statistics and mathematics to define





standard deviation. The Sigma scale of measurement shows defects per unit or probability of a failure (Kaushik et al, 2007).

Six Sigma Academy (Ramasamy, 2009) defines it as “a business process that allows organisations to drastically improve their bottom line by designing and monitoring every day business activities in ways that minimize waste and resources while increasing customer satisfaction”.

Advantages of application of Six Sigma in Veterinary Library :

- If applied, it would have impact on the strategies focus on user’s satisfaction.
- It would reduce process cycle time, thus would reduce the cost.
- It would facilitate the library professional to achieve accuracy in process by reducing defects in the acquisition and classification process.
- It would help to work smart rather than work hard.
- It would be the better decision making capacity and better understanding process.

Implementation of Six Sigma in veterinary extension :

ICT based veterinary library can change traditional veterinary information sources in to digital with world wide approach. The time has come when every veterinarian should make an effort to imbibe the various ICT skills to perform better and contribute something substantial to the faculty. Due to application of ICT the veterinary libraries are gradually transforming from their traditional set up to the new technology- oriented digital and virtual libraries. The requirement of information of veterinarian is different and vast then the need of common users at traditional library. There has been a paradigm shift from traditional to digital libraries, print on paper to digital information, traditional vs. online journals, ownership vs. access, in library vs.





desktop access, photocopy vs. digital copy, post / fax vs e-mail and subscription based vs open access. An organization has to pass through six phases before getting ready for implementation of 'six sigma' in the organization. Phases one to four are for establishment of 'six sigma'. And five and six are for realization of 'six sigma'. The following model explains six sigma implementation phases.

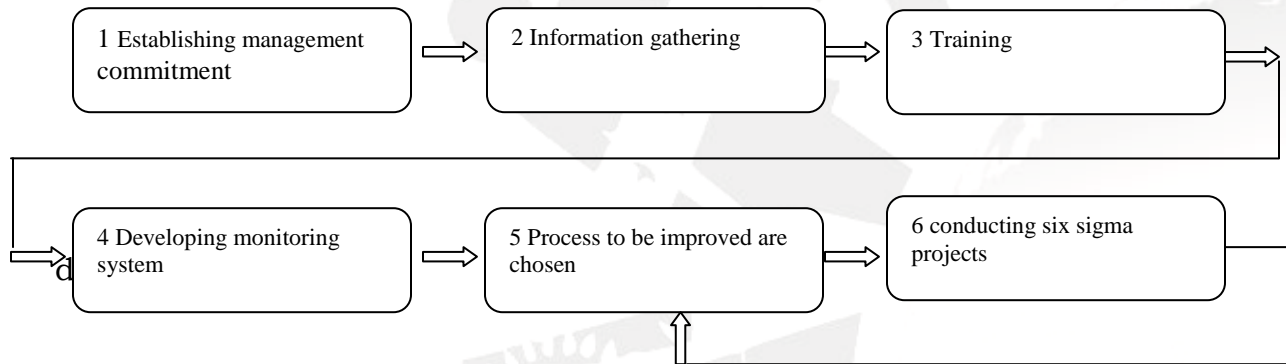


Figure 1 Six Sigma Implementation Model (Sharma, 2004)

The first phase is establishment of commitment within management and Library professionals towards implementation of 'six sigma'. This requires training to the every component of the library about the principles and tools of 'six sigma' and development of management infrastructure to support 'six sigma'. The requirements and expectation from the veterinary library is entirely different than the libraries of traditional universities. Hence a special training needs to be provided to the library staff members to perform better.

The second phase deals with information gathering. This could be realized through communication with scientists, farmers, livestock owners, farm equipment manufacturers, administrators, bureaucrats and technocrats etc. who are the users of veterinary library. For example: By using ICT based services like reference service, e-resources and digital mobile library the veterinary Library can gather and disseminate the required information immediately and this is how the last man of the rural society can be touched.





Training to the team brings the third phase of 'six sigma'. Training from the expert to the last man of the team is needed. Black belt and Green belt are levels of training. Black Belt training is meant for top management and Green Belt for team members engaged in the project. Opting help of six sigma experts is also an option. The veterinary is a very vast subject and each topic has many dimensions; however, the requirement of information for research of the veterinarians is very pin-pointed. But due to the training provided by the library and information centre on application of ICT in the veterinary library, the research-related data can be stored in all formats- print, CD, ROMs and e-publication, which can be time saving and easily accessed. Nevertheless, the digital format also saves the cost of binding, it is easy to use any time anywhere 24 X 7. It has portability, it saves physical space, it has unlimited concurrent use, downloading, saving reading, forwarding facility at click button. These facilities can assist the veterinary researchers in several ways.

Next or fourth phase of six sigma implementation is to develop monitoring system. First three phases build up a framework of the management and development of monitoring system completes fourth phase. Adequate measure should be created for strategic goals and key processes. Measures can be internal or external, e.g. **user's satisfaction survey.**

Veterinary researchers bring innovation and the extension worker has to transmit the scientific information to the farmers. This task can be made easy with the help of veterinary library. Besides this extension worker has to inform the researchers about the problem faced by the farmers, this process can be expedited by using ICT based library services. New technology is very fast and accurate and has brought varied changes in veterinary library. Technology just like, video-conferencing, broadband, wi-fi, mobile telephony all contributing to



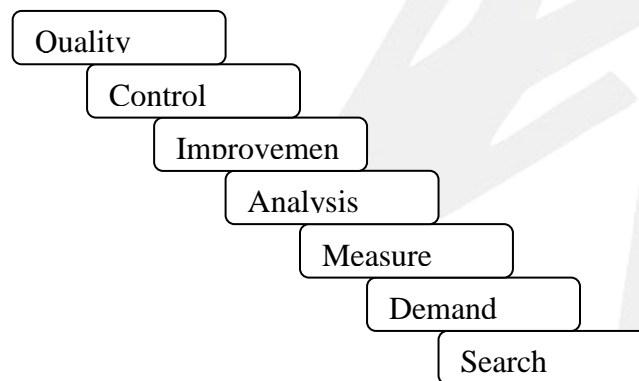


increasing of speed and availability of direct internet communication. The DML (Digital Mobile Library) may carry DVD's, computers, pictures, maps, leaflets as well as books and audio-visual material etc. can be used to overcome the barriers of communication, distance and time, and to monitor the system properly.

The application of six sigma starts from phase five where extension process to be improved is related. Current process is mapped and problems within this identified followed by setting up six sigma project. One six sigma project concept is DMAIC (Define, Measure, Analyze, Improve and Control) where the problems of the process that need improvements are first defined and then the goals that should be achieved during the project are determined (Sharma 2004) Establish valid and reliable measures and carry out a research. Analyze the finding and define the gap between "as-is" and "Should-be". And DMADV (Define, Measure, Analyze, Detailed Design, Verify) is applied for the design of new products, which aims to achieving 6 σ quality. Thus, DMADV is aimed at development of a new product or process, while DMAIC is for improvement of existing process or product. Thus, appropriate strategy is to be chosen by the six sigma team.

After analysis, the system starts to create new ways of doing things. Improve the process and validate them with statistical method. A proper documentation is also required.

Six Sigma Process Model to be implemented :





**Fig 02. Library based Extension Process
Six Sigma and Veterinary Library :**

As there is huge information pertaining to veterinary education, research and extension it becomes a challenge to veterinary professionals how to acquire, organize and retrieve various information available in the digital form. ICT based library services have created complex challenges before veterinary professionals. Hence several orientation programmes and trainings are required to be organized by the library and Information centre to make the veterinary professional aware of variety of services offered by Digital library / Electronic Library / Virtual Library and latest technology like web 1.0, web 2.0 and 3.0 and e- resources. Besides this, in order to manage the changing veterinary environment the veterinary professional will need to be trained in the application of necessary tools in their work environment. The modern storage media like, CD-ROM, microfilms, micro text, optical laser disc etc. play a pivotal role in ever-growing information world –daily routines and functions of veterinary education, research and extension have been impacted and influenced very much by the modern communication media like e-mail, e-journal, satellite communication, telecommunications, online network communication etc. so it is very essential to provide training to veterinary professional to handle and utilize the modern facilities of veterinary library. The professional librarian can extend his assistance to the Agri. Extension Worker by offering him various services by using technology like web based, internet based, CD-Rom based, Network based and consortium based information services and Text Retrieval and Document Management Software etc. These services will make it easy to prepare programme which will share real experience. These services will also enable the Extension Worker to recreate events, action, place and time.





Six sigma techniques can be applied in 21st Century extension programme because of its lucrative features. In computerization and digitization we need to change the old methods of dissemination of information. The application of ICT has completely transformed the outlook of traditional agri. education, research and extension in to modern one. The 21st century was shaped by sweeping changes in agricultural technology as well as communication technologies. The emergence and use of information technology is the century's most significant development affecting all the aspects and every stratum of the society. In computerization and modernization of agriculture 'six sigma' reduces defects and improves the extension work. The farmers need is considered in the modern extension programme. To provide the need based training the material and method should be defect less. Six sigma concepts are used to decrease defects in data analysis operation. Expenditure and time required in the dissemination of information can be reduced by applying six sigma concepts, which improve more and more services to the farmers.

There are many advantages of implementing six sigma concepts. The team as well as user would be happy due to availability of training and guidance on proper time to elevate the productivity. By proper utilization of human resources and defect removal techniques the library based the extension programme could be improved. The researchers and scientists can have good experience of total quality management in offering the farmers the cost effective technology. And valuable information with the help of Library and Information Centre.

CONCLUSION :

Veterinary Library & Information in process of applying six sigma must perceive the factor that satisfies users as an ideal quality and try to find key factors that affect quality from technology point of view. 'Six sigma' was introduced for manufacturing process. For more than two decades





its implementation is also seen in service industries and library is no an exception for that. Six sigma theories are used in order to review various aspects of library management, conduct evaluation and to find a modern ICT based library application.

The Library professional needs performance oriented qualities to run his day to day activities. To meet the requirement the library professionals must have various skills i.e. professional knowledge, extension skills, responsiveness in training, motivation, managing and organizing skills, foresight, awareness, team spirit communication skills, adaptability, tactfulness, flexibility, sense of time, resourcefulness, initiative, commitment, creativity, responsibility, loyalty and Integrity etc. The 'Six Sigma' can also help the to imbibe these qualities.

REFERENCE :

- 1) Antony, J (2004), Some pros and con of six sigma : an academic perspective. The TQM Magazine, 16(4), 303-306
- 2) Choudhari Subir, "The Power of Six Sigma", Delhi Pearson Education, 2004
- 3) Jagdish Vyas, "Six Sigma : A Statistical Measure Technique for Library", Conference Proceedings on Changing dimension of Library Management : Challenges and Opportunities
- 4) Kaushik, C. (2007). Six Sigma application for library services. DESIDOC Bulletin of Information Technology, 27(5), 35-39.
- 5) Kumar P.S.G. Management of Library and Information Centers, Delhi, B.R. Publication, 2003
- 6) Pande Pete and Holpp Larry, "What is Six Sigma?", New Delhi, Tata Mc Graw Hill Publishing Company Ltd. 2002
- 7) Pawan R. Agrawal, "Application of 'Six Sigma' in Libraries for Enhancing Service Quality", International Journal of Information Dissemination and Technology, October-December 2011 Vol.1 issue 4"
- 8) Ramasamy, S. (2009). Total quality management. New Delhi: Tata McGraw-Hill.
- 9) Sharma, D.D. (2004), Total quality management principles, practice and cases, New Delhi: Sultan Chand and Sons.

