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QUALITY ASSURANCE PROGRAM & IMPLEMENTATION OF ISO, A CASE STUDY

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ABSTRACT
Quality assurance has become the major concern for any kind of organization in this competitive business world. Every organization wants to ensure best quality for their product their product or service i.e. in a word we can say all want to ensure 'Quality Assurance' by imposing different methods or processes. This paper discusses the importance and implementation process of **ISO** for product quality assurance in Bangladeshi industries. To cope up with the increasing competition of business around the world and to provide the people a better experience with good quality product and service the local industries needs to implement international standards to confirm the quality assurance up to the satisfaction of customers ultimately. The RANGS workshop limited (RWL), a leading automobile repair shop as well as automobile supplier in Bangladesh, gained ISO 9001:2008 certificates in year 2011.All related documents of RWL have been checked during implementation phase of ISO. This paper discusses all steps of implementation of ISO and also the most important steps in ISO implementation, the audit section of that organization.

Keywords: ISO, Quality Assurance Program

1. Introduction: [1], [2]

Before purchasing any product or receiving any service every customer wants to get the best with a reasonable price. Here the question comes, Quality Assurance. It has become the trump card for any organization in this competitive business world. To ensure quality some methods and procedures are followed depending on the organization types. Some standards and also technology work as a helping tool. ISO [3] and ERP [4] are the most common and effective tool to ensure quality and also for its continual improvement. Industries are growing rapidly in our country and the issue for ensuring quality has become more important to the industries / organizations. Implementation of ISO and ERP requires hard work, time and money but it has some unique benefits [5]. ISO provides senior management with an efficient management process and also sets out areas of responsibility across the organization, identifies and encourages more efficient and time saving processes, reduces product costs, provides continuous assessment and improvement. Some Improved quality and service and last of all independent audits demonstrate commitment to quality. Installing an ERP system has many advantages-both direct and indirect. The direct advantages include: Improved efficiency, Information integration for better decision-making, faster response time to customer queries etc. Modern ERP systems are built for the internet-enabled world with e-commerce capabilities and provision for integration and collaboration with supply chain partners, customer portals, and enhanced tracking of incoming material and outgoing product to extend the visibility and control. We believe that implementation of ISO and ERP for quality assurance can change the overall scenario in our local business. It will also help to break down the barrier of global business. In our study we could finish the ISO part in detail but we too studied the implementation of ERP briefly. In this paper we only focused our concentration in ISO implementation.

2. Objective of research and case study:

- To know the process of implementation of ISO in any industry in Bangladesh
- Study of the importance of quality assurance in industries
- Preparing ourselves to implement ISO in local industries
- Study of the implementation process of ISO in RWL as a case study

3. Background of the study:

Any Production entity / service organization / any type of Production plant can be represented like the following in a broad sense [6]. Usually input like human, material, technology, and societal variables etc. and also the conversion process play an important role in final product, profit, customer satisfaction, etc. The very survival of any production / service entity depends on customer satisfaction along with the efficiency in managing the affairs of the organization. And Customer satisfaction is ultimately related to the quality assurance program of the organization / industry.

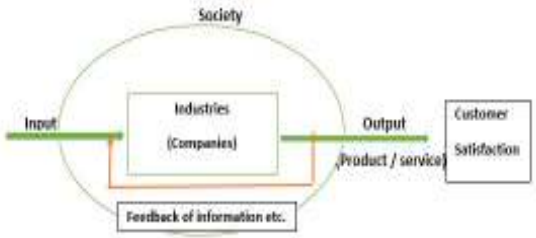

Fig. 3.1: Black Box Representation of Organization

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In a word we can say that, to satisfy the customer with the best quality product or service has become the most important problem / objective for any organization to remain on the racing track with the increasing competition both locally and internationally i.e., throughout the whole world. We are living in the age of globalization, developed technologies and information, etc. In this age all customers are very much aware about what they want, while buying products or receiving service from any organization. So it has become a duty for the companies to ensure the quality and to improve them continually. Because quality has no finish lines just like 100 meter sprint. The companies are continuously trying to provide better quality or service and the customers too will come to get them. To ensure the quality, International Organization for Standardization (ISO) has developed standards called ISO 9000 that is for Quality Management of service & product quality in addition to various other local / regional agencies / organizations. In the following a brief discussion on ISO has been made.

4. ISO:

The word ISO [7], [8] came from a Greek word "Isos" which means "Equal". That means "Equal to Standard" [6]. Some popular ISO standards are mentioned below, but there are many others:

Table 4.1: ISO Standards

ISO 9000	Quality management
ISO 14000	Environmental management
ISO 26000	Social responsibility
ISO 50001	Energy management
ISO 31000	Risk management
ISO 22000	Food safety management

ISO 9000: The standard is a guide-line for world class business practice [9]. The unique part of the standard is that it allows each company to evaluate each element of the standard and decide how to meet the requirements of that element effectively. In very simplified terms, the standard tells an organization to check what it is doing to ensure quality and then does what it requires. Finally documentation or proof that it has been done as what it said. It can be applied to construction, engineering, manufacturing, health care etc. There are many standards in the ISO 9000 family [10], including:

ISO 9001:2008 - sets out the requirements of a quality management system

ISO 9000:2005 - covers the basic concepts and language

ISO 9004:2009 - focuses on how to make a quality management system more efficient and effective

ISO **9001:2008** sets out the criteria for a quality management system and is the only standard in the family that can be certified. It can be used by any organization, large or small, regardless of its field of activity. In fact ISO 9001:2008 is implemented by over one million companies and organizations in over 170 countries. [10]

4.1 Benefits of ISO 9001:

- Provides senior management with an efficient management process,
- Sets out areas of responsibility across the organization,
- Identifies and encourages more efficient and time saving processes,
- Highlights deficiencies,
- Reduces organizational costs,
- Provides continuous assessment and improvement, etc.

4.2 Application in Production Flow:

ISO 9000 series of standards has variety of application in a production process. The related flow chart is given below:

Fig. 4.1: Application of ISO 9000 series in production process

A basic of ISO 9000 is Quality Management. A principle is a fundamental truth or law and therefore quality management principles are the fundamental truths or laws that form the basis of quality management [11]. These principles have been identified to facilitate the achievement of quality objectives and form the foundation for effective quality management. Names of some of such principles are: customer focused organization; leadership; involvement of people; process approach; system approach to management; continual improvement; actual approach to decision making; mutually beneficial supplier relationships, etc.

4.3 Requirements ISO 9001:2008:

We studied various articles and books about quality management and ISO at the very beginning of our study. After reviewing the related literatures and also consulting the related official in RWL we found some core information about it. To implement ISO 9001:2008 in any type of organization we need to understand the requirements of it at first. Basically for implementing ISO 9001:2008 there are almost twenty requirements that an organization has to fulfill to get certification. But it is not fixed. It varies from organization to organization, from business to business. Those basic 20 clauses/requirements are: [each main clause has a few

sub clauses which are not mentioned here due to space limitation.]

1. Management responsibility
2. Quality System
3. Contract Review
4. Design Control
5. Document Control
6. Purchasing
7. Customer-supplied material
8. Product Identification & Traceability
9. Process Control
10. Inspection and Testing
11. Inspection, Measuring and Test Equipment
12. Inspection and Test Status
13. Control of Nonconforming Product
14. Corrective Action
15. Handling , Storage, Packaging and Delivery
16. Quality Records
17. Internal Quality Audits
18. Training
19. Servicing
20. Statistical Techniques

Along with those twenty requirements there are eight requirements that are usually considered as common for every organization. These especial eight requirements are:
1. Scope
2. Normative reference
3. Definitions
4. Quality, management systems
5. Management responsibility
6. Resource management
7. Product and / or service realization and
8. Measurement, analysis, and improvement

The details about these clauses may be found in literatures [12]

4.4 Implementation Process of ISO 9001:2008 at RWL:
ISO implementation consists of some organized procedure [13]. The certification procedure can be described briefly as similar procedures which are needed to be followed for getting any other ISO related certificates.

General ISO Certification Process:
i) Auditing by the 1st party:
It is the first step of the audit. Auditing means checking or conformance with defined standards. In it generally all the ISO implementation requirements are formally checked and audited. It was done by RWL itself.
ii) Auditing by the 2nd party:
Usually it is done by any local ISO related audit agency to see that the application submitting organization / company fulfills the requirements to get ISO certificate as per set standard. But most of the organizations along with RWL avoid this step because of cost and time.
iii) Auditing by the 3rd party:
It is done by the ISO affiliated body. ISO does not certify any organization by itself. Their affiliated body usually certifies the organization which applies for getting certificate. RWL got its certification from TÜV SÜD. There are many affiliated bodies like SGS, UKAS etc. While choosing the 3rd party proper research and study are needed because it involves huge amount of cost and time, i.e., we can say extreme care should be taken when choosing the certification body as certification from the wrong one might not be worth.

For the whole work the following procedures have been followed by RWL to get the desired ISO certificate. Thus this can be considered as work done before getting ISO certification. Generally all organizations interested to get quality certification like ISO certification should follow the procedures mentioned in this Section.

a. Formation of ISO team:
ISO team was formed generally by including the Head from each of the departments of the company. The formation can be shown in a block diagram:

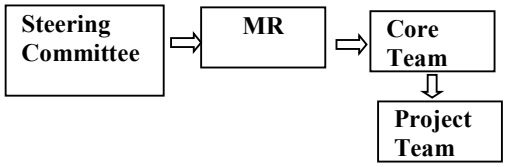

Fig 4.2: Formation of ISO Team

Basically steering team refers about cost and other involvements to the project sponsors, as ISO implementation involves cost and time. Mainly the CEO along with his high officials acts as the steering committee. Then the committee selects MR. after that core team is formed by selecting the head of every department such as supply chain, production, quality control, marketing etc. Core team members selects 2 to 3 person from his department. Those 2/3 persons from every departments actually works as the Project team and MR guides this team from the very beginning. One important task of this project team is to share information and updates with the rest of the employees in the organization so that everybody knows what's going on at that time.

b. Selection of Management Representative (MR) at RWL:
After forming ISO team then the top management of the RWL selected their Management Representative (MR) as **Engr. Md. Rajibul Amin** and made him totally responsible for the project of implementation of ISO 9001:2008. Basically MR will work as the project leader.

c. Assigning / hiring a consultant:
A consultant is a person who gives necessary guidance. Implementing ISO standard is very hard and complex work. So it is difficult for any organization to implement ISO standards without any previous experiences. So the company generally hires a consultant. Top management of the RWL then selected its consultant from CATS Academy India Pvt. Ltd. This has not been made compulsory yet. Polar Ice-Cream BD did not assign any consultant for their ISO 22000 certification for food safety. This is totally dependent on the organization.

d. Task given by the Consultant:
Consultant usually helps MR in implementation of ISO 9001:2008. In RWL too it was done like that and consultant helped MR by giving him necessary guidance. Actually the consultant gave / suggested necessary tasks / guidance to MR which was essential for the audit by the 3rd party. MR needs to finish the job along with his team members within the given period of time.

e. Feedback to the consultant:
MR finishes those tasks with the help of his team and gave feedback to the consultant. It is a dynamic process. And the whole team needs to be aware of that. In RWL too it was followed and done in time.

f. Reviewing the progress:
The consultant reviews the progress. Basically if every criterion is fulfilled then MR will go for the next step and if not he may take time for correction. After that the organization applies for certification to the ISO affiliated body. For RWL too it was followed accordingly.

g. Visit of Affiliated body:
Affiliated body then visits the company if requested and performs the audit. It is the last stage of certification. If everything is all right then the company gives certificate within 3 months. The same was done for RWL.

Predetermined charges are needed for the whole processes of the audit and certification.

RWL spent almost 2 years for the whole procedure as stated above and finally got ISO 9001:2008 certificate at **12th July, 2011**.

While doing the study / research work it became clear that ISO 9001:2008 standard can also be applied in the educational institutions too. For assuring the quality of education ISO 9001:2008 can be a very effective tool along with other national / international standards. In our country implementing ISO standards in educational sector it is very much uncommon but literatures say it has been implemented in other parts of the world in educational Institutions. It is a matter of hope that now the people are becoming very much aware about quality in every aspects and this awareness will make a better scope to seeing the implementation of ISO 9000 standards in other sectors including educational sector in near future.

5. Global adoption
The growth in ISO 9001 certification is shown in the Figure 5.1 as given below:
Source: ISO Survey 2011

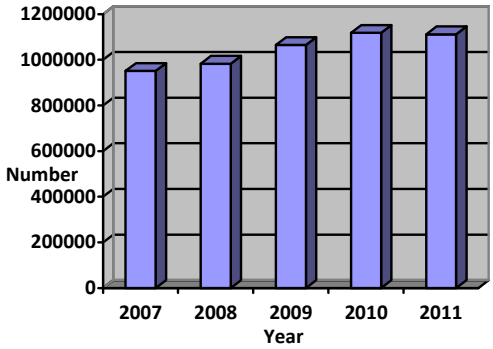

Fig 5.1: Growth in ISO 9001 certification

It is very much clear from the above chart that global adaptation of ISO 9001 standard is increasing day by day. In recent years there has been a rapid growth in China, which now accounts for approximately a quarter of the global certifications [14]. In our country this rate is also increasing but not in a dramatic way. To become a promising global competitor we need to focus on this area. But the matter of great hope is that while doing this study we came to know that not only the production companies of our country but also many service organizations at present are showing their interest to implement ISO 9001 standard as competition in our country and also outside the country is growing at a relatively faster rate day by day.

6. Discussion:
Quality assurance has become the major concern for any kind of organization in this competitive business world. Every organization wants to ensure their product or service quality i.e. in a word it can be said that every organization wants to ensure 'Quality Assurance' by imposing different methods or processes. ISO documents say that in an ISO 9001:2008 certified company the top management gets fully involved in a committed way to the customer satisfaction and quality improvement. Thus the standard revolves around "customer satisfaction". The result is: in most of the Bangladeshi industries it has now become a buzz word. Organization which is really serious about this aspect will go beyond the ISO standards and ensure total customer satisfaction and expectations of customers thus a certified organization will grow eventually. There will be more and more demand from customer's side. And the top management needs to take it as a challenge. The spirit of the standard will set directions for quality

improvement; to bring in team work; to change frames of minds; to bring in ownership and responsibility for the actions; to improve clarity and improve discipline, etc. The system will become a handy tool for effective control of operations; create confidence in the minds of the customers; and ensure continuous and consistent improvements in all fronts. ISO 9000 QMS is under criticism for long also. It requires huge paper work for documentation and record keeping. The cost associated with implementation and operations are also considered as an additional burden, which creates a question regarding ability of its adoption in small organizations. But the fact is that this ultimately pays off. Positive attitude towards quality improvement is the only solution to remove any hindrances. Nevertheless, ISO 9000 QMS is certainly not a cure for all, what many people or organizations think. It can serve as a complementary system to TQM.

7. Conclusions:

Now-a-days the market of any product has become globalized. For that reason, company has to compete with the companies not only of those which are inside the country but also of others around the world. To sustain in the market, acquiring customer satisfaction towards the product or service becomes an important criterion to be considered. Thus, ISO 9001:2008 certification is considered as an important tool of quality assurance. If the product is ISO certified, then customer can distinguish that from others and becomes interested to use. Although now a days, it is sometimes said that, this certificate can also be achieved by unfair means in many places including those in the 3rd world countries. There is a rumor prevailing in the market that, some of the affiliated bodies of ISO sometimes supply the ISO certificate in exchange of money without monitoring the standard of the organization. But it can be assumed that such rumor should not be taken into consideration at all. For getting the ISO certificate time, money and the strong willingness of top management is needed with all its merits and demerits, the ISO 9000 approach provides a systematic, documented and an all pervasive linkage through the value chain. It formally and publically commits the management for taking responsibility for this qualitative revitalization thorough a well-defined and interactive process. Quality today has become a business strategy and thus the ISO 9000 certification system acts as launching pad for Total Quality Management.

This study and research work is theory based. So no calculation has been referred. Implementation of ISO is a very hard work to do. But if the management and the employees believe that they can do then it is possible. Rangs Workshop Limited (RWL) took it as a challenge and they have done very hard work to fulfill the challenge. The authors observed, studied and verified all sequential processes towards achieving the ISO 9001:2008 by the RWL and also the review of all related documents was made. Due to limitation of space samples of the documents of RWL have not been shown.

RWL later implemented ERP in 2013, which is software based. We got a limited chance to use ERP software in a limited environment. But that was the most exciting experience to us. They are currently using IFS [15] version 8 and hoping to update it with the latest version of 8.5. RWL is the 1st company in Bangladesh who have got ISO certificate in automobile sector. The company is also running ERP successfully. These two things made RWL a unique organization and the management is getting tremendous benefits out of the implementation of both ISO and ERP.

8. Acknowledgement:

It was a good opportunity for the authors to get a chance to work at RWL because information obtained and procedures learnt, would not have been possible to know for the outsiders to the organization. Our heartfelt thanks go to the RWL management as a whole and our special thanks go to Engineer Mr. Rajibul Amin, MR for RWL for the implementation of ISO. We also are thankful to AUST authority for giving us permission to work at RWL.

9. Abbreviations:

ISO - International Organization for Standardization
ERP- Enterprise Resource Planning
TQM-Total Quality Management
QMS – Quality Management System
RWL –Rangs Workshop Limited
MR - Management Representative
TÜV SÜD - is an international service corporation focusing on consulting, testing, certification and training.
SGS - Société Générale de Surveillance, is a multinational company headquartered in Geneva, Switzerland which provides inspection, verification, testing and certification services.
CATS - CATS Academy India Pvt. Ltd has evolved as a business solutions provider, garnering the trust and goodwill of clients and associates alike.
IFS – IFS is a globally recognized leader in developing and delivering business software for enterprise resource planning (ERP)
CEO – Chief Executive Officer of any organization, who is mainly responsible for every decisions of that organization, sometimes may also be known as MD, GM, Chairman / Head of the Organization, etc.

10. References:

[1] Operations Management by Chase and Acqualino, Pearson publication.

[2] B.Sc. Eng. Thesis on Study and familiarization of implementation process of ISO and ERP for product quality assurance and efficient production in Bangladeshi industries.
(Case study: Rangs Workshop limited, Tejgaon)
By: Abrar Fahim Samad, Amit Banik, Dipanjan Ghosh, Md Jakaria Rahman
3, page 40-158

[3] Quality Assurance and TQM by K.C. Jain, chapter-3, page 40-158

[4] Enterprise Resource Planning by Alexis Leon 2nd edition

[5] http://www.iso.org/iso/home/standards/benefits of standards.htm

[6] Operations management: strategy and analysis by Lee J. Krajewski, Larry P. Ritzman

[7] http://www.iso.org/iso/home.html

[8] http://www.thefreedictionary.com/Isos

[9] Quality Control and Management by Ahsan Akhtar Hasin, chapter 24, page 321-325

[10]http://www.iso.org/iso/home/standards/management-standards/iso_9000.htm

[11]http://www.transitionsupport.com/8_QM_Principles.htm

[12] http://en.wikipedia.org/wiki/ISO_9000

[13] Reviewed document of Polar Ice-Cream BD and RWL for audit plan, production and quality assurance

[14] Total Quality Management by Dale H. Besterfield, 3rd edition, chapter 10, and page 254-256 and 3rd edition, chapter 3, and page 258-269

[15] http://www.ifsworld.com/en/about-ifs/