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STUDY OF RISKS ASSESSMENT FOR IMPLEMENTATION OF QMS IN MYANMAR CONSTRUCTION INDUSTRY

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A B S T R A C T

QMS is a part of management system with regard to quality. It focuses to improve the organizational performance and enhance the practices for sustainable success and continual improvement. Risk means the effect of uncertainty and risk assessment is the fundamental requirement for quality management system. The purpose of this research is to identify risks in Myanmar construction companies that have not received ISO 9001 certification yet. The qualitative method has been selected to collect data for risk analysis and quantitative approach for degree of risk level. The research findings concluded that implementation of QMS in these companies overcome the potential risks by improving the competency of people in organization, creating better communication throughout the organization, saving construction period, cost and create better quality, minimizing waste and occupational injuries which lead to their customers' satisfaction.

1. INTRODUCTION

According to 2018 Myanmar Statistical Yearbook (CSO:Ministry of Planning and Finance, 2018), it is observed that GDP by construction industry increased steadily during the past five consecutive years (2013-2017) and it plays as one of the major driven forces for Myanmar economy. Property development such as residential buildings, high-ends condominiums, commercial complexes, industrial buildings and construction projects for infrastructures has been increased rapidly in recent years. This reflects the interest of private and public sector investment in Myanmar construction industry. With this investment, the expectation for construction quality has also increased. By FIDIC, regarding with Quality in construction has obviously indicated that the failure in construction quality becomes a major issue throughout the world (Rumane, 2011). Quality management system has become an integral part of construction. Although acknowledging the quality issues in construction and increasing demand for quality products, very few Myanmar construction companies are committed with ISO 9001 standards to meet the requirements. This paper emphasizes the risk identification and analysis based on common risks occurred in local construction companies that are not familiar with QMS practices.

2. LITERATURE REVIEW

Quality management system, family of ISO 9000 standards, is designed to assist the organizations meeting the needs and expectations of their customers and relevant interested parties, compliance with the regulatory and statutory requirements related to their products and services. This standard has been published

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five times from 1987 to 2015 with some modifications based on the new requirements.

ISO survey 2018 results indicate that the valid certificate of QMS (ISO 9001:2015) is the most applicable standard and approximately one million organizations all over the world are practicing this standard. About thirty thousand organizations in China are committed to be conformance and compliance with this standard and the figure represents the highest number of certifications throughout the world. Among the ASEAN countries, Malaysia has the highest number, 9558, and Laos has the lowest, 40. In Myanmar, 180 numbers of organizations are recorded in compliance with this standard (ISO, 2018). Based on the type of business sector, this survey results reveal that basic metal and fabricated metal products industry leads in application of this international standard and publishing industry stands at the last. In construction industry, 75080 companies all over the world are devoted with the implementation of this standard.

Quality issue in construction industry has become the major concern and high attention among the public sector (Keng & Kamil, 2016) due to the frequent occurrence of insufficient qualified materials used in construction sites, building defects and failures for improper construction methods, greater impact on environmental issue and high accidental rates during construction work. These situations capture the interest of public and make lesser confidence in construction capability. To overcome these unfavourable conditions, implementation of QMS becomes the vital requirements for construction industry.

This paper focuses on the assessments of the effects of uncertainty mostly occurred in workplaces of Myanmar construction companies which have not been applied QMS yet. Based on the survey results, it is urged to implement QMS not only to meet the requirements by means of preventive actions but also for continual improvement.

2.1. Quality Management System (QMS)

Quality management system provides guidance on how to develop the activities by which the organizations focus on quality of products and services that deliver value to their customers. It is based on Seven Principles and adopts a process approach that incorporates PDCA cycle to be effective management system. In construction industry, QMS could be applied both in company and project sites to meet and maintain the required standards of construction parameters that the customers expected. To meet customers' expectations and satisfaction, QMS represents as a preventive tool that specifies requirements for organizations by means of risk-based thinking (ISO, 2015).

2.2 Risk-based thinking

The concept of risk-based thinking is to carry out preventive action to eliminate potential nonconformities, analyze them and take action to prevent recurrence due to their effects. It is the addressing of both risks and opportunities to improve results and prevent negative impacts.The level of risks in accordance with organization's ability may not be the same and differ from each other based on type and nature of business organizations. Addressing risks can be done by means of risk assessment.

2.3 Risk assessment

Risk assessment is a formal process, which is applicable for identifying, analyzing and controlling risks. The main purpose is to prevent losses that are caused by experience to risk (Cooke & Williams, 2004).Risk assessment is a part of risk management process and comprises four stages as Risk Identification, Risk Analysis, Risk Criteria and Risk Evaluation. Risk identification means finding out risk sources, their causes and potential consequences by means of historical data and experience. Risk analysis is trying to understand the nature of risk and degree of risk level by means of qualitative and quantitative approach. In this analysis, the three attributes of risk such as Likelihood, Severity and Detection are used for finding risk ranking number, RRN. Other methods such as FMEA (Failure Mode Effect Analysis), FTA (Fault Tree Analysis), HACCP (Hazard Analysis and Critical Control Points), HAZOP (Hazard Operability Analysis) and LPA (Loss Prevention Analysis) are used to analyze risk priority number, RPI. Risk criteria mean the risks acceptance level at which the risk can be considered to be tolerable (Bai & Bai, 2019). It requires numerical data for risk criteria for quantitative analysis. Risk evaluation is the classification of risk priorities against with the numerical value of risk criteria. By ranking priorities to be mitigated is the essence of risk assessment and provision for performance evaluation and improvement.

3. OBJECTIVES

The objectives of this paper are

- To explore the potential risks commonly occurred in Myanmar construction sites.
- To introduce ISO 9001-2015 standard clauses as the remedies for preventing these risks.
- To recommend implementation of QMS in Myanmar construction industry for continual improvement.

4. RESEARCH METHODOLOGY

To collect data for qualitative survey, 10 local construction companies that have not accustomed with QMS were selected. At the time of study, these companies were performing various types of construction throughout the country. Interviewing three

representatives (Project Engineers, Architects, Owners, Contractors& etc.) from each site of these companies had participated. The potential risks commonly occurred in their sites were listed and used to identify their impacts on three parameters of construction: Quality, Time and Cost. In this risk assessment process, it comprises six steps as (1) Identify risks with the risk sources, (2) Define three risk attributes as Likelihood, Severity and Detection, (3) Establish Likelihood-Severity matrix model due to their impacts on parameters, (4) Calculate risk ranking number, RRN for each risk, (5) Apply the assumed numerical value for risk criteria, (6) Determine the risk priority level based on risk criteria to take action.

Figure 1. Risk Assessment Steps

Step (1): To accomplish risk assessment, first accumulate the most common risks occurred in Myanmar construction sites. A questionnaire form relating with risks and risk sources had been developed and distributed to each respondent and made a list of 10 potential risks with the risk sources based on occurrence as in Table 1.

Step (2): To alter the qualitative results to quantitative number, it requires to define three risk attributes: likelihood, severity and detection.

Likelihood or probability means the most frequent occurrence situation for any kind of risk in construction that varies from 1 to 3 where 1 represents rarely occurred, 2 sometimes and 3 mostly happened in work places. For example, for R1 risk, incomplete design provision occurs rarely in construction sites as all of the survey sites were observed with fully design provision and so it represents occurrence value 1. R2 risk, inaccurate schedule for completion, occasionally occurs in some construction sites for being observed that ambiguous targeted date of completion and it represents occurrence value 2. For R8 risk, poor documented information occurs mostly throughout the study as the evidence of incomplete quality inspection records, imperfect competency records of manpower, detail schedule for working procedures, lack of quality policy, plan and manual, accurate assignment of roles and responsibilities, no records for customer survey and feedback analysis reports in all sites and so it denotes occurrence value 3.

Table 1. 10 Potential risks with their sources

Risks No:	Potential Risks in Construction Sites	Risk Sources
R1	In completed design provision	Operation, Planning, Top management commitment
R2	Inaccurate schedule for completion	Top management, Organizational context, Operation
R3	Poor competency of workmanship	Resources, Operation, Leadership
R4	Less awareness on safety precautions	Planning, Communication
R5	Improper methods of construction	Monitoring, Operation, Organizational knowledge
R6	Errors for project cost estimation	Operation
R7	Lack of QA/QC	Operation, Organizational commitment
R8	Poor Documented Information	Leadership, Support
R9	Noncompliance with regulatory & statutory requirements	Leadership
R10	Unexpected conditions during construction (Disaster, Legal policy changes, Market demands)	Planning

Severity means the impact of risks on three parameters of construction: Quality, Time and Cost. If the risk is negligible and no treatment is required, it is called low impact risk especially only on the cost of construction which has no adverse condition for quality and denoted with 1. If the cost and benefits are taken into account and opportunities are balanced with potential adverse consequences, such kinds of risks are defined as medium 2. If the risks are intolerable although the opportunities come together with them and it is essential for risk reduction whatever the cost, they are considered as high severe risks with numerical value 3. If R1 risk, for instance, happens in construction sites, due to the lack of complete design provision, it will impact not only quality but also delay working process and cost more expenses and such kinds of risks are intolerable and assume the severe value 3. For R2 risk, inaccurate schedule for completion takes longer construction period and consequently uses more expenses than the estimated cost. Such kinds of risks are occurred due to delay of design provision, insufficient resources as competent manpower, technology, financial support and lack of clear vision of top management level. If R2 risk happens, it will impact on two parameters as construction time and cost but not on quality. In this case, the opportunities are balanced with potential adverse consequences and it is classified as medium with impact value 2. For R6, errors for project cost estimation effects on the profit margin of construction work and it will be acceptable if it has no adverse conditions for project quality assurance. Such kind of risk is assumed as low impact risk with severe value 1.

Detection is the frequency of monitoring and inspection throughout the construction processes. If the inspection is done continuously without interruption, it is the high detectability and scored with 1. If the monitoring processes occur regular requirements such as QC inspection before concreting work, it is medium detection level 2 and if there are very few inspection activities based on customers' complaints or construction failures, it is very low detection that represents 3. For R1, R2 & R7, inspection activities occur continuously throughout the process without interruption and it assumes high detection value 1. For R4, awareness on safety precautions and R5, methods of construction, the monitoring processes occur regularly throughout the study and which assumes medium detection level with value 2. It is poorly detected the competency of workmanship, R3, in all construction sites as most of the front line workers and supervision engineers were not examined their competency thoroughly and so which will impact the parameters of construction. Such kinds of risks, R3, R6 & R8 are detected poorly and inspected only when customers' complains or construction failures happened and it represents the low detection value 3.

Step (3): To establish Likelihood-Severity matrix model, first distinguish the occurrence of risks and their impacts to construction parameters based on the respondents' answers. By multiplication of occurrence and impact value, risk level can be classified as low, medium and high. Table 2 describes the numerical data of each type of risk with their attributes and Figure 2 describes Likelihood-Severity matrix model. If risk value is less than or equal 2, it denotes as low risk level. If risk value is 3 or 4, it is medium and if the value is greater than 4, it is classified as high-risk level.

Table 2. Risks level based on occurrence and impact

Risks No:	Occurrence	Likelihood Number	Impact	Severity Number	Risk Value	Risk Level
R1	Rarely occurred	1	QTC	3	3	MEDIUM
R2	Sometimes occurred	2	TC	2	4	MEDIUM
R3	Sometimes occurred	2	QTC	3	6	HIGH
R4	Rarely occurred	1	TC	2	2	LOW
R5	Rarely occurred	1	QTC	3	3	MEDIUM
R6	Sometimes occurred	2	C	1	2	LOW
R7	Sometimes occurred	2	QTC	3	6	HIGH
R8	Mostly occurred	3	QTC	3	9	HIGH
R9	Rarely occurred	1	QTC	3	3	MEDIUM
R10	Rarely occurred	1	TC	2	2	LOW

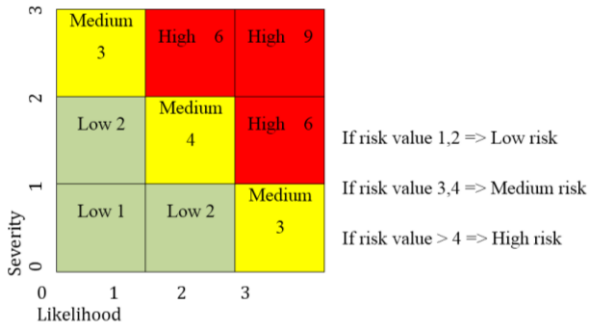

Figure 2. Likelihood-Severity matrix model

Step (4): To calculate RRN value, it needs to determine the numerical value for detection. For each type of risk even in the same construction site, the conduct of detection may be varied. In this research, the frequency of detection for R3, R5 and R7 were observed contrarily though they have similar risk sources. In all sites, relating with R1, R2 &R7, detection rate occurred the most (1) and relating with R3, R6& R8 were the least (3). RRN value is the multiplication of likelihood (probability), severity and detection. RRN values indicate the priorities of risks to be mitigated whenever the top managements of construction companies plan actions to address these risks and opportunities and evaluate the effectiveness of their actions.

$$RRN = S \times P \times D \qquad (1)$$

Table 3. Risk ranking number, RRN

Risks No:	Likelihood Number	Severity Number	Detection Number	RRN
R1	1	3	1	3
R2	2	2	1	4
R3	2	3	3	18
R4	1	2	2	4
R5	1	3	2	6
R6	2	1	3	6
R7	2	3	1	6
R8	3	3	3	27
R9	1	3	2	6
R10	1	2	2	4

Step (5): Selecting risks criteria value is an extraordinary work and varies from nature, type and structure of organizations. The acceptable or tolerable risk value for each form of construction sites may also change depending on physical environment, works attitude, organizational value and goal. For R1 risk, for instance, completed design provision is essential for any kind of construction and there is no excuse for working without completed design and instructions. This kind of risk is observed seldom in all construction sites, as it is the vital requirements for legal permission and any insufficient

provision mislead to severe impacts to all perspectives. In this case, there is no acceptable criteria value and it is expected 0tolerances, which shows this kind of risk, must be avoided. Whenever we consider risk criteria, it should reflect how much impact on three parameters of construction. If there is high impact, especially effect on quality dimension, it must be avoidable like R1, R3, R5, R7, and R8& R9. For R6, it is the lowest impact value and acceptable to some extents until it defects to quality.

Step (6): Based on the above findings, this is the last stage of risk assessment, which is also known as risk evaluation. In this step, with RRN value in table 3, the assessor has to determine which risk has to be taken into account for correction or corrective actions first. Using RRN value distinguish the priorities of risks to be avoidable or made correction.RRN value of R8, 27, is the highest value among the potential risks. It occurs in all construction sites and if it happens, it has high impact on parameters of construction. Detective activities relating with R8 were hardly performed in this survey.Because of the highest RRN value of R8,it must be avoidable and amendment first, and R3, R5... in consequence to make correction.

5. FINDINGS AND DISCUSSION

5.1 Findings by risk assessment model

This research survey had been made at the construction sites of local companies that are not accustomed with ISO 9001 standards. Through risks assessment model, top management aware the relation of risk sources and potential risks, their impacts on parameters of construction, which type of risks must be avoided, in what way they can be arranged according to their priorities for correction and how to mitigate them not to be recurred in their work places. To do corrections and corrective actions for overcoming these risks, the principles and requirements in QMS are better to be implemented. All of these are transpired due to the lack of the quality management system in these organizations and it is obviously observed that they can be overcome by implementation of ISO 9001 practices. Around 70 percent of interviewees in this survey believe that ISO 9001 certifications are required for their marketing strategy rather than quality issue.Lack of QMS requirements led them absence of quality policy, plan and strategy or maintain documented information that created barriers and obstacles for continual improvement.

5.2. Implementation of ISO 9001 clauses as remedies for risks

The principles, guidelines and clauses prescribed in ISO 9001 standard are practical, logical and enhance effectiveness to organizational performance and their customers' satisfaction. Table 4 shows the clauses numbers of ISO 9001 standard to be applicable as a preventive action in construction industry.

Table 4. ISO 9001-2015 Standard clauses for prevention of listed risks in this table

Risks No:	Potential Risks in Construction Sites	ISO 9001-2015 Standard Clauses
R1	In completed design provision	4.4.1d, 5.1.1e, 5.1.2a, 8.3
R2	Inaccurate schedule for completion	5.2.1, 6.2.2d
R3	Poor competency of workmanship	7.1.2, 7.2
R4	Less awareness on safety precautions	5.2.2b, 7.3,
R5	Improper method of constructions	7.1.5.1, 7.1.6, 8.3.2, 8.3.3
R6	Errors for project cost estimation	8.2
R7	Lack of QA/QC	5.1, 5.3, 8.3.4
R8	Poor Documented Information	5.2, 7.5
R9	Noncompliance with regulatory & statutory requirements	4.1, 5.1.2a, 5.2.1c
R10	Unexpected conditions during construction (Disaster, Legal policy changes, Market demands)	6.3

Clause 8.3 signifies the requirements for design and development of products and services. In sub clause 8.3.1, "The organization shall establish, implement and maintain a design and development process that is appropriate to ensure the subsequent provision of products and services". Clause 4.4.1d, also, focuses on to determine the required resources for the processes and certify for readiness. Clause 5.1.1e suggests as the leadership and commitment of top management by providing the required resources for QMS. By employing these requirements in organizations can control and eliminate the risks R1, R5, and R7.

Clause 5.2.1 denotes the requirements to establish the quality policy and clause 6.2.2d highlights the organization to determine the completion time to achieve its quality objectives. These clauses refer to determine, establish and implement the resources needed in accordance with expected results. Practicing these requirements can determine the length of construction period throughout the processes and establish the date of completion.

Clause 7.1.2 suggests, "The organization shall determine and provide the persons necessary for the effective implementation of its quality management system and for the operation and control of its processes. Clause 7.2, also, emphasizes on the competency of persons in their respective workmanship to be effective management system. These clauses highlight the importance of competency and R3 risk can be overcome by means of these clauses.

Clause 5.2.2b indicates that the quality policy shall be communicated, understood and applied within the organization. In clause 7.3, the requirements of awareness for quality policy, objectives, the benefits and the implications of not conforming to QMS are explained in detail. Communication within the organization to

aware the quality policy takes control on practices for safety precautions and such kind of risk can be reduced in work places.

Clause 8.2 focuses on the requirements for products and services and explains in detail with sub clauses. Clause 8.2.1 indicates how to communicate with the customers to collect data for requirements, clause 8.2.2, how to determine the requirements, 8.2.3, to review the requirements and 8.2.4 suggests how to handle the changes to requirements. In preparing cost estimation for proposed sites, the quantity surveyors need to practice the requirements in these clauses and R6 risk could be eliminated.

Clause 5.2 implies how to establish, implement and maintain quality policy as documented information and communicate within the organization. Clause 7.5 specializes how to create, update and control documented information required by QMS. By preparing, maintaining and retaining documented information assist the organization to be more confidence and reliable for its customers and increase the capability and performance in order to achieve its quality objectives.

Clause 4.1 suggests the organization to consider legal framework as the external context in preparing the inputs requirements to implement QMS. Clause 5.1.2a highlights to meet consistently customer and applicable statutory and regulatory requirements by means of leadership and commitment. Clause 5.2.1c denotes that top management shall establish, implement and maintain a quality policy that includes a commitment to satisfy applicable requirements. These clauses could be implemented to eliminate R9 risk.

Clause 6.3 emphasizes on planning of changes. Whenever the organization requires for changes to QMS, the changes shall be carried out in a planned manner. The organization shall consider the reasons of changes and their possible results, the way to integrate with QMS, how the resources could be available and how to assign and reassign of responsibilities and authorities. This clause is applicable to encounter the unexpected conditions during construction work.

5.3. Benefits for implementation of ISO 9001 standard

Some potential benefits for implementation of QMS based on ISO 9001-2015 standard are as follows:

1) The ability to meet the applicable statutory and regulatory requirements;
   Priority to be compliance with the applicable legal framework is the major concern of this international standard. For any type of organizations, non-compliance with statutory and regulatory requirements makes them negative consequences and which deviates the organizational goals, norms and values. In clauses, 4.1, 5.1.2a, 5.2.1c, 6.1.1, 8.2.2a.1, 8.4.2c.1, 8.5.5a, 9.2.1a.2, point out the importance of conformity of products and services with this legal requirements.
2) The ability to provide products and services that meet customers' requirements;
   Meeting customers' requirements is one of the characteristics of this international standard and essential for their satisfaction. To be continual improvement in global economy, customer focus is the better policy rather than any other ones and it can be applied as the competitive strategy for organizational improvement. In this standard, clauses 5.1.2, 5.2.1c, 5.3d, 8.1, 8.2.2, 8.2.3.1, 8.3.2g, 8.4.2c.1, 8.4.3f, 8.5.3, 8.5.5d,e, 8.6, 8.7.1c, 9.1.2, 9.1.3b, 9.3.2c.1, 10.1a indicates the organization shall focus on customers' requirements throughout the management processes of planning, leading, organizing and controlling activities.
3) Enhance capability to address the potential risks and plan to control in advance;
   Planning by means of process approach and risk based thinking is the specifications of this standard and which performs as the key purpose and acts as a preventive tool. In clauses 4.1, 4.4, 6.1 emphasizes on this concept by which the organizations give assurance their management system to be effective, enhance desirable effects, prevent undesired effects and achieve improvement.
4) Create the organization with the knowledge of responsibility, authority and accountability;
   This is invaluable guideline of this standard and it is based on the QMS principles of leadership and engagement of people in organization. In Myanmar, most of the organizations are not accustomed with the concept of the importance of authority and accountability. Authority means empowering the people in organization with the relevant right in decision-making process due to their responsibilities. Accountability means knowing the self-responsibility of the consequences of making decision and acceptance of the impacts of the results whether good or bad. By applying the clauses 4.4.1d,e, 5.1.1a, 5.3, the organization shall ensure that QMS conforms to the requirements of this international standard, confirm that the processes are carrying out their intended outputs, promotion of customer focus throughout the organization.
5) Establish the organization with better communication and transparency for avoiding defects and nonconformities;
   Internal and external communications have great impact on organizational performance for achieving goals and customers' satisfaction. In this research, the communication skill in most of the construction sites was poorly observed, as

there had been less understanding on their roles and responsibilities, quality policy, objectives, the importance of safety practices and competency. Clauses 5.2.2, 6.2.1f, 7.4 especially highlight the necessity of communication and method for application throughout the organization and which improve the capability and awareness to convene the requirements.

6) Understand the importance and usefulness of documented information throughout the processes;
   Maintaining and retaining documented information plays as the vital requirements for implementation of QMS. Doing without proper documented information has been still found in some of Myanmar construction sites and some of the representatives have less awareness on this issue. In QA/QC process, although they are actively participated in quality issue, they rarely use checklists for inspection and maintain and retain the related documented information as a record in either the construction site or head office. Moreover records for employees' competency, customers' feedback form, quality policy, objectives and plan are essential documented information for construction work. By employingthe requirements in clause 7.5 and related ones in this standard, the organization can create, update and control documented information andgain benefits as their intended results.
7) Facilitate opportunities to enhance sustain success and continual improvement;
   Clause 9.1 monitors and measures analysis for organizational performance, 9.3 indicates how to make analysis for evaluation and 9.2 provides the conduct of internal audit for examining the conformity of organization against with QMS. By employing these clauses, organizational performance can be evaluated and measured whether to meet or not the expected results. Performance evaluation is essential to examine the organizational achievement for its quality objectives. Clause 10 assists the organizations how to determine and select opportunities to meet customers' satisfaction, the ways of corrective actions for nonconformities by means of evaluation and continual improvement with suitability, adequacy and effectiveness of QMS.

5.4. Challenges for Implementation of QMS in construction companies

Based on the previous researchers'findings, implementation of QMS in construction companies is not an easy task and there might be some obstacles and challenges to be effective implementation:

1) Challenges as resistance to change for inadequate resources, perceptions and attitudes of top management and employees to accept the new management practices in place of existing one (Willar, 2012). This is generally occurred in the introduction stages of new idea, philosophy and technology in every aspects and it can be overcome by providing required resources for their products or services, trainings, workshops and seminars to improve their knowledge, competency and workmanship.
2) Challenges for being high implementation and maintenance cost as for hiring QMS experts and technical consultants and loss of productivity due to the adoption of new management system which interferes the personnel competency, inter communication system and operational management technique (Yusoff & Narizan, 2006).
3) Challenges for preparing, maintaining and retaining paperwork as documented information to implement QMS in construction sites (Lee et al., 2001; Abdual-Raham & Tan, 2005). Practices for organizing and providing documented information make enhancement for continual improvement, although, it is rarely accepted to be implemented enthusiastically.
4) Challenges for poor commitment of top management are one of the major obstacles for implementation of QMS (Tan, 2010). Among the three parameters of construction cost and time are the major concern of the top management rather than quality.
5) Challenges for lack of high competent human resources become the major barrier to implement QMS in construction companies (Tan, 2011). In construction sites, generally, it is observed that the competency of front line workers as carpenters, masons, bar-benders does not match the typical requirements as they have not learnt related technical knowledge systematically and which becomes the vital challenge for accomplishment of QMS.

5.5. Limitations for Research Survey

In collecting data based on questionnaire survey, there had been some limitations or constrains for sampling method, however, which is an easy access and low costs for data collection. Some respondents were observed that feeling worry for their feedback on questionnaire survey on potential risks due to lack of QMS. Based on thirty respondents from ten local construction companies, for doing data collection in their construction sites, busy areas, the respondents were not strongly keen on the questions and feedback by each respondent may vary due to difference educational background, working experience and attitude on their professions and hence there might be certain limitation for gathering data for this study.

6. CONCLUSIONS

According to the research, the results indicate that most of the organizations are unwillingnessfor implementation of QMS for believing that it increases paper work and the employees feel reluctance to practice consistent with the standard (Anup et al., 2015). Among the various forms of management systems, QMS, family of ISO 9000 standards, emphasizes to meet the requirements of products and services with their customers' needs and wants. This international standard is not so much popular in construction sector rather than any other industries, agriculture, livestock and manufacturing, in Myanmar, it will be acknowledge and implemented to avoid and reduce risks and enhance effectiveness on the parameters of construction. By implementation of this standard, it is easier to foresee the potential risks and the assessment to check their priorities to take into account, address the actions to react risks when they are encountered and change as the opportunities and enjoy benefits for meeting customers' satisfaction and continual improvement. Implementation of QMS, furthermore, is the fundamental stage of employing management systems and it is easier to integrate with other standards as EMS (ISO14001: 2015) and OHSMS (ISO 45001: 2018) to be integrated management system.

7. RECOMMENDATIONS

Considering three risk attributes, however, has developed risks assessment model; likelihood, severity and detection, RRN needs to be compared with risk criteria value to complete the process. This paper emphasizes to find out the potential risks in Myanmar construction companies, the method for calculating RRN and the remedies by applying QMS standards. It is believe that by comparing RRN with risk criteria value, the organization can determine the priorities of risks to be mitigated and the potential risks can be controlled, eliminated or reduced. Further research is recommended to determine more clarification method for identifying risk criteria value for such kinds of risks.

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