















unit manages the documents and records accordingly. Majority of respondents, or 58%, have indicated negative responses to Q.B-2 which asked if the documented procedures required by ISO 9001:2015 were in place, known and implemented.

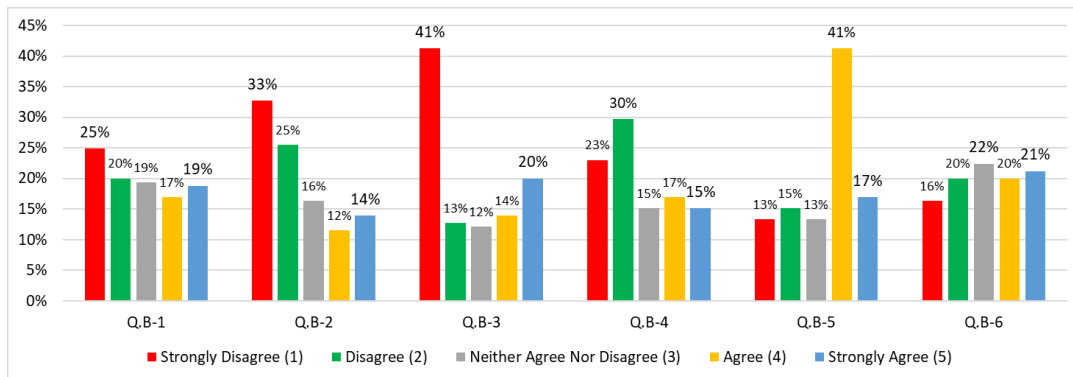


Figure 4. Section B – Frequency of Responses

To Q.B-3 which enquired about whether documents are formally approved for adequacy prior to use, majority of respondents, or 54% answered negatively. 54% of respondents also did not agree with Q.B-4 which enquired about documents being reviewed and updated as necessary as well as being re-approved. However, Q.B-5 and Q.B-6, which enquired about document changes and revision status of documents being identified as well as documents and records being legible readily identifiable and retrievable. Both of which had majority of respondents agree at 58% and 41% respectively.

#### 4.4 Part 2: Section C – Control and Monitoring of Measuring Devices

This sub-section provides the results of Section C which covers the control and monitoring of measuring devices. Depicted below in Table 4 are the descriptive statistics of responses to Section C and subsequently in Figure 5 are the frequencies of responses to the same section.

Table 4. Descriptive Statistics of Responses to Section C

	Q.C-1	Q.C-2	Q.C-3	Q.C-4	Q.C-5
N	Valid	165	165	165	165
	Missing	0	0	0	0
Mean	2.2121	2.3030	1.9333	1.9152	3.4545
Std. Error of Mean	0.09680	0.10544	0.10464	0.10752	0.08994
Std. Deviation	1.24346	1.35442	1.34406	1.38108	1.15534
Variance	1.546	1.834	1.807	1.907	1.335
Range	4.00	4.00	4.00	4.00	4.00

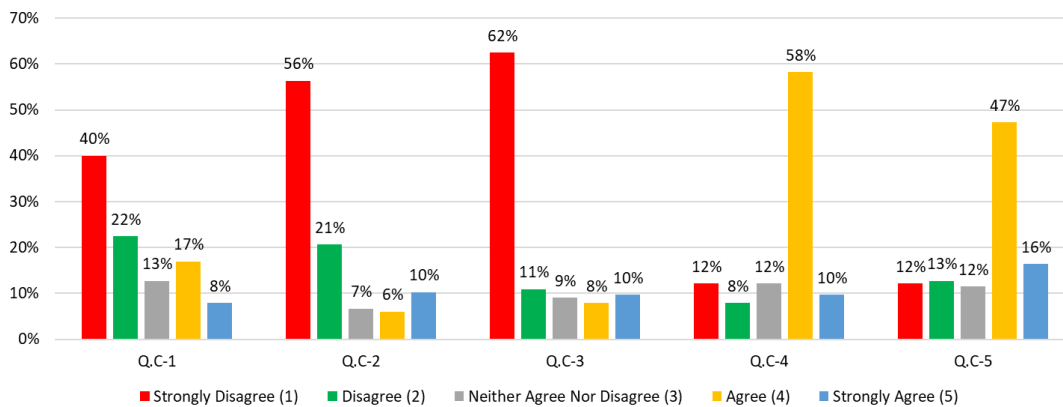


Figure 5. Section C – Frequency of Responses



As shown in Figure 5 above, majority of respondents or 62% strongly disagreed with Q.C-1 about devices confirming at specific intermissions, or before use, against measurement standards attributable to international standards. A staggering 77% and 73% strongly disagreed with the questions Q.C-2 and Q.C-3 respectively. Q.C-2 and Q.C-3 asked whether the devices being adjusted or being re-adjusted as necessary, as well as whether the devices identified devices allow the standardization status to be determined, respectively. Majority of respondents, or 68% agreed in Q.C-4 that devices are protected on or after changes that would invalidate the measurement outcome and lastly, 63% of respondents agreed that devices are protected against deterioration and damage during handling, maintenance and storage.

#### **4. Results and Discussions**

From the interviews with managers and supervisors, it was noted that the legal and technical requirements are not being adhered to within the metering division. The whole metering at the electricity state owned company is governed by the National Energy Regulatory of South Africa (NERSA). As such, one of the requirements from NERSA is that measuring equipment should be twice as accurate since they are meters used to bill consumers for electricity consumption. Since there is no proper control of measuring and monitoring equipment, there is no proof that metering division is adhering to regulatory and technical requirements from the National Energy Regulatory of South Africa. Therefore, the following recommendations for a better-quality management can be made:

##### ***1. The utilization of internal and additionally outer reviews***

Quality frameworks control the instruments that create and convey a service to customers. On the off chance that we depend on customers to let us know of the effectiveness of the controls, it might be past the point of no return and we won't hold their custom. A successful quality framework will contain steady checks, tests and frameworks for restorative activity. In any case, these need the help of free checks of the association from the association. These autonomous checks are called reviews. It is in this manner essential that reviews are completed in metering discipline and the review degree ought to incorporate all metering angles not only certain parts in metering.

##### ***2. Quality Awareness Programs of metering employees***

Secondary plant department should impart the training for those employees whose work has a significant impact on quality; it is also important that subcontractors whose activities might influence quality management system should also be trained in the areas of their activities that impact the management system. In providing training to employees would close the gaps that seem to be present in the metering quality management system.

##### ***3. Proper Training Provision to new employees.***

In Secondary plant department metering is not seen as an important discipline when in fact it is very important and therefore management tend to not show its commitment in the discipline therefore all employees of the organization should be made to clearly understand their quality roles and responsibilities. They should be made aware of the importance of quality targets and objectives that they are going to work on. The employee's job description should include the quality responsibilities he has been assigned.

Worthy of note is the indication that this research is limited by the fact that it only targeted the metering division of the electricity state-owned company in Johannesburg. However, there is a need to expand the study to establish the confirmation of this study's finding as the state-owned company is battling with revenue losses, which might also be attributed lack of adequate QMS within its metering division.

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## **Biography**

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**Jonathan Eljadael Kasongo** is young Congolese businessman who has a study background in Operations Management with a National diploma and Bachelor of Technology in Operations Management. He is an award-winning academic who has been tutoring Financial principal to third year students in Operations Management at the University of Johannesburg. His passion for research has allowed him to develop a problem-solving skill that enables him to be very competitive in his business ventures.

**Prof Charles Mbohwa** is a Professor at the Faculty of Engineering and the Built Environment at the University of Johannesburg (UJ). As an established researcher in the field of sustainability engineering and energy, Prof Mbohwa's specialisations include sustainable engineering, energy systems, Life-Cycle Assessments (LCA's) and bioenergy/fuel feasibility and sustainability with general research interests in renewable energies and sustainability issues. Prof Mbohwa's current research in sustainability engineering includes: Social and climate change comparison of bio-diesel life cycle impacts in Brazil and South Africa; Life Cycle Assessment and Comparisons of Rail and Road Freight Transportation in China and South Africa; The Potential, Energy and Environmental Impacts of Bio-energy in the Sugar Industry in South Africa; and the Economic, Energy and Environmental Evaluations of Biomass-based Fuel Ethanol based on Life Cycle Assessment. He is a co-author of the second chapter of the United Nation's Environmental Programme's (UNEP) Global Guidance Principles for Life Cycle Assessment Databases: A Basis for Greener Processes and Products 2011. In addition, he is Project Leader for the Development of the Climate Change Response Strategy and Action Plan for the Gauteng Department of Agriculture and Rural Development: Use of indigenous knowledge.