ISO 55000: A Keyword Density Analysis

David Albrice, June 14, 2015

"The limits of my language means the limits of my world" - Ludwig Wittgenstein.

I have taken it upon myself to read every single word of the ISO 55000 standard. I'm doing this for two reasons: i) to ensure that my asset management work conforms to international expectations; and ii) as part of my preparations to write the IAM exams.

This blog represents my first steps in understanding this document.

Step 1. The Big Picture

Starting from the highest level possible:

- There are approximately **27,050 words** in the ISO Standard

- The document is captured in **96 pages**

The five most frequently occurring words in the standard are as follows:

- **#1 Asset**(s) - appears 1,032 times

- **#2 Management** - appears 976 times

- **#3 Organization**(s) - appears 356 times

- **#4 System**(s) - appears 384 times

- **#5 ISO** - appears 220 times

At this very high level, these words dominate the document and this is what the word cloud looks like.

But this is not helpful as it does not really tell us anything. We need to drill down deeper.

Step 2. The More Detailed Picture

Once we strip out the top five most common words, the cloud starts to reveal some of the finer language and looks like this:

Before we dig deeper into these 27,000+ words, it's important to realize that some words have derivatives and should therefore be considered in groups. Here are two examples to illustrate word derivatives.

- **Risk** (appears 90 times in the standard) and **Risks** (appears 73 times). So therefore, there are 163 combined occurrences

- **Asset** (appears 884 times in the standard), whereas **Assets** (appears 148 times); thereby giving us 1,032 combined occurrences

I used two software tools to conduct my analysis and both are available free on the internet:

- **Tool 1: Keyword Density Algorithm** - to check for word prevalence

- **Tool 2: Word Cloud Algorithm** - to create visualizations of prevalence

Based on these two tools, I have started to analyze the 27,050 words.

Step 3. The Action Words (Verbs)

In reviewing the standard, it became immediately apparent to me that verbs appear more often than other words. Verbs are used to describe an action or a possibility. Here are all the "to-do" type words in the ISO 5500 standard, listed from most prevalent to least prevalent.

- **PLAN** [/plans/planning/planned] - 226 times

- **IMPROVE** [(s)/ment/ing] - 98 times

- **DOCUMENT** [/ed] - 94 times

- **IMPLEMENT** [/ing/ation/ed] - 80 times

- **EVALUATE** [/evaluation(s)/ed/ing] - 77 times

- **DETERMINE** [/ing/ed/ation] - 73 times

- **REVIEW** [(s)/ing] - 66 times

- **ESTABLISH** [/ing/ed] - 64 times

- **CONSIDER** [/ed/ation] - 61 times

- **MONITOR** [ing/ed] - 59 times

- **AUDIT** [(s)ing] - 59 times

- **IDENTIFY** [/ied/ication/ing] - 55 times

- **ENSURE** [/ing] - 52 times

- **MAINTAIN** [enance/ing/ability] - 47 times

- **COMMUNICATE** [ion/ed/ing] - 40 times

- **PROVIDE** - 33 times

- **ASSESS** [/ed/ment] - 34 times

- **MEASURE** [ment(s)/ing] - 31 times

- **OUTSOURCE** [(s)/ing/ed] - 31 times

- **INTEGRATE** [ed] - 31 time

- **REPORT** [(s)ing/ed] - 27 times

- **ANALYSE** [is] - 26 times

- **DEVELOP** [/ing/ed] - 25 times

- **DEMONSTRATE** [d] - 18 times

- **ENABLE** [ing] - 18 times

- **PREPARE** [ation] - 11 times

- **UPDATE** [ing] - 9 times

- **VERIFY** [ication/ing] - 8 times

- **CREATE** - 7 times

- **COMMISSION** [ing] - 6 times

- **INVESTIGATE** [ion] - 5 times

- **OBTAIN** [ed] - 4 times

- **ELIMINATE** - 4 times

- **INSPECT** [ion] - 3 times

The word cloud of these action verbs looks like this. The need to "plan" clearly sticks out amongst the rest.

Word cloud of ISO 55000, 55001 and 55002 – top action directives

But action words only give us part of the picture. The next step is to look for the modal verbs, which show us if something is certain, probable or possible.
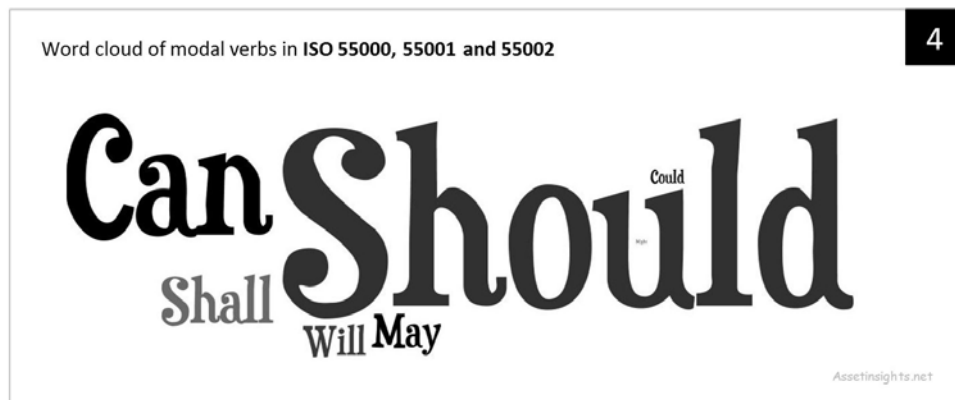
Step 4. The Directive Words

Modal verbs such as "should" and "must" express advisability, necessity, and requirement. And here are these types of words, in their order of prevalence, in the ISO 55000 standard.

- **Should** - 268 times
- **Can** - 180 times
- **Shall** - 70 times
- **May** - 50 times
- **Will** - 44 times
- **Could** - 20 times
- **Might** - 6 times
- **Must** - 0 times
- **Would** = 0 times

The word cloud of these modal verbs looks like this.

Word cloud of modal verbs in ISO 55000, 55001 and 55002

And... here are some of the most common 3-word phrases in the standard:

- the asset management system... - 262 times

- asset management objectives... 76 times

- the organization should... - 76 times

- the organization shall... - 45 times

- organization should consider... - 16 times

- management system should... - 12 times

Step 5. What "Should" we "Plan"?

Based on this keyword density analysis, the ISO 55000 standard sends a powerful message that can be captured in this statement: Asset managers should plan. But what is it that we should plan for?

In the weeks ahead I will provide further commentary as I continue my exploratory journey into the ISO 55000 standard and other associated asset management documents.

For those who have read my blog you know that I am passionate about asset management. I am constantly looking for ways to deepen my understanding of this fascinating field of knowledge and to share with insights with others.

What struck when you saw these word clouds and keyword densities?

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