

## STRATEGIC PRIORITIES FOR EMPLOYEES DEVIATE FROM THE WIDELY-EMPLOYED PARETO'S LAW

Dr. Jan van de Poll<sup>1</sup> and Li Chen<sup>2</sup>

<sup>1</sup>Managing Director at Transparency Lab BV ([www.praioritize.com](http://www.praioritize.com)), Amsterdam, the Netherlands

<sup>2</sup>Senior Consultant at Microsoft, Shanghai ([www.microsoft.com](http://www.microsoft.com)) Shanghai, China

### Abstract

During an organizational transformation, improvements must be dosed. Usually, an organization cannot change in lockstep: some teams and employees go faster than others. A more diverse and tailor-made target setting enables managers and employees to sufficiently transform while doing their day job and keeping their sanity. When it comes to where to focus management attention on the topics and employees most behind the target, Pareto's 80-20 rule is the usual answer: Only 20% of X is responsible for 80% of Y. Although Pareto seems a very general approach, some studies in the literature claim that the idea that only 20% of employees matter can be more harmful than beneficial. Moreover, it still doesn't tell where to focus, only that there is an unequal relationship between input and output. In this study, to verify whether Pareto's 80-20 rule applies to organizational transformation, we conducted extensive surveys during 320 different transformation projects covering almost 2,500 teams and more than 100,000 employees. We found that we had to adjust Pareto's 80-20 rule to a "50-20" rule-of-thumb. Approx. 20% of questions and 20% of respondents covered approximately 50% of the improvement target. Additionally, the underlying visualizations developed in this study yielded benefits in transformation planning and knowledge sharing.

**Keywords:** Pareto, organizational transformation, Guttman-Poll, Gap Map, Praioritize

### 1. Introduction

Pareto, an Italian economist and sociologist, who mainly worked in theory development, made a considerable contribution to econometrics and established "Pareto's Law" regarding the distribution of wealth (Schumpeter, 1949). While Pareto wrote of his observation in 1896, it wasn't until the 1930s that the Pareto principle was more widely recognized and was attributed to Pareto (Backhaus, 1980). Today, Pareto's Law's mathematical description is more commonly known as the Pareto distribution, a power-law probability distribution. However, the Pareto principle is more widely known and discussed as the "80-20 rule." The 80-20 rule has been widely applied to areas like fitness, and it has been observed in fields like IT and even in the transmission of Covid-19 (DeWitt, n.d.; Rooney, 2002; Endo et al., 2020). Dr. Joseph Juran, though, pioneered the idea of applying the Pareto principle to business, particularly to quality management (Best & Neuhauser, 2006). Juran's application of the Pareto principle to companies is notably a Six Sigma strategy (Six Sigma Daily, 2018).

The Pareto principle and its resulting notion of the "vital few and useful many" are present in various business conditions. For instance, the Juran business website indicates that a business may note that "the top 15 percent of our customers account for 68 percent of our total revenues. Our top five products or services account for 75 percent of our total sales" (Juran, 2019). Additionally, the ABC analysis derived from the Pareto principle is a managerial method of business analysis that begins with creating a Pareto diagram. Although the 80-20 rule is called a "rule," it is more of an aphorism for application. Outside of the Pareto distribution's strict mathematics, there has been little analysis of actual practice variance from the standard 80-20 pattern, mainly because it is a guideline, not a law. However, a few have written about variations, such as Koch (2011), who in his book states that the 80/20 pattern can vary between 70/30 and 90/10, but more recently has been increasing toward a variability of 90/10 to 99/1. According to Grosfeld-Nir et al. (2007), using the concept of ABC analysis, "If the total frequency corresponding to 20% of the attributes is above 60%, the entropy index is below the control limit" and thus the Pareto methodology is indeed applicable. While many studies have shown the 80/20 rule to

apply to many different aspects of life, the ultimate takeaway “is that there is almost always an unequal relationship between inputs and outputs in most...systems.” As Great Work Cultures (2017) points out, however, that when managers apply this to their personnel, the idea that only 20% of employees matter can be more harmful than beneficial. These sources reinforce the idea that the rule's application has limits but can be generally used as a valuable tool in a wide range of settings.

A precise version of Pareto is significant when organizations make big-impact decisions. Such big-impact decisions are certainly there in organizational transformations. There, the “unequal relationship between inputs and outputs” may have even more harmful consequences. Is it possible to get a comparable version of “X percent of A accounts for Y percent of B” regarding strategic priority setting in a changing organization? And how can we be so sure?

Although Pareto's 80-20 rule seems a very general approach, it has some basic deficiencies. The idea behind this rule is that – when applied to organizational transformations - 20% of employees (projects, process, etc.) result in 80% of the change effort (management attention, benefits, etc.). This research searches the possibilities of avoiding these deficiencies by simply proposing a new method to focus management's attention on parts of an organizational transformation, in our study expressed in transformation topics and employees. Additionally, we investigated whether our method can be upgraded to generally applicable “law”.

## 2. Method

When transforming an organization, it's changing the way things are done. An example: people (managers, employees) have to work according to a new process. Another example: the organization has to adopt new technology that requires a company-wide adoption program. Then, it is mandatory to measure verifiably how things are changing. Usually, the data to do such measurements can't be found in the company administration; you must ask people. In our two examples above: “To what extent can you do a better job with this new process?” and “How does this new technology improve your teamwork?” These are ‘container’ questions that need further specification in a survey. A survey with Likert scales is about agreeing with statements, like in our example “I can do a better job with this new process” (and then a disagree-agree scale). We considered this not the right way to measure verifiable facts, let alone verifiable behavior. Hence, we created an alternative survey scale based on the Guttman scale (Stauffer et al., 1950), focusing on employee polling (van de Poll, 2021). Next, we conducted large-scale online surveys about various strategic topics requiring organizational transformation. This large-scale study yielded a total of 320 surveys with a response from 106,028 respondents in 2,420 teams, giving over 9.9 million answers. The organizations' management teams set improvement targets based on the responses. Finally, we calculated the delta between the actual situation and the management target for each team, respondent, and topic.

In this study, we upgraded the Guttman survey scale (Diamond, McDonald, and Shah, 1986) for employee polling (van de Poll 2018 and 2021). Our survey scale required capturing two scores: the respondent entered the actual situation and management a target score. Every following answer described an improved situation (the target itself, a step closer to the management target) than a previous answer. Uhlaner (2002) refers to this as ‘breaking points.’

For example:

Q. How do you celebrate successes?

1. We don't
2. When there is an apparent reason to do so, with whoever is involved
3. We make it a habit to celebrate successes with the entire team

We considered this survey format verifiable (Ahrens & Chapman, 2006; Plewis & Mason, 2007). First, we did not use adjectives or adverbs that cannot be verified (e.g., "good") to reduce interpretation bias. Second, there are "proof-words" like, e.g., 'periodically,' 'measurable,' 'formally,' 'described,' and 'documented.' This reduces the respondents' self-reporting bias (discussed by Donaldson and Grans-Vallone, 2002). Third, using these "proof-words" discourages respondents from adding an emotional or cognitive meaning to the answers (Frese &

Zapf, 1988). Comparing the actual situation and the management target, it could be that a respondent must move from Answer 1 to, e.g., Answer 2 or Answer 3. A so-called Gap Map was designed to check – per team – on which questions the team was most behind the target and which respondents in that team were most behind the target. Figure 1 shows such a Gap Map.

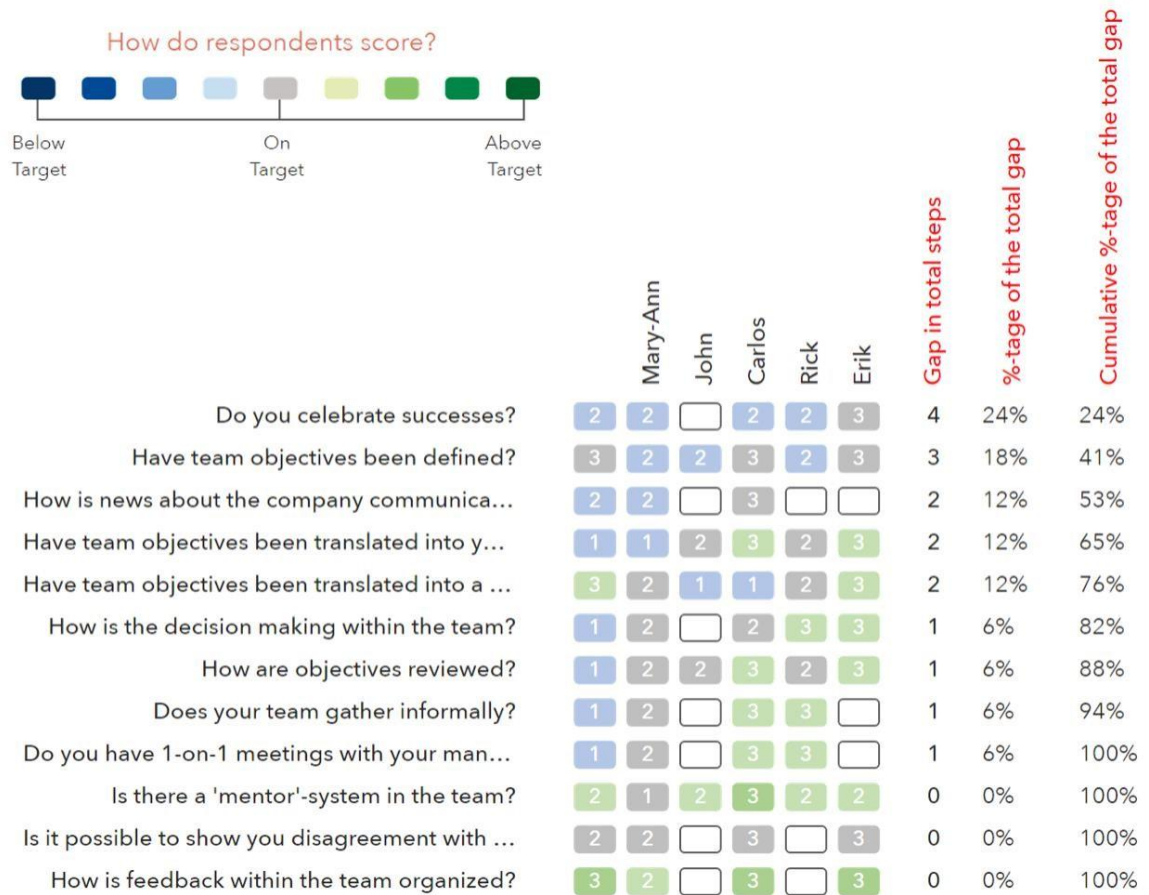


Figure 1. A Gap Map

The rows represent the questions. The columns represent the respondents. Each ‘cell’ indicates how a respondent answers on a particular question. Shadings in the cell indicate whether – and how much – a respondent is scoring below a management target. (How we developed the management target is out of scope for this article). The top row shows where the team (the group of respondents) is most behind the target and it gets better descending to the lower rows. The left-most row shows the respondent most behind target and the respondentss score gets better moving to the right-most column. The column headers indicate the respondents’ names. An absent name means the respondent opted to remain anonymous. The difference between a respondent’s actual score and the management target is expressed in steps (moving from one answer to the other). We link the amount of steps one on one to the amount of effort: we did not apply any weighing among answers or questions. We calculated per row, and per column, the amount of steps the entire group had to take to reach the management target. We then calculated what each question’s and respondents’ share of the total steps was.

With Gap Maps showing the questions and respondents most behind the target, we expressed their backlogs in the ‘number of answers behind.’ For example, in the Gap Map in Figure 1, we see five respondents answering the first question (top row; respondent “John” skipped this question). The color-coding shows that respondent “Erik” scored the target (Answer 3), and four other respondents (of which one was anonymous) scored Answer 2. That means four people times one answer backlog equals a total of 4 answers (‘steps’ in our graph). These four answers represent 24% of the total answers in the backlog. A similar calculation was done for the

respondents. We calculated per questionnaire per team the number of questions and respondents closest to 50% of the target and expresses that number in a percentage. If we plot Pareto's 80-20 rule as a curve, 5% of the questions and respondents will cover 50% of the target. Further down Pareto's curve, we would find that 20% of questions and respondents would approximately cover 80% of the target, depicted in Fig. 2. The orange triangles follow Pareto's curve with the 80-20 point in the circle.

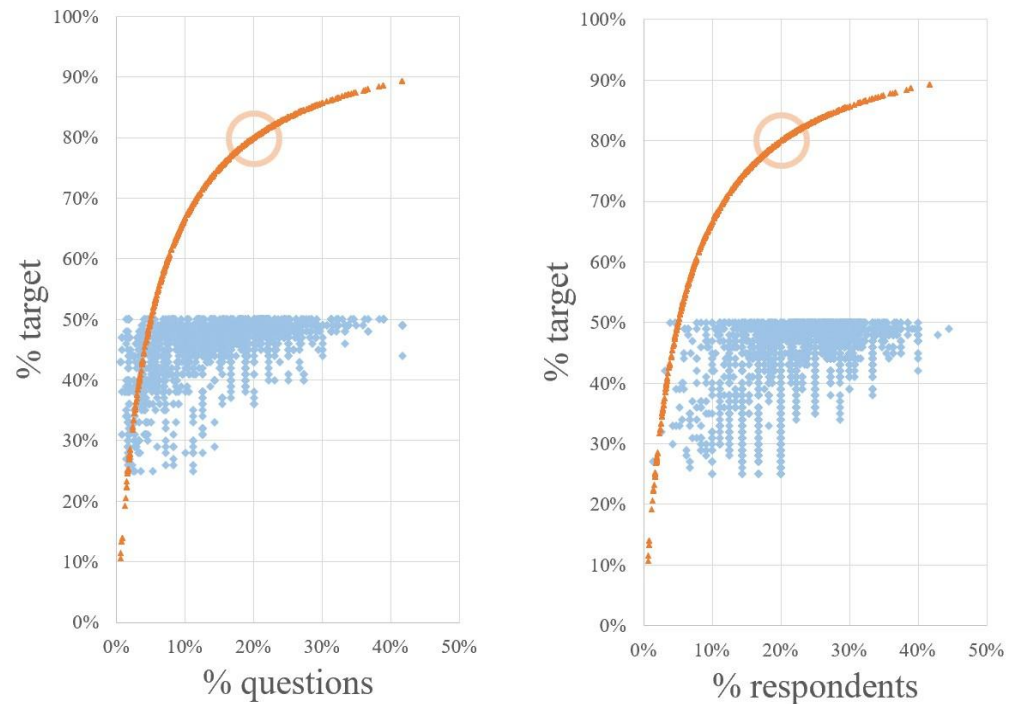


Figure 2. The percentage of questions/respondents closest to 50% of the target (every dot is a team). The curved line represents Pareto with the “80%-20%”-point in the circle.

### 3. Results

In the same Figure 2, the 2,420 teams under consideration are very densely packed: most blue diamonds blur together in one blot. The difference between Pareto and our outcomes is comparable for questions and respondents. Table 1 shows how the blots averaged out in averages. For the questions, 14% of them represented

45% of the target. With respondents: 23% represented 44% of the

Table 1

*Sample size and focus of the questions and respondents*

	N	Min	Max	Avg.	StDev.
<i>Sample size</i>					
Number of questionnaires	320				
Number of teams	2,420				
Number of employees	106,028				
Answers given	9,904,834				
Teams per questionnaire		1	82	7.6	11.7
Number of employees per team		5	992	43.8	91.0
Number of questions per questionnaire		7	234	49.5	30.0
<i>Questions</i>					
Percentage of questions		1%	42%	<b>14%</b>	8%
Percentage of target		25%	50%	<b>45%</b>	5%
<i>Respondents</i>					
Percentage of respondents		1%	44%	<b>23%</b>	7%
Percentage of target		25%	50%	<b>44%</b>	6%

*Min.: lowest number. Max: highest number. Avg: average number.*

*StDev: standard deviation.*

ta rget.

Figure 3 shows how both the % questions and the % respondents compared for each team.

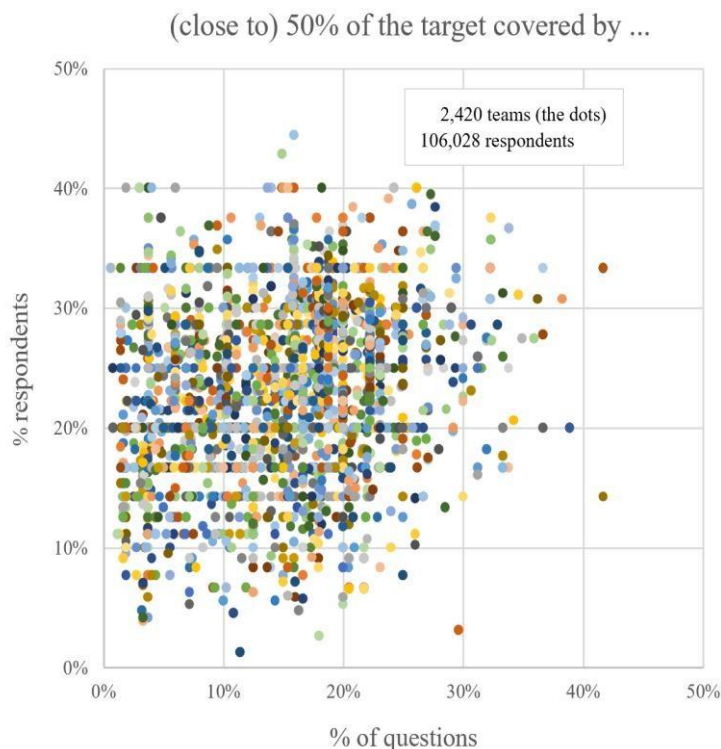


Figure 3. How % questions and % respondents relate

#### 4. Discussion

The conventional wisdom of the 80-20 rule does not apply in strategic priorities in organizational transformation. If we convert our findings to a more generic rule-of-thumb, it would be more a “50-20” rule. More importantly, other than the rule itself, this Gap Map has many advantages. First, management knows



precisely which questions and respondents to focus on. That is a great help with planning the resources and the time to implement the organizational transformation. Second, the Gap Map shows immediately when ambition turns into ‘overeating.’ The Map’s color-coding shows how many respondents will be burdened by too much change at the same time. That, in turn, may drive a more harmonic, personalized target setting where every employee can maximally improve but without a burn-out looming. Third, where the left-most columns show the respondents most behind the target, the right-most columns show the respondents on or above the target. These respondents are a welcome source for knowledge sharing: those who have achieved the target in a question can help colleagues that still must improve on that same question. Conversely, the Gap Map’s bottom rows show where a team is on or ahead of target: a source of knowledge sharing with other teams.

At the same time, some cautionary remarks are to be made about our analysis. We deliberately ‘round off’ our findings to a generic 50-20 rule. We acknowledge that there are imprecisions in our calculations. For example, a short questionnaire paired with a non-ambitious improvement target may result in a priority list of only a few questions. Say, there is a questionnaire of 10 questions. The first question is 30% of the target, and the second question is 24% of the target. We would record “10% of the questions is 30% of the target.” If the questionnaire is only one question longer and is subject to an improvement target, the first question would be (e.g.) 28% of the target, and the second question would be (e.g.) 21% of the target. We would now record “18% of the questions are 49% of the target.” Table 1 shows that the smallest questionnaire contained only seven questions. Yet, with an average questionnaire length of 49.5 questions, we do not deem this distortion a significant factor. Similarly, when respondents skipped a question, that question was excluded from the calculation. Additional research will show whether this will affect our 50-20 rule of thumb. Finally, we did not discriminate among steps: we counted each step (one respondent moving from answer to the next) as equal in effort. More detailed analysis will reveal whether such a refinement will materially impact our 50-20 (compared to Pareto’s 80/20) rule-of-thumb.

In conclusion, there has been little analysis of actual variability from the standard 80-20 pattern in organizational transformations. When management has to focus its attention, the reflex “It’s 80-20!” requires some caution. Strategic priorities for employees might deviate from the widelyemployed Pareto. In this study, we suggest to adjust Pareto’s 80-20 rule to a “50-20” rule-ofthumb when it comes to organizational transformations. Our sample’s number of teams and respondents confirm our 50-20 rule-of-thumb. Our additional research and visualizations using the Gap Map bring other advantages for a management board amid an organizational transformation. Such benefits include pinpointing resources, avoiding overeating, and generously sharing knowledge within and among teams.

## Acknowledgments

The authors would like to express their appreciation to Dr. Jasna Duricic for her valuable and constructive suggestions during the planning and development of this research.

## References

- Ahrens, T., & Chapman, C. S. (2006). Doing qualitative field research in management accounting - positioning data to contribute to theory. *Accounting, Organizations and Society*, 31, 819-841. DOI: 10.1016/j.aos.2006.03.007
- Backhaus, J. (1980). The Pareto principle. *Analyse & Kritik*, 2(2), 146-171.
- Best, M., & Neuhauser, D. (2006). Joseph Juran: Overcoming resistance to organisational change. *Quality and Safety in Health Care*, 15(5), 380-382.
- DeWitt, A. (n.d.). The 80/20 rule for fitness. *Muscle & Fitness*.  
<https://www.muscleandfitness.com/flexonline/flex-nutrition/8020-rule-fitness/>

- Diamond, I. D., McDonald, J.W., & Shah, I.H. (1986). Proportional hazards models for current status data: application to the study of age at weaning differentials in Pakistan. *Demography* 23(4), 607-620. DOI: 10.2307/2061354
- Donaldson, S. I., & Grans-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology* 17(2), 245-260.
- Endo, A., Abbott, S., Kucharski, A. J., & Funk, S. (2020). Estimating the overdispersion in COVID-19 transmission using outbreak sizes outside China [version 3; peer review: 2].
- Frese, M., & Zapf, D. (1988). Methodological issues in the study of work stress: Objective vs subjective measurement of work stress and the question of longitudinal studies. In: C. L.
- Cooper, & R. Payne (Eds.), *Causes, Coping, and Consequences of Stress at Work* (pp. 375-411). Wiley & Sons, Chichester.
- Great Work Cultures. (2017, August 16). How the 80/20 rule ruined management. Huffington Post.[https://www.huffpost.com/entry/how-the-8020-rule-ruined-management\\_b\\_5994ce35e4b056a2b0ef02e5?guccounter=1&guce\\_referrer=aHR0cHM6Ly93d3cuZ29vZ2xILmNvbS8&guce\\_referrer\\_sig=AQAAAEPCChAzu\\_kXCimoibiCKU3X3BVQDSSnhzZlQaYZYT6WoO5UnNUQ4UzOwe7dmQOZqIqKL\\_H4vlchpRi\\_sel3I8YFOPSivaiDIgXbMnc0-soqgxeVIHcyUrp3DuSkQhO2sRKq0cYwlrrZZOkPjQMqWT8beG53hdjn0429QqEGNjI dq](https://www.huffpost.com/entry/how-the-8020-rule-ruined-management_b_5994ce35e4b056a2b0ef02e5?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xILmNvbS8&guce_referrer_sig=AQAAAEPCChAzu_kXCimoibiCKU3X3BVQDSSnhzZlQaYZYT6WoO5UnNUQ4UzOwe7dmQOZqIqKL_H4vlchpRi_sel3I8YFOPSivaiDIgXbMnc0-soqgxeVIHcyUrp3DuSkQhO2sRKq0cYwlrrZZOkPjQMqWT8beG53hdjn0429QqEGNjI dq)
- Grosfeld-Nir, A., Ronen, B., & Kozlovsky, N. (2007). The Pareto managerial principle: When does it apply? *International Journal of Production Research*, 45, 2317-2325. <https://doi.org/10.1080/00207540600818203>
- Guttman, L. (1950). Chs. 2, 3, 6, 8 and 9 in SA Stauffer, L. Guttman, EA Suchman, PF Lazarsfeld, SA Star and JA Clausen. 1950. *Studies in Social Psychology in World War II*, 4, 46-90.
- Juran. (2019, March 12). Pareto principle (80/20 rule) & Pareto analysis guide. <https://www.juran.com/blog/a-guide-to-the-pareto-principle-80-20-rule-pareto-analysis/>
- Koch, R. (2011). *The 80/20 principle: The secret of achieving more with less: Updated 20th anniversary edition of the productivity and business classic*. Hachette UK.
- Plewis, I., & Mason, P. (2007). What works and why: combining quantitative and qualitative approaches in large-scale evaluations. *International Journal of Social Research Methodology*, 8(3), 185-194. DOI: 10.1080/13645570500154659
- Rooney, P. (2002). Microsoft's CEO: 80-20 rule applies to bugs, not just features. CRN. <https://www.crn.com/news/security/18821726/microsofts-ceo-80-20-rule-applies-tobugs-not-just-features.htm?itc=refresh>
- Schumpeter, J. (1949). Vilfredo Pareto (1848-1923). *The Quarterly Journal of Economics*, 63(2), 147-173.
- Six Sigma Daily. (2018). Remembering Joseph Juran and his lasting impact on quality improvement. <https://www.sixsigmadaily.com/remembering-joseph-juran->

qualityimprovement/#:~:text=His%20contributions%20came%20in%20many,improvement%20of%20quality%20in%20products.

- Uhlaner, L. M. (2002). The use of the Guttman scale in development of a family business index. (No. H200203). EIM Business and Policy Research.
- Van de Poll, J. (2021). An Alternative to the Likert Scale When Polling Employees. *International Journal of Business and Management*, 9(5), 239-244. <https://doi.org/10.24940/theijbm/2021/v9/i5/BM2105-044>
- Van de Poll, J. (2018) Ambition patterns in strategic decision-making, Doctor of Philosophy, Industrial Engineering and Innovation Sciences, Technical University Eindhoven.