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Comments: Development of an early career academic supervisor in Statistics - a discussion on a guiding rubric

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This article provides commentary on the article titled *Development of an early career academic supervisor in Statistics: A discussion on a guiding rubric.* The article aims to address the some of the main points raised and provide an overview of a current blueprint of how these can be implemented.

1 Identity of statistics

The authors raise the fact that they deem statistics to have an identity crisis. This is caused by the notion that statistics can be used in both a theoretical, as well as a practical application context.

This should not be seen as a detriment of the field of statistics but rather an opportunity to combine the theoretical and practical applications for the benefit of statistics as a whole. This can be achieved through highlighting the integration of statistics in fields such as data science, machine learning and quantitative analysis. Prospective students should understand that statistics is part of the bedrock of such fields and a career in statistics enables a vast array of options, both in the theoretical and practical applications.

2 Funding

The article references the importance of quality funding. This is especially a concern for doctoral students aiming to pursue a career in statistics whilst also working full time for an academic institution.

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One point of contention here is the cost involved in studying towards a doctorate at the university for students that are not employed by the university. The university resources used, especially in the field of statistics, is exceedingly minimal. The resources that the student uses from the university, other than the time of the supervisor, is often none. At the completion of the PhD, the university is awarded a significant sum of money in the form of government funding. Despite this contradiction, students are still expected to pay a substantial fees each year to be able to study towards a PhD at a university; see [1].

It is important that academia recognize the value in partnering with industry. The increase in fields related to data has resulted in an increased need for statisticians. Whilst the number of statisticians in academia have increased apace with those employed in industry, there also exists a shortage of skilled statisticians in industry. It is therefore in the interest of both academia and industry to increase the throughput of high quality statisticians. While most of this increase will likely end up in the industry, it is inevitable that some statisticians will further their careers in academia.

The resolution of the funding conundrum will not have an impact on the development of early career statisticians in the short term. Cultivating a strong culture in academics takes many years and the current gap can only be resolved with the passage of time. Such a resolution will assist in increasing the number of statisticians and make the field of statistics, and most notable post graduate statistics, more accessible in South Africa.

3 Guiding rubrics

The article highlights the importance of a guiding rubric for standardising the PhD process for statistics across the country. The idea of standardization of the process is productive and should result in an enhanced process with a more predictable outcome. Where it is clear to both the supervisor and student what the next goal is, both can work towards this goal with greater clarity and focus.

However, three points need to be raised on the impact of guiding rubrics. First, the rubric needs to be set up in such a way that it does not become a constraint to the completion of a PhD. When such a rubric introduces unnecessary complexity and administrative work into the process, it can become a stumbling block instead of a stepping stone towards progress. Second, the guiding rubric needs to be revised on a regular basis to ensure that the outcome of the rubric is aligned with expected outcomes. Such a review will also provide a natural point to assess the effectiveness of the rubric and make the necessary adjustments to align the rubric to the perceived end-goal. Third, the rubric needs to create space for creativity and promote thinking over process. If the rubric is too strict, a situation can occur where all PhDs are too similar, thereby narrowing the field of research.

3.1 Mentoring

The article discusses the idea of having mentors. The aim here is to advance the experience of early career statisticians through assigning a mentor. As in the case of funding, it would be worthwhile for the field of statistics to align with industry in this regard. Many experts in industry have the required depth of experience to act as mentors for early career

statisticians. Further to this, the time and effort required from a mentor is much less than that required of a supervisor. Mentors need to provide guidance on deeper topics, rather than deal with the administrative tasks of supervising a PhD. Whilst it is true that the experience in industry might differ from that in academia, these industry experts can provide valuable guidance to early career supervisors and fulfill this role in the absence of academic mentors.

3.2 A blueprint - The Centre for BMI

The Centre for Business, Mathematics and Informatics at the North West University provides a good blueprint for a process that assists supervisors. The Centre for BMI places a number of students at different companies in industry each year with the goal of conducting a project as part of a Masters degree. The program has been very successful over a long period of time, delivering a substantial number of Masters degrees. For more details, please consult the Centre's website at [2].

The success of the BMI program can be attributed to a large number of aspects, however certain parts of the program can provide a clear way forward:

1. The BMI program is well established in industry. Most companies in the financial sector are aware of the program and the quality of students that it delivers. Despite there being different focus areas inside the program, the program is highly aligned with the needs of industry and therefore has the ability to attract attention from industry.
2. Funding levels for the students performing their master's degree projects is set by the Centre for BMI. This ensures that students are well paid during this time and provides an incentive for students to complete their studies. The homogeneity of the funding levels makes it transparent to observers in industry and creates a level of value for these students. Companies accept the fact that they need to pay these students well in order to be afforded the opportunity to appoint them following the completion of their projects.
3. The project structure is well defined. A set of objectives is clear at the start of the project. These objectives are defined in the form of three critical meetings that need to take place during the course of the project. The outcomes of each meeting is clearly defined and students are tracked to ensure they meet these outcomes.
4. Rubrics exist to standardise the assessment of the students regardless of their project topic or client in industry. These rubrics are very detailed and serve to give the student the maximum structure in the course of completing the degree.

The topics listed above makes the process for the completion of a BMI Masters degree both transparent and focused to the point where the role of the supervisor can be ceded to someone in industry with no prior supervisory experience. The program supplements the supervisory role through an academic supervisor but the nature of their involvement is mostly restricted to the academic topics in the project, thereby reducing the need for involvement by the academic supervisor.

3.3 Conclusion

The commentary set out in this article aims to provide some further view points on the topics discussed in the main article. It highlights the fact that a stronger relationship between academia and industry is required to benefit all through stronger statistics departments in the country. Finally, the article touches on the successes of the BMI Masters degree program and highlights some aspects that could be transferred to assist early career statisticians.

References

[1] Coldron, A.C. 2002, *PhD Study in South Africa – A Guide for 2022.* https://www.findaphd.com/study-abroad/africa/phd-study-in-south-africa.aspx

[2] *https://natural-sciences.nwu.ac.za/sites/natural-sciences.nwu.ac.za/files /files/BWI/Profile/BMI_Profile_Elektronies_web.pdf*