



Assignment 1: Blog Posts 1-7

REFLECTIONS ON QUANTITATIVE RESEARCH

Xialiang Yao 2000533 | Applied Quantitative Business Research | 10th November 2020

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Blog 1: Well begun is half done

Word count: 391

“It’s going to be a disaster!”

This is the first thing come to my mind when I heard the Applied Quantitative Research is going to be the first module in my DBA program.

The reason I felt this way before is that I heard that it requires students to have statistics background, which I don’t have any. “Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity.”¹ Math and statistics have never been my strength. More over, the whole session is in English. I can imagine how frustrating I am going to be when I’m looking up words in dictionary while reading literatures.

However, as more as I read the required articles, I starting to see the Whole picture of doing research. I start to realize that the quantitative research is only a part of the scientific research². What I was afraid of is not as big as I have imagined. The more I read the less frustrating I was. I can start to think about the area I want to research in, and I can even make more specific plans about how to design and conduct the experiment.

¹ Kothari, C.R. (2004) *Research Methodology: Methods and Techniques*. 2nd edn. New Delhi: New Age International (P) Limited, Publisher.

² Jackson, M.R. (2015) Resistance to Qual/Quant Parity: Why the “Paradigm” Discussion Can’t Be Avoided, *Qualitative Psychology*, 2(2), PP. 181–198.

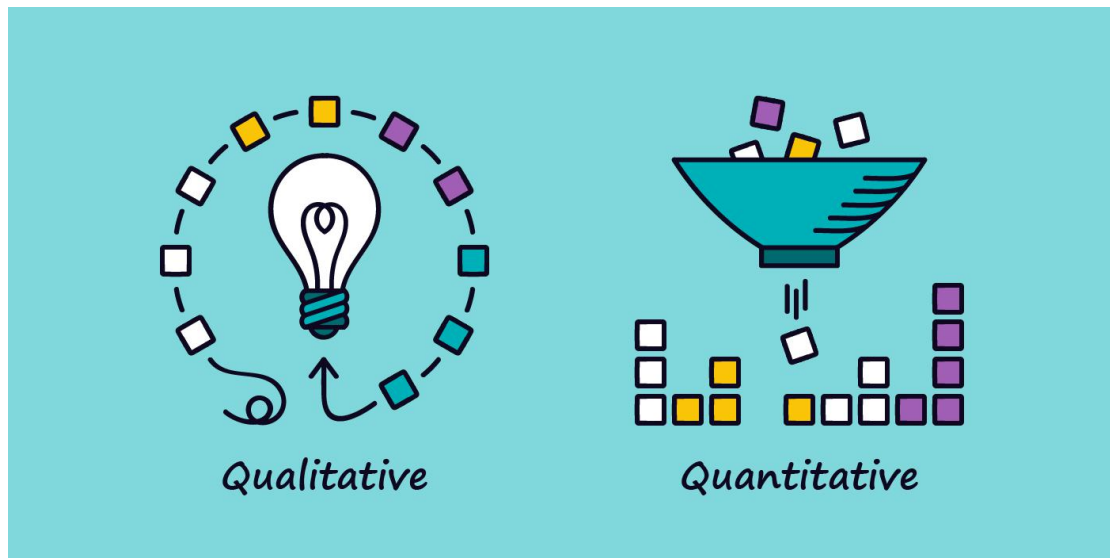


Figure 1: A beginner's guide to qualitative and quantitative research (Source: studentaffairsassessment, 2020) ³

Right now, after I had my first session, I am actually pleased and appreciative that this module is the first one for me to commence the DBA program. Not only it enables me to face my fear at the beginning, but also it introduces me the whole picture of conducting a scientific research. For example, steps like using software to analyze data is just a part of the research, what is also important is that being understanding and able to explain what is the research based on, so that the right questions can be addressed, and so as the hypothesis.⁴

Things become clearer as I gain more information from this module. It's far different than I was expecting. I started to realize that the process of doing research does not have to be anxious and painful, it can be manageable and even pleasant, as long as I know what I am dealing with.

³ Student affairs assessment. (2020) *A beginner's guide to qualitative and quantitative research*. Available at: <http://studentaffairsassessment.org> (Accessed 20 November 2020)

⁴ Durbin, J., Charles G., (2004). How to come up with a good research question: framing the hypothesis, *Respiratory care; Respir Care*, 49(10), pp. 1195-1198.

Blog 2: Challenges of using quantitative methods

Before the module starts, I only had a few vague ideas about quantitative research methods. From the sessions in the first week, I understand that there are certain steps to follow when you are using quantitative methods to do business researches. Steps like sampling, gathering data, and analyzing etc.⁵ In the learning process, I found that getting familiar with the software, using it to analyze data, and reading the meanings behind those results in the output windows are quite challenging. However, when it come to the research part, I'm afraid that sampling and gathering the relevant data would be things that most challenge me.



Figure 2: small business (Source: smallbusiness, 2020)⁶

I work as a finance management teacher in my university. The area I am interested in is finance management for small and micro business. Thus, to have a proper research design that fits the objects is the most difficult thing to do, if I want to conduct the

⁵ Kothari, C.R. (2004) *Research Methodology: Methods and Techniques*. 2nd edn. New Delhi: New Age International (P) Limited, Publisher.

⁶ Small Business. (2020) *Small Business*. Available at: <https://smallbusiness.co.uk/small-businesses-uk-worth-average-90000-2541535/> (Accessed 18 November 2020)

research in the area.⁷

Along with the rapid growth and development of e-commerce platforms, many people see the opportunity of starting their own business. For instance, opening online shop. Although, these platforms just like Amazon did make selling and buying things easier, it did not make running a successful business easier.⁸ This has led the situation that many businesses have opened and then failed in the last few years. One of the reasons is that these business starters did not have adequate qualities like finance knowledge to run a business successfully.⁹ So, there is a huge need of financial service from these business owners.¹⁰

However, unlike those listed companies in security market, these businesses are small and have little information that you can access from outside. Consequently, one should contact the owners directly for the information he/she needs. Meanwhile, the finance information of a business is the kind of thing that owners wants to keep to themselves. Other than that, to meet the adequate sample size for a quantitative research, hundreds of companies' data is needed.

After consider my research topic step by step, I realize that I have many things to do and learn. However, I am more confident about what I should do right now.

⁷ Starr, H., (2005) Cumulation from Proper Specification: Theory, Logic, Research Design, and "Nice" Laws. *Conflict management and peace science*, 22(4), pp. 353-363.

⁸ GONÇALVES, R. et al. (2018) Evaluation of e-commerce websites accessibility and usability: an e-commerce platform analysis with the inclusion of blind users. *Universal access in the information society*, 17(3), pp. 567-583.

⁹ FINE, L., (2020) Successful Business Owners Have Qualities in Common. *Arkansas business*, 37(23), pp. 3.

¹⁰ PÄIVI, H. and ANTIKAINEN, M.J. (2015) Co-creating a digital service for small business owners' finance management. *Journal of Innovation Management*, 3(3), pp. 57-70.

Blog 3: Sampling: Foundation of Quantitative Research

Word count: 406

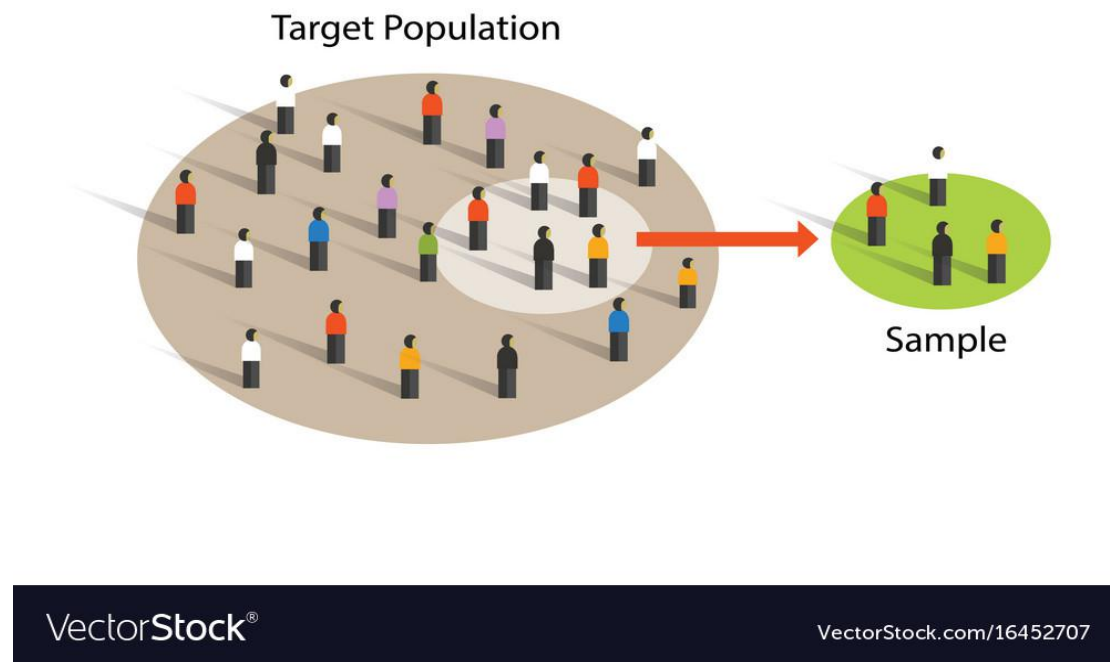


Figure 3: Sample from population statistics research survey (Source: VectorStock, 2020)¹¹

‘A good sample is a miniature version of the population of which it is a part – just like it, only smaller.’¹²

To understand sampling, there are three things need to be considered, population, samples, and sampling.

It might feel redundant when both samples and sampling are mentioned. Considering the specific process of doing a research project, when it requires quantitative methods,

¹¹ Vector Stock. (2020) *Sample from population statistics research survey*. Available at: <https://www.vectorstock.com/royalty-free-vector/sample-from-population-statistics-research-survey-vector-16452707> (Accessed 21 November 2020)

¹² Fink, A. (2003) *How to Sample in Surveys*. 2nd Edition. Thousand Oaks: Sage.

there are three questions need to be asked:

1. *what is the entire population?*
2. *Which and how many individuals in the population should be selected as sample?*
3. *How these samples can be accessed?*

The first question is how you define the population to catch the ‘whole picture’ which is researched.¹³ Sometimes, the population can be easily defined geographically. For example, the research objects are things about cities or countries. Other times, defining population is not as easy. Ensuring the accuracy of this step is fundamentally crucial.

The second question is that who or what would be the sample that need to be selected. Would the sample size be enough to represent the population which has defined? An adequate sample should be able to represent characteristics of the population.¹⁴ Theoretically, the bigger the sample size is the population can be represented better. However, considering the time and cost of obtaining each item, the amount of sample should be kept at a proper size.¹⁵

Finally, in what way these samples are selected. This question is about the sampling method that is chose. Normally, it is considered better to use a random or systematic sampling, so that every item has equal opportunity to be selected, or the selected items are equally distributed. Thus, the population can be better represented. After all, all the later experiments and data analysis are based on this original information.

When the evaluation of the research quality is taking place, the first and most important thing needs to be assessed closely is the sampling process. To make sure this part right, is the start of ensuring the reliability and validity of the research. Consequently, it leads a robust quantitative research.

¹³ SHARON L. L. (2019). *Sampling*. CRC Press.

¹⁴ MASTRANGELO, P.M. (2020) *Improving the Design and Interpretation of Sample Surveys in the Workplace*. New York: Oxford University Press.

¹⁵ SUBRAMANIAN, S. (2016) The effects of sample size on population genomic analyses – implications for the tests of neutrality. *BMC Genomics*. 17(1), pp. 123.

Blog 4: Ethical Issues of Big Data and Machine Learning

Word count: 501

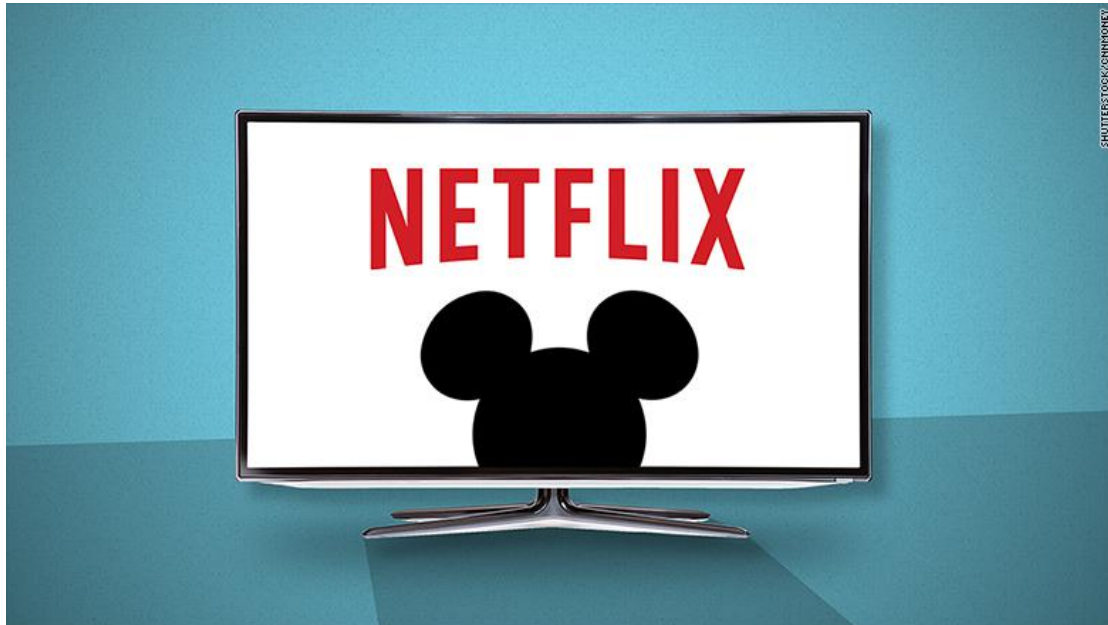


Figure 4: Why Disney won't kill Netflix (Source: CNN business, 2020)¹⁶

Netflix is a very famous company. How famous is it? For a person who is living on the other side of the Pacific Ocean, even though I have all this difficulty to subscribe and watch videos on it, I can still see it appears on the news in the finance section very often. Also, I can watch many different series that are produced by the company. It is so famous that I do not have to google it or search it on Wikipedia to know that it is a very successful technology and media services provider and production company that based in the United States.¹⁷

One of the reasons that it being so famous, is because that the company is doing its business very successfully. It has beaten many huge competitors like Blockbuster in the industry to become the one of the most popular media platforms in the US. As of

¹⁶ CNN Business. (2020) *Why Disney Won't Kill Netflix*. Available at: <https://money.cnn.com/2017/08/09/media/disney-netflix-streaming/index.html> (Accessed 25 November 2020).

¹⁷ Wikipedia. (2020) *Netflix*. Available at: <https://en.wikipedia.org/wiki/Netflix> (Accessed 16 November 2020).

October of this year Netflix had almost 193 million paid subscribers all over the world.¹⁸ And the main income contribution is from these hundreds million accounts every year.¹⁹ How can Netflix earn all this amount by making its subscribers stick with it? One of the effective ways that many internet companies use is to access their massive subscribers' data, and using machine learning to access the data, analyze them and learn about its subscribers' likes and dislikes, so that the front page of the website can be more attractive to them and want to spend more time on it.

Obviously, the advantage of using this strategy is that it can gain more time and attention from the subscribers, and increase its income. However, it has some ethical issues that the public wants to discuss. For the users, there are two main different attitudes to the issue. Some think this make the website more convenient and likable. But the others feel their privacy has been invaded.

Therefore, one problem needs to be sort out is that who does this usage data belong to. Does it belong to the subscribers or the company? If it does belong to subscriber, then is using it can be count as a way of privacy invading? Because Some might think that the company has been using the data that belongs to its subscribers against themselves. However, the company did spend millions of dollars to develop the website and to obtain its members, theoretically, it has the right to use these subscribers' data in its own business. It's just there might need rules to regulate the company that how far can they use, and on what purpose cannot be used.

Technology in itself cannot be judged as good or evil, but we can regulate the behavior of big organizations to establish boundaries and better ways of using it.

¹⁸ Netflix Investors. (2020) *Netflix Releases Third-Quarter 2020 Financial Results*. Available at: https://s22.q4cdn.com/959853165/files/doc_news/Netflix-Releases-Third-Quarter-2020-Financial-Results-2020.pdf (Accessed 16 November 2020).

¹⁹ Netflix. (2020) *Financial Statement of Netflix*. Available at: <https://ir.netflix.net/financials/financial-statements/default.aspx> (Accessed 16 November 2020).

Blog 5: the significance of significance test

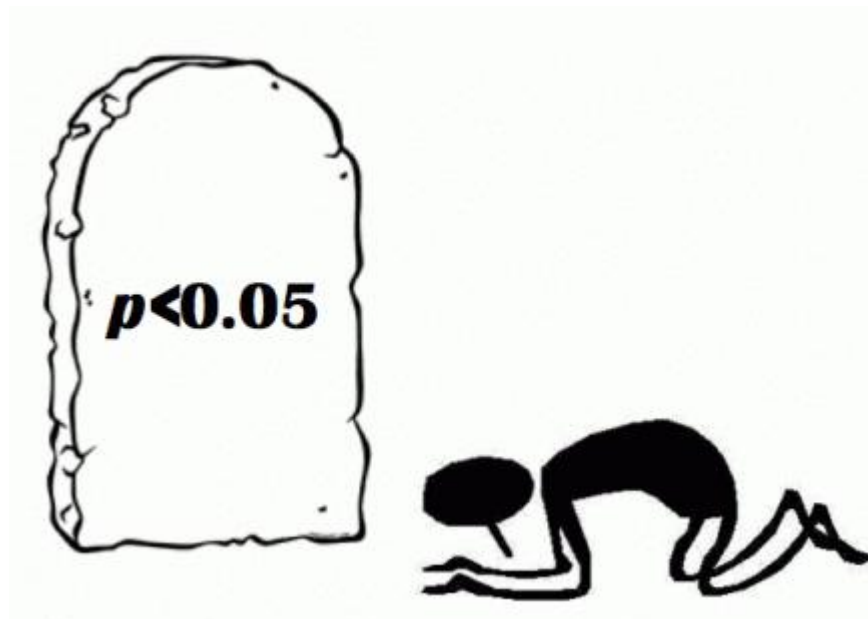


Figure 5: P Value Idolatry (Source: PulmCrit, 2020)²⁰

As quantitative methods started to be adapted in social science research, the test of statistical significance has been widely used for decades to test the hypothesis.²¹ If the hypothesis test theory is using, the significance test cannot be avoided. Scientists need to calculate P values to see if their null hypothesis can be rejected, so that they can get the final results of their experiments.

Even though the hypothesis testing theory has been well developed, along with the rapid updating of computer science, the skills that required to doing quantitative research are less. Decades ago, scientists need to master statistics and math, and take years to gather sample to test and get results. Thanks to technology, one can do data analysis and test hypothesis by just know how to use relevant software. All they need to do is input or upload data into the software, hit the relevant button, the results are coming out themselves. Finally, check for the P value. It's under the significance level? The research is successfully done. Technology make doing research easier. Obviously,

²⁰ PulmCrit. (2020) *Why Disney Won't Kill Netflix*. Available at: <https://emcrit.org/pulmcrit/demystifying-the-p-value/> (Accessed 22 November 2020).

²¹ HAIG, B.D., (2018) Tests of Statistical Significance. *The Philosophy of Quantitative Methods: Understanding Statistics*. Oxford University Press.

it saves time and energy of researchers. However, it also saves the process of understanding data thoroughly and looking it closely. This leads many false researches being published and spreaded by media.

Take the measles vaccine case in America as an example. When the article which about 8 out of 9 children had autism after getting measles vaccine was published on *The Lancet* in 1998.²² After a series of hypothesis tests, with the support of low P value that passed significance test, the author concluded that measles vaccine injection would increase the risk of children having autism. After, many parents refuse to inject the vaccine. In 2010, *The Lancet* made a statement that the article published in 1998 had the wrong conclusion. Even though the number of measles vaccine taking has increased consequently, many children have lost their health and life in America.²³

As mentioned by Ellenberg, significance test is a well-developed statistic tool. It can point a direction for researchers, but it cannot be over trusted that depending it alone to evaluate the whole research.

22 CHALABI, M., (2019) *Why 2019 could be the worst year for measles in the US in decades*. London (UK); Guardian News & Media Limited.

23 STANLEYBECKER, I., (2019) *Measles vaccine doesn't cause autism, says a decade-long study of half a million people*. Washington, D.C; WP Company LLC d/b/a The Washington Post.

Blog 6: About A Statistics Book

Word count: 520

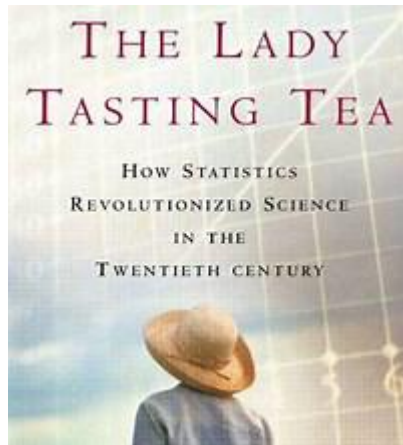


Figure 6: The lady Tasting Tea (Source: macmillan Publishers, 2020)²⁴

As recently I am being swamped in my quantitative research module, I have been doing some readings about statistics and quantitative research. Lately, a book called “*The Lady Tasting Tea: How statistics Revolutionized Science in the Twentieth Century*”²⁵ has caught my eyes. It is written by David Salsburg, and was translated and published for the first time in 2004 in China.

As the name of the book has stated, this is about the development history of statistics. But I was curious with the name of the book, why does lady tasting tea have something to do with statistics. I decided to find it out.

Basically, this book starts from a story about several Cambridge professors and their wives having a tea party in one afternoon, during the tea party there was a discussion about which tastes better, pouring milk into tea, or pouring tea into milk. Obviously, as a group of scientists, they decided to find it out by designing a set of experiments to test the hypothesis.

²⁴ Macmillan Publishers. (2020) *The lady Tasting Tea*. Available at: <https://us.macmillan.com/books/9780805071344> (Accessed 25 November 2020).

²⁵ Salsburg, D., (2002) *The Lady Tasting Tea: How statistics Revolutionized Science in the Twentieth Century*. Holt Paperbacks. Henry Holt and Co.

The whole book has explained the basic philosophy and logic behind different statistic methods by painting a vivid picture about the revolution of statistics that has taken place all over the world in the 20th century.

Before reading this book, I thought that statistics science has always been the way it is right now for a long time. However, as the book has described, the science of statistics had an enormous revolution which started from the World War II. Before that the world of statistics was dominated by determinism. People think everything has causal relationship. That is everything happens and exists for a reason. Based on this theory, scientists used to believe that what would happen in the future could be predicted, by finding out and analyzing the facts and data which are from that time, i.e. predict consequence by understand the cause. Thus, theoretically, the more facts and data one could obtain, the prediction would be more accurate. This seems right in many cases. Although many individuals with high education still see the world this way, we have to acknowledge that not everything can be explained by the determinism.

By the contribution of a group of great scientists like Pearson, Fisher etc., about the time of late 19th and early 20th centuries, this theory has been shaken gradually. The society started to understand the randomness of things, and the world cannot be exact predicted. However, it does have certain regulation and laws. The purpose of scientific research is trying to find out these regulation and laws.

It needs to be admitted that I am a person who likes to predict things. I am a person watch news regularly. Just a few days ago, before I read this book, I look at my investment in stock market, hope I can grasp any information as a sign that my stock would go up or go down. Obviously, I do aware the randomness of things. However, it feels like it is not resistible. This book, as a reminder, to warn me that keep having a scientific attitude all the time is difficult. It needs practice.

Although I am only half way through the book, I recommend it to ones want to have a over view of statistics like me.

Blog 7: quantitative methods in my research

Word count: 389

As of this moment, the first module of my DBA program has come to an end. A six weeks module feels so short. To be honest, learning how to conduct a quantitative research is a very important reason that I am taking a doctoral program.

Before I started this module, I had many ideas about my research. Accompanying with these ideas, there are some fears, too. Fears like would I be able to conduct these researches successfully, or is this topic good enough. Mainly is because that I did not had any knowledge about statistics and quantitative research methods. But right now, along with I learn more in my module sessions, other than having understanding to the whole picture of doing research, I gained more ideas for my own DBA research.

As I mentioned in my earlier blog, my research interest is focused on finance management for small and micro business. I would like to know that is there any factor which can influence the length of small business life. Small and micro businesses is a very important part of Chinese economy.²⁶ Other than paying taxes, they also create many employment opportunities every year, the contribution made by these businesses to the country's development cannot be ignored.

There are many small businesses have started and failed in the last few years. Is there any specific reason that leads to the failure of these businesses? Can they be helped in what ways? It is obvious that to find out the answers, the research needs a certain size of sample. Other than that, the way of designing questionnaire is vital. The truth is, there is a big chance that these business starters do not have an answer to why they

²⁶ TAPLIN, N., (2019) *A Controversial Savior for Chinese Small Business; China's plan to help struggling small businesses is failing, but tweaking an older product could be a solution*. New York, N.Y; Dow Jones & Company Inc.

fail. Design a proper questionnaire might help me to spot on the factors better.²⁷

Other than questionnaire design, correlation test is another important tool that can assist my research on the factors that influence on small business life. Under the condition that the right factors have been found by the questionnaire and further interviews, then the correlations can be tested between these factors.²⁸

Noticeably, because of the nature of my research topic, not only quantitative methods cannot be avoided, but also it will play a very significant role as a foundation of my study in small business.

²⁷ LANE, S., (2018). The best evidence comes from the right study design, not just randomised trials: Research question 2 of 2: the importance of research design. *BJOG: an international journal of obstetrics and gynaecology*. **125**(12), pp. 1504.

²⁸ TAKMASHEVA, I.V. and SANNIKOV, D.V., (2018) Assessing the Potential of Small Business Development in the Northern Region of Russia Based on Correlation Analysis. *European Research Studies Journal*, **XXI**, pp. 577-587.