Identification of Variables in Predicting Trends in Social Entrepreneurship

N A Zulkefly¹, N A Ghani², W Alquliti³

¹,² Department of Information Systems, Faculty of Computer Science & Information Technology, University of Malaya, Kuala Lumpur, Malaysia
³ Department of Information Technology & Information Resource Centre Organization of Islamic Cooperation Jeddah, Kingdom of Saudi Arabia

erinzulkefly@gmail.com¹, norjihan@um.edu.com², walquliti@hotmail.com³

Abstract. Social entrepreneurship can be utilized with the emergence of big data analytics. Data analytics can assist entrepreneurs who do not have the expertise, data, and systems to perform the analysis necessary so that it can provide predictions in order to optimize their business. Although research has been done showing the prediction variables in commercial entrepreneurship, but the variables cannot be simply used to tackle the prediction in social entrepreneurship. Prediction in social entrepreneurship is different with commercial entrepreneurship. The variables used in predicting commercial entrepreneurship primary focused in measuring the economic returns meanwhile social entrepreneurship primary focus in social returns. Predicting social impact is a good form of action for social entrepreneurs which may help them in decision making and keep their business sustainable. This study synthesizes the variables which can be used in predicting social impact in social entrepreneurship. As an outcome of this research, the paper highlights the variables which can be used in predicting social impacts and the contributions are it can enrich the knowledge of researchers and social entrepreneurs in term of the prediction of social entrepreneurship impact.

1. Introduction
Starting in the year of 1990s, social entrepreneurship has been among the hot topic among researchers. This has been proved by the increasing number of researches in this domain [1]. Social entrepreneurship can be define as the entrepreneur who create their activities to be led to ultimate goal of creating social value. Social entrepreneurship also refers to the development of social innovation that aim to solve social problem not only for own individual profit [1]. Social entrepreneurship have various version of definitions but even though there are various definitions, the mission of social entrepreneurship is still same for the most of the definitions. The factors can be because of the difference of the geographic locations and the country economic development [2]. There are three most similar terms of social entrepreneurship that carry different meaning of itself. The terms include social entrepreneurship, social entrepreneurs and social enterprise. Social entrepreneurship mainly focused on a business process. Meanwhile, social entrepreneurs are focus on the founder of the business, and social enterprises refer to the outcome of social entrepreneurship [1].
The evolution of social entrepreneurship is rising in recent decades. This has been proved by the increasing number of researches in the field of social entrepreneurship [3]. Social entrepreneurship is different with commercial entrepreneurship. Social entrepreneurship is a unique entrepreneurship that lies between for profit and non-profit organization [4]. Commercial entrepreneurship generally focuses its business only on value creation and aiming on increasing their profit [4]. On the other hand, for Social entrepreneurship, the final goal is to solve the societal problems. Compared This is why measuring the impact in social entrepreneurship is not easy as measuring the impact of commercial entrepreneurship, this is because it requires the consideration of a variety of objectives and results from many stakeholders [4]. Furthermore, social entrepreneurship is very complex since they operate in many different industry fields [4]. This complex industry lead to different information needs, different expectations, and also different variables needs in measuring social entrepreneurship impact [4].

Big data analytics tools and techniques becoming hot topic in entrepreneurship nowadays. Most of the companies generating vast amount of data, so they found a new opportunity to efficiently do their business. Big data help them by providing meaningful information for the better decision making [5]. Big data driven decision making is developing nowadays. Exploiting big data in social entrepreneurship can be used to help in decision making to reduce large-scale social problems and address social challenges. Many experiences, over the world, show how big data analytics can generate value for social good. The power of big data has emerged to become a tool in making patterns, modelling, and recognizing predictive patterns that in result offers valuable insights for social entrepreneurship to form social innovations opportunities [7].

This research was conducted to discuss the analysis of variables used in predicting social impacts in social entrepreneurship. In this paper, we analyse all the previous works which discuss all the variables that have been derived from literature review. This paper consists of the following sections: The related works will be discussed in section II, the research methods will be discussed in section III, The result & findings in section IV and the conclusion in section V.

2. Related works
This section discussed how the variables that we have derived from the literature review. Social entrepreneurship is very important and should be cultivated and motivated since it can give impact in society, economy and environment. Social entrepreneurship is a productive entrepreneurship where it can create those impacts. It is different with commercial entrepreneurship or it always been called traditional entrepreneurship where it is an unproductive entrepreneurship. The main focus of commercial entrepreneurship is only focus on creating economic impact only [8]. This research is focused on the analysis of the variables which can be used in predicting social impact in social entrepreneurship that focus in education sector. Education sector in social entrepreneurship is mapped in the social impact category. The category of social entrepreneurship impact is shows in figure 1.

![Figure 1. Social Entrepreneurship Impact Category](image-url)

The role of social entrepreneurship impact in society is the social impact creation that give effect to the society and solve social problems. It creates social value which addressing the social problems either in short term or in the long-term perspective. Social entrepreneurship can be a successful and growing. It achieves its main mission and country social needs. It can create income redistribution, redistribution of wealth, immediate suffering mitigation, and create opportunity for the society. In term
of income redistribution, it uses economic strategies to close the gap of income of the rich and poor earned income. Redistribution of wealth refers to the income seizure from the rich people and distributing it to the poor people [9]. Alleviate immediate suffering does not create a long term impact as it is only give relief to people in the short time period and it is not sustainable [9]. In the other hand, the long-term impact is opportunity creation. This involve the job opportunity creation that give impact to society in the long term as it can improve people’s earned income as simultaneously it can contribute to the nation growth. Since this research is focus in social impact in education sector, the variables that has been found is aligned with the social impacts.

3. Research methods
This section explains how we analyses and validate the list of variables to be chosen for the next phase. The research design of this research involves two main phases. The first phase comprises three tasks which include literature review on relationship of big data and social entrepreneurship. The second and the third task focused on the identification and verification of the variables that can be used in predicting social impact. These tasks have been conducted by synthesizing variables found from literature review verify it by the social entrepreneur expert.

In the first phase of this research, we have conducted a comprehensive literature review to find the evidences for the results based on the past studies. The purpose of this phase is to investigate all possible variables through literature review, analyse it and verify from the social entrepreneur expert. The investigation was made by literature review of other researcher that has done their work related to social impact prediction or social impact measurement. Four databases were used to collect the papers. Those four databases are Web of Science, Science direct, IEEE explore, and Scopus. The year of articles selected were limited to eight years frame from 2010 to 2018 as we assume that it provides sufficient literature related to variables in prediction of social entrepreneurship impacts. For the keywords of the search, it started by using relevant keyword which include the different words but having the same meaning. This keyword was called “seed keyword”. As for example, “Social entrepreneur”, “Social enterprise”, “Social Entrepreneurship”. Then a manual search was used by using Boolean operations “AND” and “OR”. For example, “Social entrepreneur” OR “Social enterprise” OR “Social Entrepreneurship”. The articles then been selected based on its relevant title, keywords, and abstract.

The selected articles from the keyword search process were then filtered based on its relevancy for the study and the paper quality. We also take into account about the word’s synonyms. For example, we try to change the search with different synonym words. For example, “trends”, “movement”, “tendency”. This is to ensure that we cover as maximum of the search result related to the research domain. We used Boolean operation then for our search. These are the examples of search query of this study:

- (Predicting variables) AND Social Impact
- “Predicting Variable” AND “Social Impact” AND (Social entrepreneur OR Social enterprise OR Social Entrepreneurship)
“Predicting Social Impact” AND (Social entrepreneur OR Social enterprise OR Social Entrepreneurship)
“Social impact” AND (Social entrepreneur OR Social enterprise OR Social Entrepreneurship)

The research then continued with analysis of the variables. The output from the literature review has been analysed and synthesized based on the variables found, authors and the description of the variables. The result of the synthesized variables are as shows in table below.

| Variables                          | Author(s)                                      | Explanation                                                                 |
|------------------------------------|------------------------------------------------|------------------------------------------------------------------------------|
| Household income                   | (Diana M. Hechavarría, 2017 [10]; Sophie Bacq, 2016 [11]) | Combined incomes of all people sharing in a particular household             |
| Skills                             | (Natalia Agapitova, 2017 [12])                 | The improvement of people’s ability and capacity acquired through experience of handling the job. |
| Number of new jobs generated       | (Fredrik O. Andersson, 2015 [13]; Natalia Agapitova, 2017 [12]) | Social entrepreneurship company with more workers can produce and sell more goods and services, increasing revenue that can fuel additional growth and jobs. |
| Business revenue                   | (Diana M. Hechavarría, 2017 [10]; Natalia Agapitova, 2017 [12]) | The amount of money that social entrepreneurs receives based on their business activities. |
| Money Raised by social enterprise  | (Jevgenija Dehtjare, 2015 [14]; Natalia Agapitova, 2017 [12]) | Social enterprises re-invest the money they make back for their business.    |
| Social return on investment        | (Ana Maria, 2006 [15]; Natalia Agapitova, 2017 [12]) | Framework for measuring and accounting the social value                      |
| Rate of youth recidivism           | (Tina Saebi, 2018 [16]; Natalia Agapitova, 2017 [12]) | Recidivism rate of number of people involved in criminal activities         |
| People’s skills category           | (Jevgenija Dehtjare, 2015 [14]; Natalia Agapitova, 2017 [12]) | People’s expertise of doing something.                                       |
| Number of unemployment             | (Roger spear, 2013 [17])                       | The number of unemployed people in Malaysia                                  |
| Knowledge/ education               | (Joanne Hillman, 2018 [18]; Natalia Agapitova, 2017 [12]) | The impact of education or training that people received                    |

The next step of this research is verification of variables. The purpose of this task is to verify whether the variables found from literature review is valid for the purpose of social impact prediction. The verification of the variables has been done through interview with three social entrepreneur’s experts.
The social entrepreneurs’ expert is the founder of ARUS Academy Malaysia, and Co-founder of J Global Resources, Malaysia. Both of the social entrepreneurs mentioned are in the same social entrepreneur category which is in education sector. The purpose of the interview is to verify the variables as shows in table 2. The result of verified variables will be discussed in section IV. The research next continues to model the prediction which this model can be used in predicting social impact and the last task in this research is to validate the effectiveness of the model.

4. Result & Discussion

Variables used in predicting social impact is differ to the variables used in predicting commercial entrepreneurship. This research only focusses social entrepreneurship in education sector. The targeted individual of this research is the people with disability or the poor people that does not have the opportunities of having the proper education that ensure them to get the job in future. Employer usually don’t have the insight why they need to hire people with disability. They have the negative sight for them in term of the productivity of work [19]. Table 1 shows the variables that has been verified by the social entrepreneur expert.

Table 2. The Variables of Predicting Social Impact After Verified

| Variables              | Author(s)                                                                 | Explanation                                                                 |
|------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Household income       | (Diana M. Hechavarría, 2017 [10]; Sophie Bacq, 2016 [11])                | Combined incomes of all people sharing in a particular household             |
| Skills                 | (Natalia Agapitova, 2017 [12])                                           | The improvement of people’s ability and capacity acquired through experience of handling the job. |
| Juvenile recidivism    | (Tina Saebi, 2018 [16]; Natalia Agapitova, 2017[12])                     | Recidivism rate of number of people involved in criminal activities         |
| Number of unemployment | (Roger spear, 2013[17])                                                  | The number of unemployed people in Malaysia                                 |
| Knowledge/ education   | (Joanne Hillman, 2018 [18]; Natalia Agapitova, 2017 [12])               | The impact of education or training that people received                    |

The reason selection of each variables:

a) Household Income
Household Income is the measurement of the combined income of all people sharing a particular household. This variable selected because this is one of the main problems of poor people or people with disability. They do not have the proper education, and this has lead them to not getting any job.

b) Skills
People are born to have different skills. It does not mean people with disability or poor people do not have the skills. Sometimes they do have the skills, but they do not expose, and they usually do not develop their skills.
c) Juvenile Recidivism
The recidivism may be occurred among people who do not have the proper education. People that do not have proper education may be exposed to the juvenile recidivism world. The purpose of select this as the variable is to measure the future of juvenile recidivism rate.

d) Number or unemployment
Number of unemployment is the number or proportion of unemployed people in Malaysia. The data of unemployed people may be used to predict the number of employments after they have been trained or follow the education programmes.

e) Knowledge/education
The level of people’s education and knowledge can be use as variables as it can be measure even before or after they been trained or follow the proper education programmes.

5. Conclusions
The next plan of this research is to use the verified variables in modelling the prediction of social impact in social entrepreneurship. As for conclusion, prediction variables used in predicting social entrepreneurship is different compared to prediction in commercial entrepreneurship. Social entrepreneurship has focus on sustaining their business and to give the impact to the society while commercial entrepreneurship is just focus on its economic impact. The variable that has been posed in this study can be only used by social entrepreneur in the same sector which is education sector. This is because, social entrepreneurship has many different sectors. Different sector has different problems to be solved and different impact to be measured. This has led to different variables used in prediction even though it is in social entrepreneurship. Next, in term of the predicting techniques, by considering a wide range of modelling technique that may be suitable for developing the model, a researcher may have better decision on what techniques is the most suitable (accurate). These techniques normally focus on predicting metrics in commercial entrepreneurship, we are currently expanding the empirical comparison of the techniques that really suit to predict social impact in social entrepreneurship.

6. Acknowledgement
The authors would like to thank and acknowledge the support provided by UMRG Program 2018 at University Malaya and the Ministry of Higher Education, under research grant reference number:RP044D-17HNE, entitled “Utilizing the data socialization for predicting future trends in social entrepreneurship” that has been led by Dr. Norjihan Binti Abdul Ghani.

References
[1] R. G. Rivera, D. Santos, M. Martín-Fernández, B. Requero, and A. Cancela, “Predicting attitudes and behavioural intentions towards social entrepreneurship: the role of servant leadership in young people / Predicción de las actitudes y las intenciones conductuales hacia el emprendimiento social: el papel del liderazgo de servicio,” Rev. Psicol. Soc., vol. 33, no. 3, pp. 650–681, 2018.
[2] H. Engelke, S. Mauksch, I. L. Darkow, and H. A. von der Gracht, “Opportunities for social enterprise in Germany - Evidence from an expert survey,” Technol. Forecast. Soc. Change, vol. 90, no. PB, pp. 635–646, 2015.
[3] Pandey, S., Lall, S., Pandey, S. K., Ahlawat, S., Pandey, S., & Lall, S. (2017). The Appeal of Social Accelerators : What do Social Entrepreneurs Value ? The Appeal of Social Accelerators : What do Social Entrepreneurs, 676(March). https://doi.org/10.1080/19420676.2017.1299035
[4] M. Arena, G. Azzone, and I. Bengo, “Performance Measurement for Social Enterprises,” Voluntas, vol. 26, no. 2, pp. 649–672, 2015.
[5] M. K, S. K, and K. S, “a Survey on Impact of Big Data in E-Commerce,” Int. J. Pure Appl. Math., vol. 116, no. 21, pp. 183–188, 2017.
[6] M. T. Matriano and M. F. R. Khan, “Technological Platforms for Social Entrepreneurship,” vol. 3, no. 1, pp. 47–53, 2017.
[7] M. Z. Zailan, H. Yaakub, and S. Jusoh, “Yield and nutritive quality of napier (Pennisetum purpureum) cultivars as fresh and ensiled fodder,” J. Anim. Plant Sci., vol. 28, no. 1, pp. 63–72, 2018.

[8] Z. J. Acs, M. C. Boardman, and C. L. Meneely, “The social value of productive entrepreneurship,” pp. 785–796, 2013.

[9] R. Justo, M. Renko, D. M. Hechavarría, A. E. Ingram, S. A. Terjesen, and A. Elam, “Taking care of business: the impact of culture and gender on entrepreneurs’ blended value creation goals,” Small Bus. Econ., vol. 48, no. 1, pp. 225–257, 2016.

[10] S. Bacq and E. Alt, “Feeling capable and valued: A prosocial perspective on the link between empathy and social entrepreneurial intentions,” J. Bus. Ventur., vol. 33, no. 3, pp. 333–350, 2018.

[11] N. Agapitova, B. Sanchez, and E. Tinsley, “Government Support to the Social Enterprise Sector: Comparative Review of Policy Frameworks and Tools,” p. 68, 2017.

[12] F. O. Andersson and M. Ford, “Reframing Social Entrepreneurship Impact: Productive, Unproductive and Destructive Outputs and Outcomes of the Milwaukee School Voucher Programme Reframing Social Entrepreneurship Impact: Productive, Unproductive and Destructive Outputs and Outcomes,” vol. 676, no. December, 2015.

[13] J. Dehtjare and V. Riashchenko, “Social Entrepreneurship: issues and trends,” vol. 8, no. 1, pp. 7–11, 2015.

[14] A. M. Peredo and M. Mclean, “Social Entrepreneurship: A Critical Review of the Concept,” no. July, 2006.

[15] T. Saebi, N. J. Foss, and S. Linder, “Social Entrepreneurship Research: Past Achievements and Future Promises,” vol. 45, no. 1, pp. 70–95, 2019.

[16] R. Spear, “Social entrepreneurship and other models to secure employment for those most in need (Croatia, 2013),” pp. 1–20, 2013.

[17] J. Hillman, S. Axon, and J. Morrissey, “Social enterprise as a potential niche innovation breakthrough for low carbon transition,” Energy Policy, vol. 117, no. March, pp. 445–456, 2018.

[18] L. Strindlund et al., “Employers’ views on disability, employability, and labor market inclusion: a phenomenographic study a phenomenographic study,” Disabil. Rehabil., vol. 0, no. 0, pp. 1–8, 2018.