

RGC Ref. No.: <u>UGC/FDS16/B07/18</u> (please insert ref. above)

**RESEARCH GRANTS COUNCIL
COMPETITIVE RESEARCH FUNDING SCHEMES FOR
THE LOCAL SELF-FINANCING DEGREE SECTOR**

FACULTY DEVELOPMENT SCHEME (FDS)

Completion Report
(for completed projects only)

<p><u>Submission Deadlines:</u> 1. Auditor's report with unspent balance, if any: within six months of the approved project completion date. 2. Completion report: within 12 months of the approved project completion date.</p>

Part A: The Project and Investigator(s)

1. Project Title

An Empirical Study on Relationship between IPO Prospectus Readability
and IPO Underpricing

2. Investigator(s) and Academic Department(s) / Unit(s) Involved

Research Team	Name / Post	Unit / Department / Institution
Principal Investigator	TSUI Christophor Sai-kit Senior Lecturer	Lee Shau Kee School of Business and Administration The Open University of Hong Kong
Co-Investigator(s)	LI Kevin Chi-keung Assistant Professor	Lee Shau Kee School of Business and Administration The Open University of Hong Kong

3. Project Duration

	Original	Revised	Date of RGC / Institution Approval (must be quoted)
Project Start Date	1 January 2019		
Project Completion Date	30 June 2020	31 August 2020	11 March 2020
Duration (in month)	18 months	20 months	
Deadline for Submission of Completion Report	30 June 2021	31 August 2021	11 March 2020

Part B: The Final Report

5. Project Objectives

5.1 Objectives as per original application

- 1. To assess the readability of the IPO prospectus in Hong Kong*
- 2. To determine the relationship between the readability, tones and ambiguity of the IPO prospectus and IPO underpricing in the Hong Kong stock market*

5.2 Revised objectives

Date of approval from the RGC: NIL

Reasons for the change: _____

5.3 Realisation of the objectives

(Maximum 1 page; please state how and to what extent the project objectives have been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any)

Our study used machine learning technique to analyze the readability of IPO (Initial Public Offer) prospectus of companies listed in the Hong Kong Stock Exchange from 2010 to 2017. We further use the IPO prospectus of companies listed in the Hong Kong Stock Exchange in 2018 to validate our model.

We used the ‘automated readability index’ to determine the readability of the chapters in the IPO prospectus. We find that the readability of chapters of ‘future plans and use of proceeds’, ‘waivers from strict compliance with the listing rules’, ‘financial information’ are the three most dominant factors in our model. Our model can predict underpricing stocks with 65.56% accuracy using the readability scores of seven key IPO prospectus chapters.

We further used regression analysis to analyze the relationship of company characteristics, overall readability score of the IPO prospectus and underpricing. We found that underpricing had a significant and direct relationship to firms with a significant Chinese background.

5.4 Summary of objectives addressed to date

Objectives <i>(as per 5.1/5.2 above)</i>	Addressed <i>(please tick)</i>	Percentage Achieved <i>(please estimate)</i>
1. To assess the readability of the IPO prospectus in Hong Kong	✓	100%
2. To determine the relationship between the readability, tones and ambiguity of the IPO prospectus and IPO underpricing in the Hong Kong stock market	✓	100%

6. Research Outcome

6.1 Major findings and research outcome

(Maximum 1 page; please make reference to Part C where necessary)

Prior studies suggest that underpricing of IPO (Initial Public Offer) underpricing is due to asymmetric information between the difference in knowledge on the same firm among different investors. For IPO, the prospectus may be the primary source of information for the investors. The readability of the prospectus will have impacts on the investors' decisions as investors may not be willing to invest in firms which are challenging to understand. Our study shows that the IPO prospectus of Hong Kong requires the investors to have at least be a university graduate to understand. Our first paper, *"IPO Underpricing and Prospectus Readability, A Machine Learning Approach"* finds that readability scores of seven key chapters in IPO prospectus of listed companies in the Hong Kong Stock Exchange can be used to classify the underpricing of IPO using the IPO data from 2010 to 2017. Our model has been validated by 2018 IPO data and the accuracy is 65.56%.

Our second paper, *"An Empirical Study on Relationship between IPO Prospectus Readability and IPO Underpricing"* shows interesting results when compared with prior studies. Prior studies show that IPO underpricing is directly related to many different factors such as the reputation of the underwriters, the age of firms, the readability score of the prospectus, etc. Our study uses regression analysis to analyze factors affecting underpricing of IPO of companies listed in the Hong Kong Stock Exchange from 2010 to 2018. Our study shows that the reputation of the underwriters, the age of firms, the readability score of the prospectus are not statistically significant to IPO underpricing. We find that the factors of readability of the IPO prospectus, the polarity of the IPO prospectus, listing in main board are statistically significant to IPO underpricing. We also find that reputation of underwriters, the age of the listed company, the reputation of the auditor are not statistically significant to IPO underpricing in Hong Kong.

6.2 Potential for further development of the research and the proposed course of action (Maximum half a page)

The project team has identified the following research opportunities:

1. There is an over-the-counter (OTC) market in Hong Kong for IPO where the investors can sell their stocks to key stockbrokers before the official first trading day in the Hong Kong Stock Exchange. We can use machine learning techniques to predict the maximum selling price of IPO in the OTC market using the readability scores of the IPO prospectus and the fundamental data of the IPO.
2. Since the annual report of listed companies contained a lot of information for the investors and will affect their investment decisions. An interesting study is to analyse the relationship between readability scores of the annual reports of listed companies in Hong Kong and their short-term and long-term share price movements.
3. Some IPO companies listed in Hong Kong did not perform well in the first year of trading. We can study the relationship between the readability scores of the IPO prospectus and firms earning performance. This could help investors to avoid investing in under-performance firms which demonstrate specific characteristics in their IPO prospectus.

Preliminary studies on the above research opportunities will be conducted in 2021.

7. Layman's Summary

(Describe in layman's language the nature, significance and value of the research project, in no more than 200 words)

The prospectus is an essential document for investors who would like to invest in the IPO (Initial Public Offer) market in Hong Kong. IPO underpricing occurs when a listed company set its initial public offer price below its true value in the stock market. If investors can identify which company is underpriced, investors can get significant returns by subscribing such IPO shares and sell it on the first trading day. This study makes use of a machine learning model to analyse the readability scores of IPO prospectus of companies listed in the Hong Kong Stock Exchange from 2010 to 2017. Our model can classify underpriced IPO with 65.56% accuracy by using the automated readability scores of seven key chapters from IPO prospectus. We further find that listed companies with significant Chinese background are generally underpriced. We also find that reputation of underwriters, the age of the listed company, the reputation of the auditor are not statistically significant to IPO underpricing in Hong Kong.

Part C: Research Output**8. Peer-Reviewed Journal Publication(s) Arising Directly From This Research Project**

(Please attach a copy of the publication and/or the letter of acceptance if not yet submitted in the previous progress report(s). All listed publications must acknowledge RGC's funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s) (denote the corresponding author with an asterisk*)	Title and Journal / Book (with the volume, pages and other necessary publishing details specified)	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this Report (Yes or No)	Acknowledged the Support of RGC (Yes or No)	Accessible from the Institutional Repository (Yes or No)
Year of Publication	Year of Acceptance (For paper accepted but not yet published)	Under Review	Under Preparation (optional)						
			✓	TSUI Christophor Sai-kit*, LI Kevin Chi-keung	"IPO Underpricing and Prospectus Readability, A Machine Learning Approach", Journal of Accounting and Economics	Manuscript completed	Yes [Attachment 1]	Yes	No (Will become accessible after being published)
			✓	LI Kevin Chi-keung*, TSUI Christophor Sai-kit	"An Empirical Study on Relationship between IPO Prospectus Readability and IPO Underpricing", Journal of Accounting and Economics	Under preparation	No	Yes	No (Will become accessible after being published)

9. Recognized International Conference(s) In Which Paper(s) Related To This Research Project Was / Were Delivered

(Please attach a copy of each conference abstract)

Month / Year / Place	Title	Conference Name	Submitted to RGC <i>(indicate the year ending of the relevant progress report)</i>	Attached to this Report <i>(Yes or No)</i>	Acknowledged the Support of RGC <i>(Yes or No)</i>	Accessible from the Institutional Repository <i>(Yes or No)</i>
NIL						

10. Whether Research Experience And New Knowledge Has Been Transferred / Has Contributed To Teaching And Learning

(Please elaborate)

The PI and Co-I have gained a lot of valuable experience in research, especially in the application of machine learning in research. This facilitates them to use new techniques in future research studies

11. Student(s) Trained

(Please attach a copy of the title page of the thesis)

Name	Degree Registered for	Date of Registration	Date of Thesis Submission / Graduation
NIL			

12. Other Impact

(e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, teaching enhancement, etc.)

Nil

13. Statistics on Research Outputs

	Peer-reviewed Journal Publications	Conference Papers	Scholarly Books, Monographs and Chapters	Patents Awarded	Other Research Outputs (please specify)	
No. of outputs arising directly from this research project	2 (Under preparation)	NIL	NIL	NIL	Type	No.

14. Public Access Of Completion Report

(Please specify the information, if any, that cannot be provided for public access and give the reasons.)

Information that Cannot Be Provided for Public Access	Reasons
NIL	