RGC Ref. No.:
UGC/FDS25/B01/17
(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)

Submission Deadlines:	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.*

Part A: The Project and Investigator(s)

1. Project Title

Modelling Country Attractive Factors that affect Hong Kong's Textiles and Clothing Trade Potential with One Belt One Road Countries

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

Research Team	Name / Post	Unit / Department / Institution
Principal Investigator	Dr. CHAN Man Hin, Eve	Fashion Design / Faculty of Design and Environment / THEi
Co-Investigator	Ms. CHU Wai Ching, Alice	Fashion Design / Faculty of Design and Environment / THEi
Co-Investigator	Prof. Angappa GUNASEKARAN	Former: Charlton College of Business / University of Massachusetts – Dartmouth, USA Current: School of Business and Public Administration / California State University
Co-Investigator	Dr. YIP Tsz Leung	Department of Logistics and Maritime Studies / The Hong Kong Polytechnic University
Others Research Assistant	Dr. CHEUNG Jenny	Fashion Design / Faculty of Design and Environment / THEi

3. Project Duration

	Original	**Revised**	**Date of RGC / Institution Approval** *(must be quoted)*
Project Start Date	1st January 2018	1st February 2018	17th November 2017
Project Completion Date	30th June 2019	31st July 2019	17th November 2017
Duration *(in month)*	18	18	N/A
Deadline for Submission of Completion Report	30th June 2020	31st July 2020	N/A

Part B: The Final Report

5.   Project Objectives

5.1   Objectives as per original application

1. To create the OBORICA for the T&C industries that would contribute to sustainable business development in different countries of the OBOR initiative.
2. To examine the relationship between the OBORICA and trade performance of the OBOR countries in the T&C industries.
3. To design and develop a tailored gravity trade model on the basis of theoretical analysis by considering different variables for the analysis of trade potential between Hong Kong and the OBOR countries.
4. To determine markets that should have priority for the production processes of T&C industries in the OBOR countries, marked by performance in trade potential in order to provide Hong Kong with opportunities to further business growth and expansion.
5. To identify and valuate the effect of various factors on the efficiency of T&C export supply chains between OBOR countries. The analysis is conducted in parallel with the T&C supply chain mapping exercise.
6. To provide recommendations for T&C companies in Hong Kong to improve their export chain efficiency and business competitiveness in the new markets.

5.2   Revised objectives

Date of approval from the RGC: N/A

Reasons for the change:

1.

2.

3. ....

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)

Objectives	Realisation of the objectives *(How and to what extent the project objectives have been achieved)*
1. *To create the OBORICA for the T&C industries that would contribute to sustainable business development in different countries of the OBOR initiative.*	To create the OBORICA, determinants of Textile and Clothing bilateral trade flow were identified. The findings were collected and analysed to present at the "Belt & Road Initiative (BRI) Conference", on 24-26 June 2018, School of Business & Management, RMIT University Vietnam. The findings from this initial study was developed into a paper that also discusses the sustainable business developments in different countries of the OBOR initiative and published in a peer-reviewed paper titled, "Looking Back to Look Forward: Setting Future Research Agenda for International Business in Textiles and Clothing Industry", in the *Journal of International Logistic and Trade*.
2. *To examine the relationship between the OBORICA and trade performance of the OBOR countries in the T&C industries.*	The variables identified in Objective 1 is used to guide the second study which carried out interviews with industry professionals. A study was carried out to investigate how the identified variables will affect the trade performance of T&C in China, and neighbouring OBOR countries. From a qualitative approach, this second study explored variables from industry experts in order to develop a refined list for the OBORICA. The results was submitted in an abstract titled "Exploratory Research Evidence of Challenges and Opportunities Perceived by Textiles & Clothing Companies in One Belt One Road Countries", and presented at "AIB Oceania 2018 Research Symposium Conference", Department of Management and Marketing, University of Melbourne, 16-17 November 2018. The team continued to work on this study and new results/development were presented at another conference. An abstract titled: "Evaluating the impact of the Belt and Road Initiative for Textile and Clothing companies in Asia", was submitted and presented at the 2019 International Conference of Project Management (ICPM), AIBPM, Bali, Indonesia during 5-6 April 2019. Following this conference, a paper titled, "The Belt and Road Initiative's impact on Textile and Clothing Supply Chains in Asia: Views from Hong Kong Industrial Stakeholders", was published in the *International Journal of Applied Business and International Management* (August 2019).
3. *To design and develop a tailored gravity trade model on the basis of theoretical analysis by considering different variables for the analysis of trade potential between Hong Kong and the OBOR countries.*	A third study looked at T&C companies in Hong Kong to investigate how Hong Kong can strengthen its "super-connector" role, facilitating sustainable trade and development in the T&C industries among some OBOR countries. A conference abstract titled, "Opportunities from the "One Belt, One Road" Initiative for Manufacturing? The Case of Hong Kong's Textiles and Clothing Sectors", was submitted and presented at the "Belt & Road Initiative (BRI) Conference", on 24-26 June 2018, School of Business & Management, RMIT University Vietnam. This conference output was converted into a paper titled "What are the Opportunities for manufacturing on the "one belt, one road" initiative? The case of Hong Kong's textiles and clothing sectors", published in the *Journal of Textile Engineering & Fashion Technology*, 4(6): p.355-360.
4. *To determine markets that should have priority for the*	A fourth study, investigated the effect of OBOR initiative on ASEAN countries in the OBOR. Data collection and econometric analysis for 16 Belt and Road countries for the period of

production processes of T&C industries in the OBOR countries, marked by performance in trade potential in order to provide Hong Kong with opportunities to further business growth and expansion.	2012-2018 was completed. The data was used in a study discussing the priority markets for T&C industries in the BRI. A conference paper titled: "Predicting Asia's Clothing Trade with USA within the Belt and Road Initiative using Neural Network", was produced for presentation at the 2019 Manado International Conference of Project Management (ICPM), Indonesia, 21-22 September 2019. A journal paper titled, 'Predicting Asia's Clothing Trade With USA Within The Belt And Road Initiative Using Neural Network', has been accepted by the *International Journal of Innovation, Creativity and Change (IJICC)* in July 2020.	
5.	*To identify and valuate the effect of various factors on the efficiency of T&C export supply chains between OBOR countries. The analysis is conducted in parallel with the T&C supply chain mapping exercise.*	An abstract titled, 'An Extended Gravity Model Analysis of Hong Kong's Clothing Trade: Implications for Managing Global Supply Chains Under The "Belt and Road" Initiative', was presented at the AIB 2019 Annual Meeting conference, Copenhagen, Denmark on June 24-27, 2019.
6.	*To provide recommendations for T&C companies in Hong Kong to improve their export chain efficiency and business competitiveness in the new markets.*	To provide recommendations for T&C companies in Hong Kong, the results from our various research outputs were compiled into a book. The book, "Belt and Road Initiative – Collaboration for Success", was published by Springer. Two of the published research papers from this project was included as chapters, along with four research studies from other academics and institutions formed the contents of the book. The book also entails a list of Belt and Road countries, and country profiles of countries trading in the T&C industry in the BRI.

5.4 Summary of objectives addressed to date

Objectives *(as per 5.1/5.2 above)*	Addressed *(please tick)*	Percentage Achieved *(please estimate)*
1. *To create the OBORICA for the T&C industries that would contribute to sustainable business development in different countries of the OBOR initiative.*	✓	100%
2. *To examine the relationship between the OBORICA and trade performance of the OBOR countries in the T&C industries.*	✓	100%
3. *To design and develop a tailored gravity trade model on the basis of theoretical analysis by*	✓	100%

	considering different variables for the analysis of trade potential between Hong Kong and the OBOR countries.		
4.	*To determine markets that should have priority for the production processes of T&C industries in the OBOR countries, marked by performance in trade potential in order to provide Hong Kong with opportunities to further business growth and expansion.*	✓	100%
5.	*To identify and valuate the effect of various factors on the efficiency of T&C export supply chains between OBOR countries. The analysis is conducted in parallel with the T&C supply chain mapping exercise.*	✓	100%
6.	*To provide recommendations for T&C companies in Hong Kong to improve their export chain efficiency and business competitiveness in the new markets.*	✓	100%

6.   Research Outcome

6.1   Major findings and research outcome
(Maximum 1 page; please make reference to Part C where necessary)

Based on this research project, we have published three peer-reviewed journals, six conference papers and one book. One other paper has just accepted by a peer-review journal. This research project has successfully gained the collaboration of local and international fashion companies and researchers. The impact of my research findings on the fashion and textile sector is well recognized by both academia and industry. I am the author and editor of the Springer book entitled "Belt and Road Initiative-Collaboration for Success" (please refer to Part C, research output 4), which is about the integration of econometric technique into the fashion and textile industry. My publications also cover book chapters, papers in major peer-reviewed journals and international academic conferences. In recognition of my outstanding research performance, I received the Best Research Paper Award in the 14th Asian Textile Conference (ATC-14) in 2017. I was invited to be the keynote speaker, conference committee member, session chair and reviewer of several international conferences.

The Belt and Road initiative (hereafter BRI) is a development strategy launched by China in 2015, with the aim to increase economic co-operation among countries along the belt (Silk Road Economic Belt) and road (21st Century Maritime Silk Road) that connect Asia, Europe and Africa. The anticipated gains for Hong Kong from taking part in this initiative are substantial, including for those involved with the infrastructures, as well as the banking and private business sectors. Among those who stand to gain from the BRI (which is worth noting for manufacturers in developing their business) are the newly emerging low-cost production bases in the developing countries along the BRI, which provide significant opportunities for some of the Hong Kong companies to invest in trade-led manufacturing in the low-wage, and labor-intensive sectors, i.e. the textiles and clothing (T&C) industries.

The objectives of this research project were achieved. First, it developed an OBOR Index of Country Attractiveness (OBORICA) for Hong Kong to improve the coordination process among the T&C sectors and establish Hong Kong as a "super-connector", to link the BRI countries (please refer to Part C, research output 2). Based on the proposed OBORICA, clusters of BRI countries for T&C products was identified to determine which markets should have priority for production processes. Specific measures were identified so that T & C companies in Hong Kong can establish and facilitate technological upgrades and transformation to potential production facilities in BRI countries. This would contribute to the sustainable development of T&C companies in Hong Kong in an ever-changing and dynamic globalized market (please refer to Part C, research output 3).

Secondly, the gravity trade model was extended to analyze the development of T&C trade patterns among the BRI countries. Until recently, this model has been mainly applied to aggregated data with cross-sectional or time-series data estimation techniques to analyze trading statistics. Here, the conventional gravity trade model is applied to T&C trade and extended to cover other factors not considered in previous studies on the same products, such as production costs, export supply chain costs, technologies, demographical factors, and those related to business-related environment and policies including qualitative variables (as dummy variables). The model was applied a panel data

analysis to investigate the fixed effects over time for each scenario, thus explored the changes and increasing the manipulation of the data quality and quantity which would otherwise not be possible with the use of cross sectional or time series estimation alone. The model was utilized to investigate the impacts of OBORICA, country-specific social and political determinants as well as economic indicators that affected the T&C trade flow between Hong Kong and the BRI countries (please refer to Part C, research output 1).

The empirical analysis helped to identify the extent that the determinants contribute to T&C trade at the global level. With the development of a database on global trade in the T&C industry, it developed a specific gravity trade model of Hong Kong and the BRI countries to investigate the trade potential between them for sustainable business development. Additionally, this research provided valuable knowledge to increase current understanding of the factors that affected and enhanced the T&C industries in Hong Kong (please refer to Part C, research output 5).

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

In the long run, this study will act as a useful guide for the Hong Kong government and Trade Development Council (TDC) in establishing policies for professional consultancy to further develop Hong Kong as a regional training hub, for the development of human capital/resources specifically in T&C sectors. To devise measures that ensure the professional training meets the needs of the community with reference to the BRI initiative. Based on the OBORICA and the findings of the gravity trade model, markets that should have priority for T&C production processes in the BRI countries can be identified in accordance with their trade potential, such as their level of economic and social development and advancements in technology. This information will help to identify opportunities for improving talent flow, and informs policy makers so that existing measures are optimized. Suggested new measures like an OBOR talent exchange (an online platform) can be established to facilitate sourcing and engagement of talented workforce who seek exposure to multinational cultures and environments for work. Financial resources can thus be channeled to the most deserving individuals and needed areas, which will better connect manufacturers, exporters, importers, employers and employees in Hong Kong and the countries along BRI.

Additionally, as a Co-I, a research proposal which is entitled, "Sustainable Poverty Reduction through Trade and Supply Chain Connectivity for Belt and Road Economies" has been submitted to RGC, FDS 2020/21.

7. Layman's Summary
(Describe <u>in layman's language</u> the nature, significance and value of the research project, in no more than 200 words)

The project's significance includes creating an OBOR Index of Country Attractiveness (OBORICA) for Hong Kong which can be used to develop measures that improve the coordination process among the Textiles & Clothing (T&C) industry sectors, and establish Hong Kong as a "super-connector" in the arena of innovation and technology, thus creating a relationship between Hong Kong and the Belt & Road Initiative (BRI) countries. Based on this index, clusters of BRI countries were identified as markets with priority for production processes, per their absorptive capacity, innovativeness and capability for sustainability. New measures for technology transfer and knowledge-sharing can be established as part of an industry upgrade process for the

T&C industries, which greatly aids knowledge transfer and adds to the sustainable development of T&C companies in Hong Kong in an ever-changing and dynamic globalized market. The study also provided an updated database on global trade in the T&C industry in recent years. Last but not least, the identification and evaluation of influential factors on the efficiency of T&C export supply chains were expected to inform Hong Kong T&C manufacturers and suppliers, exporters and importers of their business strategies to penetrate and expand their market share in BRI markets.

Part C: Research Output

8. **Peer-Reviewed Journal Publication(s) Arising <u>Directly</u> 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 correspond-ing 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)*						
2018				Man Hin Eve Chan, Wai Ching Alice Chu, Yui-yip Lau, Chi Kuen Danny Ho, and Hong-Oanh Nguyen*	"What are the opportunities for manufacturing in the "one belt one road" initiative? The case of Hong Kong's textiles and clothing sector" *Journal of Textile Engineering & Fashion Technology*, 4(6):355-360	Yes 2018	No	Yes	Yes
2019				Wai Ching Alice Chu, Man Hin Eve Chan, Jenny Cheung, Hong-Oanh Nguyen*	"Looking back to look forward: Setting Future Research Agenda for International Business in Textiles and Clothing Industry", *Journal of International Logistic and Trade, 17(1): 21-32.*	Yes 2018	Yes	Yes	Yes
2019				Man Hin Eve Chan*, Chi Kuen Danny Ho, Tsz Leung Yip, Jenny Cheung, and Angappa Gunasekaran	"The Belt and Road Initiative's impact on Textile and Clothing Supply Chains in Asia: Views from Hong Kong Industrial	No	Yes	Yes	Yes

				Stakeholders", *International Journal of Applied Business and International Management,* 4(2): 9-16.				
2020				Editors: Man Hin Eve Chan and Angappa Gunasekaran	"Belt and Road Initiative – Collaboration for Success" (*Springer Book*)	No	Yes	Yes	No
2020	2020, July			Man Hin Eve Chan, Chi Kuen Danny Ho*, and Chi –Wing Tsang	"Estimating United States-Asia Trade in Clothing: Panel Data Analysis vs. Artificial Neural Networks" *International Journal of Innovation, Creativity and Change (IJICC)*	No	Yes	Yes	No

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 *(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)*
June 2018 / Vietnam	A Review of the determinants of Textile and Clothing bilateral trade flow [ABSTRACT ONLY]	Belt & Road Initiative (BRI) Conference	Yes 2018	No	Yes	Yes
June 2018 / Vietnam	Opportunities from the "One Belt, One Road" Initiative for Manufacturing? The Case of Hong Kong's Textiles and Clothing Sectors [ABSTRACT ONLY]	Belt & Road Initiative (BRI) Conference	Yes 2018	No	Yes	No

Nov 2018/ Melbourne, Australia	Exploratory Research Evidence of Challenges and Opportunities Perceived by Textiles & Clothing Companies in One Belt One Road Countries [ABSTRACT ONLY]	AIB Oceania 2018 Research Symposium Conference	Yes 2018	No	Yes	Yes
Apr 2019/ Bali, Indonesia	Evaluating the impact of the Belt and Road Initiative for Textile and Clothing companies in Asia [ABSTRACT ONLY]	2019 International Conference of Project Management (ICPM), AIBPM, Bali, Indonesia, 5-6 April 2019.	No	Yes	Yes	Yes
Jun 2019/ Copenhagen, Denmark	An Extended Gravity Model Analysis of Hong Kong's Clothing Trade: Implications for Managing Global Supply Chains under The "Belt and Road" Initiative	The Academy of International Business (AIB) 2019 Copenhagen Conference, June 25-27, 2019.	No	Yes	Yes	Yes
Sept 2019/ Indonesia	Predicting Asia's Clothing Trade with USA within the Belt and Road Initiative using Neural Network	2019 Manado International Conference of Project Management (ICPM), Indonesia, 21-22 September 2019	No	Yes	Yes	Yes

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

I taught research skills and supervised Final Year Project (FYP) students, which have common research interest as me, who had submitted abstracts to participate in the 2019 International Conference on Applied Education, Technology and Innovation (AETI) and 2020 Student Applied Presentation, at THEi respectively. Abstracts were published in AETI 2019 Student Applied Research Abstracts for sharing with colleagues and peers. Another two successfully led FYP students, during these years, I equipped them with the necessary research skills and offered feedback for improvement. Under my guidance, they were gradually interested in doing research. Two students received offers from the HKPolyU to further their studies in Master degree in Fashion Business.

Additionally, I shared the knowledge which I have acquired from this research experience to my students in modules of Research Method, Dissertation, Fashion Business, Fashion Management Workshop and Fashion Marketing and Communication.

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
	BA (Hons) Fashion Design	1st September 2015	10th May 2019 / 6th December 2019 (The title page had

			been attached to the last progress report)
	BA (Hons) Fashion Design	1st September 2016	May 2020 / December 2020

12. Other Impact

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

Output	In collaboration with other research institutions
"What are the opportunities for manufacturing in the "one belt one road" initiative? The case of Hong Kong's textiles and clothing sector", *Journal of Textile Engineering & Fashion Technology*, 4(6): 355-360	• RGC Institution: Hong Kong Polytechnic University • Private Institution: Hang Seng University • Overseas Institutions: University of Tasmania, Australia
"The Belt and Road Initiative's impact on Textile and Clothing Supply Chains in Asia: Views from Hong Kong Industrial Stakeholders", *International Journal of Applied Business and International Management*, 4(2): 9-16.	• RGC Institution: Hong Kong Polytechnic University • Private Institution: Hang Seng University • Overseas Institution: California State University
"Looking back to look forward: Setting future agenda for international business in Textiles and Clothing Industry", *Journal of International Logistic and Trade,* 17(1): 21-32.	• Overseas Institution: University of Tasmania, Australia
Keynote Speaker Presentation: "The Future of Asian Textiles & Clothing Factories in the Age of Unsettling Political and Economic Environment: Strategies and Policy Responses to Belt and Road Initiative". At the *2019 Manado International Conference of Project Management (ICPM)*	• N/A
Springer book: "Belt and Road Initiative – Collaboration for Success"	• RGC Institution: Hong Kong Polytechnic University • Private Institution: Hang Seng University • Overseas Institution: California State University; University of Tasmania, Australia; IQRA University, Pakistan; Prestige Institute of Management, Gwalior

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	3	6	1	N/A	Type	No.
					N/A	

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	