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Impact of External Risks on International Construction Projects Success: Evidence from Commonwealth Caribbean Islands

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Abstract: Since risks on international construction show region to region variation, the present study investigates the impact of external risks on international construction project (ICP) success and the relationships between them, from the perspective of construction professionals working in the Commonwealth Caribbean Islands (CCI) states. After a literature review, a survey questionnaire was designed with the input of a small group of experts. An instrument was tested and then sent to the construction professionals working in the CCI. Seventy valid surveys collected were processed using the structural equation model (SEM). The results suggest that the reason why CCI is an attractive region for construction enterprises looking into developing countries is because they do not support a direct impact of external risks on the project success, contrary to the findings in other studies on developing regions. The SEM confirmed that global risks influence economic risks, while economic risks influence legal risks and, in this region, influence the social risks. Results obtained help to address the knowledge gap for the ICP risks for the Caribbean region. The study will help the firms and the professionals looking to venture into the CCI or other regions with similar characteristics to create their risk management plan.

Keywords: Construction project success, Commonwealth Caribbean Islands, International construction project, Risk management, Structural equation model

INTRODUCTION

International markets provide newer opportunities for organisations with expansion plans, even when doing business in foreign countries is considered riskier than doing business in domestic projects (Han and Diekmann, 2001; Liu, Zhao and Yan, 2016; Deng et al., 2018; Chang et al., 2019; Viswanathan and Jha, 2020). International contractors deal with more complex, diverse and uncontrollable political, economic and cultural risks (Liu, Low and Zhang, 2018) but project managers frequently rely on their intuition or experience to tackle these risks (Dandage, Mantha and Rane, 2018). Yet, intuition may not work so well when moving into a different region because of the new unknown risks; international construction projects (ICPs) have more complications and uncertainties than domestic projects (Al-Sabah, Menassa and Hanna, 2014), mainly on external risks (Zhi, 1995), which were found relevant to most of the previous studies (Chua, Wang and Tan, 2003; Eybpoosh, Dikmen and Birgonul, 2011; Al-Sabah, Menassa and Hanna, 2014; Chang et al., 2018). Consequently, a source of information about international construction project

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(ICP) risks and how external risks behave in a new market is important due to the lack of experience therein.

Risk identification, which is the first step in risk management, is essential for developing a suitable risk response strategy (Lee et al., 2017; Siraj and Fayek, 2019; Viswanathan and Jha, 2020). After risk identification, the risk management process continues with effects' assessment and the development of risk management strategies (Wang, Dulaimi and Aguria, 2004; Eybpoosh, Dikmen and Birgonul, 2011; Wang et al., 2016; Dandage, Mantha and Rane, 2019). Zhi (1995) reported that risk management process should also include risks classification into groups with certain criteria to clarify their relationships. Therefore, a classification of external risks has been proposed here to determine the relationship between them.

Existing non-regional studies have different findings. For example, Wang, Dulaimi and Aguria (2004) and Chang et al. (2018) reported that external factors like host-country risks are more critical than internal risks; Eybpoosh, Dikmen and Birgonul (2011) concluded that contractor-specific vulnerabilities have more effect on the project's cost overrun than adverse economic, political, legal, social and market conditions. Regional studies are even more diverse in their finding as will be described further in the background section and even on studies conducted in the same country, such as in China. Zhi (1995) also found that the four biggest impact factors were high inflation, bureaucracy, low social security and corruption; however, Chua, Wang and Tan (2003) and Zhang (2011) considered these factors as irrelevant.

The Commonwealth Caribbean Islands (CCI) are a group of developing countries on the Caribbean Sea in North and Latin America, characterised by positive economic growth (BCQS International, 2019) and political stability (Sutton, 1999). So far, only McIntosh and McCabe (2003) have specifically studied the risks of ICP in the CCI for international construction joint ventures (ICJVs), using a qualitative approach. Given the immense importance of the tourism industry for this region, local governments offer investors incentives for the construction of new hospitality projects and luxury residencies.

Using a quantitative approach, the present study investigates the impact of external risks on ICP success and the relationships between them in the CCI. The study might help international enterprises and construction professionals to benefit from the CCI market opportunities. Thus, a survey designed from the literature review and the inputs from construction industry experts with more than 10 years of work experience in the region, was sent to the construction professionals working in the region. Then, data collected from 70 out of the total 71 surveys were processed using a structural equation model (SEM). Though 70 samples could be considered inadequate, small homogeneous samples may produce accurate predictions (Guo and Hussey, 2004). To process the collected data, IBM Statistical Package for the Social Sciences (IBM SPSS Statistics version 24) and EQS version 6.3, a SEM program were used. The SEM was chosen because it seeks to explain the relationships among multiple variables (Hair et al., 2014), has superior results compared with other multivariate analysis methods (Chang et al., 2018) and is the most frequently used method in quantitative studies on ICP risks (Chang et al., 2018; 2019; Eybpoosh, Dikmen and Birgonul, 2011; Liu, Zhao and Yan, 2016; Ozorhon et al., 2007; Viswanathan, Tripathi and Jha, 2019). The findings are then explained in the discussion section and finally, the conclusions and limitations sections summarise the findings and recommend further research guidelines.

LITERATURE REVIEW

Risk definitions are vary based on the context and industry in which they are used (Siraj and Fayek, 2019). For example, the Project Management Institute (2017) defines risk as an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives. In the construction sector, the risk is commonly defined as the probability of the occurrence of a negative event (Viswanathan and Jha, 2020) or the likelihood of the occurrence of an event/ factor or a combination of events/factors to detriment of the project's success (Wang, Dulaimi and Aguria, 2004; Husin et al., 2018).

Project performance or project success is determined using indicators such as if the projects were within budget, schedule and quality, which result in client satisfaction (Ozorhon et al., 2007). Risks are inherent in construction projects and adversely influence the project performance criteria such as cost and schedule (Wang et al., 2016; Viswanathan and Jha, 2020; El-Sayegh et al., 2021), and scope creep (Dandage, Mantha and Rane, 2018).

Risk Management in ICPs

An ICP is a project performed by a construction firm outside its country of residence (Dandage, Mantha and Rane, 2019; Viswanathan and Jha, 2020), frequently to take advantage of economic growth in another country (Al-Sabah, Menassa and Hanna, 2014). ICPs have a high level of risk because of the differences not only in construction practices, working conditions and cultures, but also in political, legal, social and economic conditions between home and the host countries (Jha and Devaya, 2008; Lee et al., 2017; Utama et al., 2018). Risks also arise from regional conditions like cultural divergences, currency devaluation, exchange restrictions and unstable laws or regulations (Han and Diekmann, 2001). To evade such higher-level risk exposure of ICPs, an appropriate risk management process is needed to meet the project success criteria (Viswanathan, Tripathi and Jha, 2019). A structured and detailed risk identification provides the basis for risk management effectiveness (Siraj and Fayek, 2019).

Risk Classification

Prior studies have adopted different approaches in classifying risks, both in the classification titles and in the assignment of risks to a specific group. Nevertheless, there is a tendency to classify them as either external or internal risks (Zhi, 1995; El-Sayegh, 2008; Al-Sabah, Menassa and Hanna, 2014; Chang et al., 2019). Some authors group them by country, market and project level (Isa, Saman and Nasir, 2014; Liu, Zhao and Yan, 2016; Wang et al., 2016; Viswanathan, Tripathi and Jha, 2019). Few others have not done any risk classification at all (Jha and Devaya, 2008; Abdul-Rahman, Loo and Wang, 2011; Zhang, 2011). A few studies have termed all external risks as "political risks" (Xiaopeng and Pheng, 2013; Chang et al., 2018; Deng et al., 2018). Several studies have classified the ICP risks as political, economic and legal, using those three alone or combined with other groups (Han and Diekmann, 2001; McIntosh and McCabe, 2003; Ling and Hoang, 2010; Lee et al., 2017; Dandage, Mantha and Rane, 2018; 2019).

Regional Studies

Region-wise, Asia has remained the focus of existing ICP risk studies. The nature and complexity of the international business environment are unique from one country to another (Isa, Saman and Nasir, 2014) and such risk differences between different countries are evidenced by Chua, Wang and Tan (2003) who documented significant differences between China's and Singapore's risk impacts. Chua, Wang and Tan (2003) investigated the cost growth factors and concluded that while factors being studied were critical-to-extremely critical in China, those the same factors were non- or low-critical in Singapore. Applying a SEM to data collected from 104 Chinese contractors with experience in ICPs, Liu, Zhao and Yan (2016) found that government-related risks have a significant influence on the project's costs and can also trigger economic and legal risks. Chang et al. (2018), in a case study of Chinese construction enterprises, applied a SEM to 264 valid responses received from practitioners working around the world, and found that seven out of eight political risk factors or external risks have a directly negative effect on risk consequences and three have an indirect negative effect. Later, using confirmatory factor analysis (CFA), Chang et al. (2019) found political risks, contractual and legal risks, cultural risks, and financial and economic risks as the highest priority risk categories.

In India, Jha and Devaya (2008) determined that the most influential risk factors are political instability, poor government responsiveness, a weak legal system, *force majeure* and an ambiguously defined project scope. Focusing on political, economic and legal risks, Ling and Hoang (2010) investigated the risks faced by foreign firms when undertaking construction projects in Vietnam. The high impact of political risks is a common characteristic in both India and Vietnam (Jha and Devaya, 2008; Ling and Hoang, 2010). Using information from multinational Indian companies working around the world, Viswanathan and Jha (2020) reported that political-specific risk factors were comparatively less critical for Indian firms in ICPs. Viswanathan and Jha (2020) suggested that their results were contrary to other findings, predominantly because Indian firms prefer the least risky markets when venturing into ICPs. Similar results were obtained by Isa, Saman and Preece (2015) who tested the relationship between the country, market, project and firm factors with project performance. Findings of these authors supported the relationship between firm factors and performance, but the other factors were not supported. Using Malaysian firms with experience in ICPs, Isa, Saman and Nasir (2014) observed that the five highest loaded factors were "Intensity of competition", "The existence of strict quality requirements", "Proximity to competitors", "Proximity to host country" and "Firm international competitiveness".

El-Sayegh (2008) revealed that economic risks such as inflation and sudden changes in prices, shortages in materials and labour supply are significant for the Arabian Gulf Region (AGR), specifically the United Arab Emirates (UAE), but political, social and cultural risks have little significance in the UAE construction industry. Later, Abdul-Rahman, Loo and Wang (2011) collected data from Malaysian firms working in the AGR, and their top five risk factors were delayed on non-receipt of payment, design changes, project delays, material or labour availability, and rushed design. Supporting results of El-Sayegh (2008), Abdul-Rahman, Loo and Wang (2011) found a low significance of political risks for the AGR. More recently, using a quantitative method with 81 surveys in the AGR, Al-Sabah, Menassa and Hanna (2014) concluded that war threat, political instability, price inflation, resource availability

and quality, authorities and regulation requirements, and inclement climate are the external risks with the most significant impact on the performance metrics used. The differences may be explained because while El-Sayegh (2008) research focused on the UAE, and Abdul-Rahman, Loo and Wang (2011) responders were from the Kingdom of Saudi Arabia, the UAE and Qatar; Al-Sabah, Menassa and Hanna (2014) additionally covered the Republic of Iraq, the State of Kuwait, the Kingdom of Bahrain, the Sultanate of Oman and the Republic of Yemen.

In the Caribbean region, more specifically the English-speaking Caribbean, McIntosh and McCabe (2003) investigated the risks of ICJVs established between local companies from English-speaking Caribbean countries and foreign firms in the USA and Canada. McIntosh and McCabe (2003) sent questionnaires to 182 professionals working for either the local or the foreign parties of the ICJV. From the 182 professionals who were sent questionnaires, 147 expressed their intent to participate, but only 48 returned the questionnaires, negatively impacted by the questionnaire's length. The three highest-ranked risks suggested by McIntosh and McCabe (2003) were loss because of bureaucracy for late approvals, project delays and client's cash flow problems.

The Commonwealth Caribbean Islands

The CCI are English-speaking islands with British influence and enjoy some advantages that make them attractive for international contractors. These benefits include steady economic growth, government incentives for investors, low-qualified local competition and political stability. Before the 2009 financial crisis, between 2000 and 2006, the Caribbean economies' average gross domestic product (GDP) growth was 3.5%, in 2009 was –3.0%, and recovered to 1.4% in 2015 (International Monetary Fund [2016] as cited in Drinkwater, Lashley and Robinson [2018]). Recently, as described by BCQS International (2019), the World Bank reported the real GDP growth of 3.5% for 2018 and projected growth rate for 2019 and 2020 were 3.5% and 3.8%, respectively in the region. Like any other region, worldwide crises affect the Caribbean, but it can quickly recover and get back to historical growth levels. Worried about the local construction industry, the Council of Caribbean Engineering Organisations (CCEO) commissioned a report on the Caribbean Community (CARICOM) construction industry (CCEO, 2002). In this report, the CCEO identified regional competitiveness problems like poor qualifications of local contractors when bidding on large projects, low availability of local skilled and experienced staff, and limited access to financial and insurance by local companies. Also, Drinkwater, Lashley and Robinson (2018) concluded that an inadequately educated workforce and lack of access to finance are the two most severe obstacles to Caribbean enterprise development. International contractors usually bring experienced staff on board to compensate for the low availability of a local skilled workforce.

There has been a significant increase in the number of construction companies entering the CCI construction market, with a great influence from the USA and Canadian firms because of their geographic proximity (McIntosh and McCabe, 2003); from the UK because of their colony bounds; and from China and a few Middle East firms because of their financial capabilities. Focusing on English-speaking Caribbean Islands with British influence, 15 countries included in this study

are listed below: first, the six countries in the Caribbean that are still part of the UK are Anguilla, Bermuda, British Virgin Islands (BVI), Cayman Islands, Monserrat and Turks and Caicos; then, the nine independent territories are Antigua and Barbuda, Barbados, Dominica, Grenada, St. Kitts and Nevis, St. Vincent and the Grenadines, St. Lucia, Trinidad and Tobago, and the Bahamas (Worldatlas, 2018). Jamaica, with about 3 million people, is excluded from the study because of the different context associated with its violent crime, drug trafficking and poverty statistics (Worldatlas, 2018), making Jamaica a potential separate study subject. The Caribbean countries with different European influences, such as the Netherlands and France, are also not included in this study because of their different cultures, languages and legislative systems. Sutton (1999) called the Commonwealth Caribbean the English-speaking Caribbean countries and affirmed that within developing countries, the Caribbean's reputation has been as the most democratic region, especially the Commonwealth Caribbean countries, which have decisively moved toward democracy since the 1930s.

HYPOTHESES

From the literature review and the collaboration of four construction experts with more than 15 years of rich work experience in ICPs in the CCI, risks that are representative of the region were selected. Table 1 shows the hypotheses proposed.

Table 1. ICP risks and their references

Risk Category	Risks in the Caribbean Countries with British Influence	References
Economic	Low availability of construction equipment (E1)	Al-Sabah, Menassa and Hanna (2014), El-Sayegh (2008), Eybpoosh, Dikmen and Birgonul (2011), Liu, Zhao and Yan (2016), Siraj and Fayek (2019) and Zhi (1995)
	Low availability of construction materials (E2)	Al-Sabah, Menassa and Hanna (2014), El-Sayegh (2008), Eybpoosh, Dikmen and Birgonul (2011), Liu, Zhao and Yan (2016), Siraj and Fayek (2019), Viswanathan, Tripathi and Jha (2019) and Zhi (1995)
	Lack of infrastructure (E3)	Eybpoosh, Dikmen and Birgonul (2011), Liu, Zhao and Yan (2016) and Siraj and Fayek (2019)
Legal	Inadequate legal framework (L1)	Al-Sabah, Menassa and Hanna (2014), Chang et al. (2018), Chua, Wang and Tan (2003), Eybpoosh, Dikmen and Birgonul (2011), Jha and Devaya (2008), Ling and Hoang (2010), Liu, Zhao and Yan (2016), McIntosh and McCabe (2003), Ozorhon et al. (2007), Siraj and Fayek (2019), Viswanathan, Tripathi and Jha (2019), Wang, Dulaimi and Aguria (2004), Xiaopeng and Pheng (2013), Zhang (2011) and Zhi (1995)

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Table 1. (*Continued*)

Risk Category	Risks in the Caribbean Countries with British Influence	References
	Restriction on repatriation of funds (L2)	Chua, Wang and Tan (2003), Ling and Hoang (2010) and Liu, Zhao and Yan (2016)
	Restrictions for foreign companies (L3)	Chang et al. (2018), Chua, Wang and Tan (2003), Eybpoosh, Dikmen and Birgonul (2011), Siraj and Fayek (2019), Wang, Dulaimi and Aguria (2004) and Zhang (2011)
Social	Low availability of qualified local labour or subcontractors (S1)	Abdul-Rahman, Loo and Wang (2011), Al-Sabah, Menassa and Hanna (2014), Eybpoosh, Dikmen and Birgonul (2011), Liu, Zhao and Yan (2016) and Siraj and Fayek (2019)
	Hostility to foreigners (S2)	Chang et al. (2018), Liu, Zhao and Yan (2016) and Xiaopeng and Pheng (2013)
	Public opposition to projects (S3)	Chang et al. (2019), Liu, Zhao and Yan (2016), Siraj and Fayek (2019) and Xiaopeng and Pheng (2013)
Global	External conflicts (G1)	Chang et al. (2018), and Eybpoosh, Dikmen and Birgonul (2011)
	External interferences (G2)	Chang et al. (2018; 2019)
	Imported materials price fluctuation (G3)	Abdul-Rahman, Loo and Wang (2011), Chua, Wang and Tan (2003), Ling and Hoang (2010), Liu, Zhao and Yan (2016), and Siraj and Fayek (2019)

Host Country's Economic-related Risks Impact ICP Success (H1)

Economic risks frequently translate into financial impacts on the projects (Ling and Hoang, 2010). The financial and economic risk category is one of the most significant risk categories in ICPs (Dandage, Mantha and Rane, 2019). Using two analyses, Al-Sabah, Menassa and Hanna (2014) ranked the economic risk category first among all external risk categories. Of the factors listed in those studies, the only one with a potential impact on the Caribbean region is resources availability. For the relationship of economic risks, three factors from Liu, Zhao and Yan (2016) were selected, two of them related to host-country availability of resources and one to host-country infrastructure.

Legal Risks Impact ICP Success (H2)

A few authors have analysed legal ICP risks. For instance, Chang et al. (2018) listed weak enforcement mechanisms, policy uncertainty, the unfairness of the judicial process, price controls and speediness of judicial process in their legal group. Similarly, Ling and Hoang (2010) and Liu, Zhao and Yan (2016) listed inadequate legal framework and ineffective legal system; with Liu, Zhao and Yan (2016) added changes in law regulations and fairness of construction laws and regulations. For inadequate legal framework and restriction on repatriation of funds, Liu, Zhao

and Yan's (2016) factors are used to analyse legal risks, as well as one factor from Eybpoosh, Dikmen and Birgonul (2011), which is the restriction to foreign companies. Changes in regulations ranked seventh in the CCI (McIntosh and McCabe, 2003).

Social Risks Impact ICP Project Success (H3)

Within the cultural part of social risks, Wang, Dulaimi and Aguria (2004) discussed the differences in work culture, values, education level, racial prejudice, among others, between foreign and local partners. Social risks and their consequences in ICPs were also evaluated by Chang et al. (2018) who demonstrated that social risks have a direct negative impact on the project results. The language barrier, differences in religious or cultural tradition, security and crime issues are the risks listed by Liu, Zhao and Yan (2016) within social risk groups. Social risk factors are striking in the actual Chinese construction market, showing that local protectionism for local projects is considered the most critical factor (Zhang, 2011). The hypothesis is then presented based on Liu, Zhao and Yan (2016) and Chang et al. (2018) factors.

Global Risks Impact ICP Success (H4)

International contractors should pay close attention to the changes in the international situation and adjust their operations, strategies and project plans (Chang et al., 2018). Liu, Zhao and Yan (2016) determined that host government-related risks affect project cost performance indirectly through resource price fluctuation. The relationships between global risks, also described as "international risks" in other articles, are analysed through two factors from Chang et al. (2018), which are external conflicts and external interferences, and one factor from Liu, Zhao and Yan (2016) who added the risk of "imported" to "material price fluctuation" given the Caribbean local material limitation.

Host Country's Economic-related Risks Impact Legal Risks (H5)

Because of the British influence, most of the countries included have parliaments that create and modify laws and governments that make regulations; and in the UK dependent ones, the local parliament creates the laws and ultimately the governor who is appointed by the crown, approves them (Dina, 2018). Economics performance was identified as a critical political risk factor that had a positive effect on socio-political stability, legal and regulatory, public safety, and adverse effect on risk consequences (Chang et al., 2018).

Global Risks Impact Economic Risks (H6)

Globalisation is creating dependencies between whatever happens internationally and what happens locally in countries, and the Caribbean region is no stranger to this situation. Local Caribbean governments should adjust their economic politics according to the international markets, international regulations and even foreign government influences. Chang et al. (2018) demonstrated a direct impact of the international environment on the local economic performance.

Economic Risks Impact Social Risks (H7)

Continuing with economic risks, Chang et al. (2018) demonstrated a direct impact of economic performance on public safety and Liu, Zhao and Yan (2016) demonstrated that host government-related risks impact social risks. The hypothesis is proposed in alignment with Liu, Zhao and Yan (2016) findings.

About the relationship between legal and social risks, neither Chang et al. (2019) nor Liu, Zhao and Yan (2016) correlate them. Furthermore, Dandage, Mantha and Rane (2019) defined contractual and legal-related risks compared with cultural risks as not affecting each other since they are unrelated. Based on those findings, no statement has been formulated about these relationships. Figure 1 shows the relationships of the hypotheses on the ICP success.

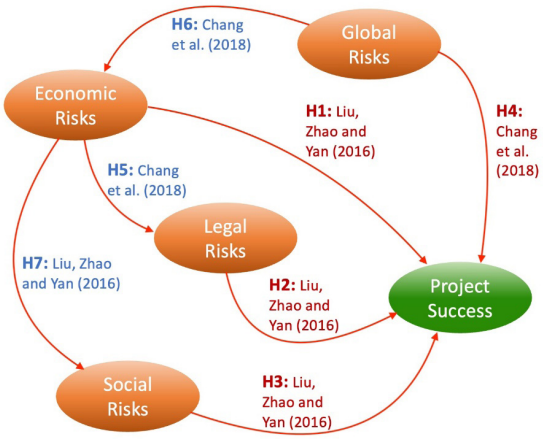

Figure 1. Figure 1. Relationships between hypotheses and risk category towards ICP success

Project Success Criteria

Regularly used project success criteria are time, cost and scope. The current study used Joslin and Müller (2016) criteria as followed: activities carried out as scheduled (A1), finished within budget (A2) and the project achieved its purpose (A3).

RESEARCH METHODS

The steps to identifying the risks and their impacts on what seems to be an unexplored region are as follows. First, a search for related studies conducted over the last two decades was conducted using keywords used in international construction industry risk. The literature review showed a list of prior studies that identified risks along with their influence and other details were presented as shown in the background section. Second, with the help of four construction industry experts with experience in the CCI, risks with an impact on the region were selected. Third, a questionnaire design was tested with a pilot survey of academics and

project management professionals. Fourth, 70 valid responses were collected from construction professionals with experience in the CCI region. Fifth, the collected data were processed using the EQS-SEM to validate the proposed model and the hypotheses presented. Sixth, the final draft elaborated with the analysis of the results and conclusions of the study. Steps are also shown in Figure 2.

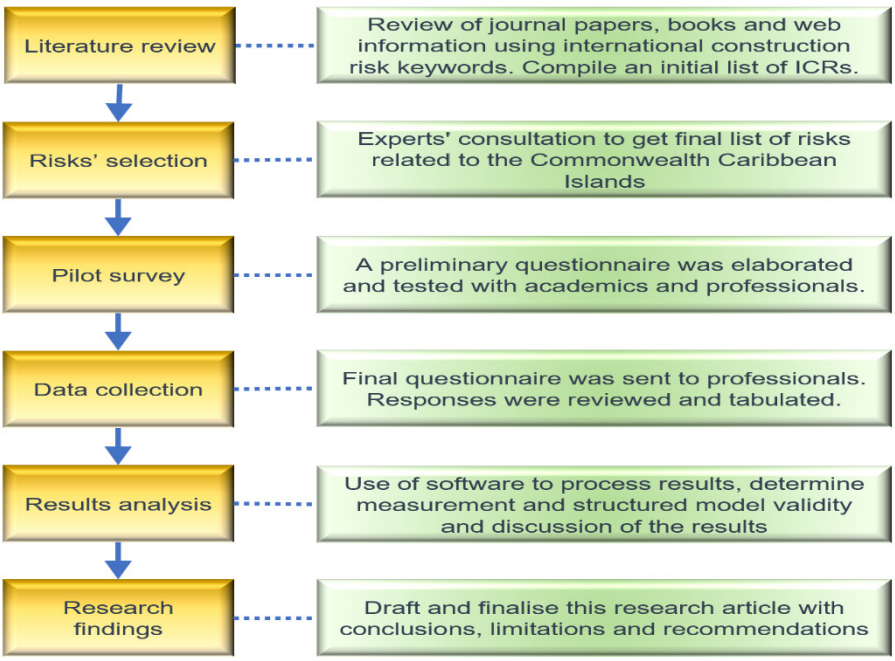

Figure 2. Research methods

Data Collection

A non-probability sample procedure was used, which has been recognised as appropriate when respondents are selected based on their disposition to participate in the study and not randomly selected from the population (Wilkins [2011] as cited Liu, Zhao and Yan [2016]). Because the objective of this study was to determine how ICP risks behave in a specific environment rather than inferring results to the global population, it is better to use a non-probability sample procedure (Guo and Hussey, 2004). From an online search using search engines and online phone books, 337 construction companies were found in the CCI, and only nine of them conducted business in more than one island. Four of the nine were designers/consultants. From overseas, eight contractors were identified doing projects in the CCI and four designers/consultants for 13 international enterprises identified in the region. The data collected for this empirical study came from surveys sent to one author's network, completed by overseas project directors, senior managers, project managers, engineers and designers who have done at least one construction project in the last five years in one of the CCI. A PDF file or a link to the survey was sent to 67 professionals with the described profile, via e-mail or social media. Using a snowball sampling approach to increase the sample size

(Zhang, 2011), 44 of the 67 professionals responded to the survey and a few of these 44 referred the surveys to their own professionals' network, getting extra 28 responses, for a total of 71 surveys collected with 70 valid ones. The rejected answer came from a professional working out of the list of Caribbean countries studied. Even when the collected surveys may be considered too small for quantitative research, according to Guo and Hussey (2004), small homogeneous samples generated by non-probability sampling may produce more accurate predictions. Also, some other prior ICP risk quantitative studies have been completed with a similar number of responses, like 68 completed questionnaires in Ozorhon et al. (2007), 65 in El-Sayegh (2008) and 81 in Al-Sabah, Menassa and Hanna (2014). Even with 100 minimum sample size as recommended by Hair et al. (2014), "No matter the modelling approach, the sample size must be sufficient to allow the model to run, but more importantly, it must adequately represent the population of interest". Given the small number of international enterprises in the CCI, the population of interest is adequately represented by 70 valid questionnaires.

The questionnaire had two main groups of questions. The first group was used to collect the respondents' characteristics with a mix of open-and-selecti questions. The second group presented five blocks of statements assessing the economic risks, legal risks, social risks, global risks and project success achieved. A five-point Likert scale was used, where 1 is considered to have no negative impact and 5 is considered to have a high negative impact on the four first blocks (the risk-related ones) and 1 is "Not successful at all" and 5 is "Very successful", for the last block about project success.

Of the 70 valid respondents, 33 (47%) were originally from the USA, 16 (23%) from the UK and the remaining 30% were from Argentina, Barbados, Belize, BVI, Canada, Cayman Islands, China, Colombia, India, Pakistan, Palestine, Saint Lucia, Spain, the Bahamas and Turkey. This demonstrated the large cultural variability of the people working in the Caribbean region. Even when having origins from different countries around the world, all the respondents had experience with ICPs in the CCI and were asked to respond based on their Caribbean experience. Table 2 shows the respondents' information.

Table 2. Information of the respondent

Working Experience (Years)	**No.**	**%**
Less than 5 years	27	38
5 years to 10 years	21	30
11 years to 15 years	11	16
More than 15 years	11	16
Total	70	100

Number of Projects	**No.**	**%**
1 to 3	29	41
4 to 6	20	29

Designation	**No.**	**%**
Architect/engineer	12	18
Commercial manager	4	6
Construction manager	1	1
Estimator	1	1
Landscape architect/ master planner	1	1
Owner	1	1
Owner's representative	1	1
Programme director	1	1
Project director	12	18

(*Continued on next page*)

Table 2. (*Continued*)

Number of Projects	No.	%
7 to 9	5	7
More than 10	16	23
Total	70	100

Designation	No.	%
Project manager	27	39
Section manager	4	6
Senior services chief engineer	1	1
Total	70	100

Type of Project	No.	%
Hospitality	42	61
Public/government project	5	7
Residential	8	11
Total	70	100

Role on the Project Worked On	No.	%
Design and build contractor	1	1
Designer or engineer/ consultant	6	9
General contractor	28	40
Owner representative/ developer	25	36
Sub-contractor	10	14
Total	70	100

Last Country Worked On	No.	%
Anguilla	10	14
Bermuda	2	3
BVI	7	10
Cayman Islands	13	19
Dominica	4	6
Grenada	1	1
Saint Lucia	2	3
St. Kitts and Nevis	13	18
St. Vincent and the Grenadines	2	3
The Bahamas	11	16
Trinidad and Tobago	1	1
Turks and Caicos	4	6
Total	70	100

MEASUREMENT MODEL

Convergent validity is verified from the result of three statistics, the average variance extracted (AVE), the construct reliability (CR) and the Cronbach's alpha score, as shown in Table 3.

Table 3. Measurement model

Factor	Item	Stand. Loading	AVE	CR	Alpha
Economic risk (F1)	E1	0.898	0.753	0.898	0.749
	E2	0.738			
	E3	0.529			
Legal risk (F2)	L1	0.629	0.623	0.828	0.619
	L2	0.715			
	L3	0.475			
Social risk (F3)	S1	0.384	0.663	0.846	0.654
	S2	0.722			
	S3	0.749			
Global risk (F4)	G1	0.803	0.747	0.898	0.772
	G2	0.772			
	G3	0.646			
Project success achieved (F5)	A1	0.498	0.741	0.878	0.627
	A2	1.000			
	A3	0.358			

An AVE of ≥ 0.5 suggests adequate scale convergence (Fornell and Larcker, 1981); with all results obtained are ≥ 0.60. CR results are > 0.8; CR values of ≥ 0.7 suggest good reliability (Fornell and Larcker, 1981) and between 0.6 and 0.7 may be acceptable (Hair et al., 2014). For Cronbach's alpha, the scale is reliable with values > 0.70 (Nunnally and Bernstein, 1994); the results showed that some constructs obtained an alpha above the 0.70 mark and the others were close to it. However, Hair et al. (2014) suggested that Cronbach's alpha score may understate reliability. The AVE test can determine the divergent validity of the scale in the measurement of the constructs. Gefen and Straub (2005) argued a discriminant validity of the scale using the confidence interval (as shown in Table 4) and the AVE test (as shown in Table 5). Under Ullman (2001) proposal, a good measurement model fit is present with, a root-mean-square error of approximation (RMSEA) of 0.095, a comparative fit index (CFI) of 0.842, an incremental fit index (IFI) of 0.854 and a goodness-of-fit index (GFI) of 0.821. With a chi-square value of 129.5 with 80 degrees of freedom (DF), the normed chi-square is 1.62; a normed chi-square number < 2.0 is considered very good and that between 2.0 and 5.0 is acceptable (Hair et al., 2014).

Table 4. Confidence interval test

Factor	Coefficient of Correlation	*Y*	Inferior Limit	Superior Limit
F1, F2	0.288	0.107	0.074	0.502
F1, F3	0.126	0.063	0.000	0.252
F1, F4	0.267	0.103	0.061	0.473
F1, F5	–0.106	0.079	–0.264	0.052
F2, F3	0.126	0.059	0.008	0.244
F2, F4	0.400	0.108	0.184	0.616
F2, F5	–0.046	0.052	–0.150	0.058
F3, F4	0.164	0.068	0.028	0.300
F3, F5	–0.031	0.029	–0.089	0.027
F4, F5	–0.021	0.049	–0.119	0.077

Table 5. AVE test

Correlation	Correlation Estimate	Squared Correlation Estimate	Factor	AVE
F1, F2	0.652	0.425	F1	0.753
F1, F3	0.346	0.120	F2	0.623
F1, F4	0.550	0.303	F3	0.663
F1, F5	–0.217	0.047	F4	0.747
F2, F3	0.205	0.042	F5	0.741
F2, F4	0.405	0.164		
F2, F5	–0.147	0.022		
F3, F4	0.260	0.068		
F3, F5	–0.100	0.010		
F4, F5	–0.083	0.007		

STRUCTURAL EQUATION MODEL

The SEM presented the following results: RMSEA = 0.065, non-normed fit index (NNFI) = 0.904, CFI = 0.928 and IFI = 0.934. The NNFI, CFI and IFI presented values > 0.9 that represent an adequate model fit, according to Ullman (2001). Also, Browne and Cudeck (1993) proposed that RMSEA values between 0.05 and 0.08 show an adequate model. A chi-square value of 100.8 with 78 DF is presented, resulting in an excellent normed chi-square of 1.29. Table 6 shows that three of the seven hypotheses were supported. The supported hypotheses show a causal relationship beta (β) between 0.730 and 0.921, and a coefficient of determination ($R2$) between 0.533 and 0.848. The results are further discussed in the next section.

Table 6. Results of the SEM

Hypotheses	Results	*β*	Significance	*R2*
H1	Non-supported	–1.142	Non-significant	0.226
H2	Non-supported	0.196	Non-significant	
H3	Non-supported	0.089	Non-significant	
H4	Non-supported	0.865	Non-significant	
H5	Supported	0.730	–	0.533
H6	Supported	0.893	–	0.797
H7	Supported	0.921	–	0.848

RESULTS AND DISCUSSION

The results of this study have some important contributions to the body of knowledge. First, the validation of a measurement model with only 70 samples confirms Hair et al. (2014) theory that not only the sample size should be sufficient for the model to run but the samples should also represent the population of interest.

The SEM confirmed the hypotheses related to the influences of each risk category, but contrary to many prior studies like Chang et al.'s (2018) and Liu, Zhao and Yan's (2016) findings in China; Ling and Hoang's (2010) in Vietnam; Al-Sabah, Menassa and Hanna (2014) in AGR; Dandage, Mantha and Rane's (2019); and even some of McIntosh and McCabe's (2003) findings in CCI. In these studies, a direct influence of external risks on project success was proven, though the results obtained in this study did not support a direct impact of external risks on the success of the project. So, that suggests that external risk in the CCI has an indirect influence on project success, a finding supporting Mohamed (2003) and Ozorhon et al. (2007). El-Sayegh (2008) documented that political, social and cultural risks have an insignificant impact on the UAE construction industry mainly because of the political and economic stability of the El-Sayegh (2008) studied countries. A direct impact of external risks on the CCI may not be supported because of the political and economic stability of the CCI region. Therefore, external risks in developing countries with economic and political stability may not have that much influence on the project success.

With a β-value of 0.730, the hypothesis about the economic risks impact legal risks is confirmed in the CCI, same as in Chang et al. (2018), where host-country economic risks affect the regulations of the country. With a 0.893 of β-value, the hypothesis about global risks impact economic risks is also confirmed in agreement with Liu, Zhao and Yan's (2016) and Chang et al.'s (2018) findings such as poor economic performance can cause social unrest. Finally, with 0.921 as the highest β-value, the supported hypothesis about global risks having a direct influence on economic risks confirms that an unstable international environment can impact the economy in most countries (Chang et al., 2018). Global risks have high relevance on the CCI because they have influence on economic risks, while economic risks have influence either in legal risks or social risks. In general, global risks like external conflicts or imported materials prices fluctuation cannot be controlled but should be budgeted for during estimation and monitored during execution.

As the results previously shown in Table 3, within the economic risks, low availability of construction equipment (0.898) indicated not only the variable with the greatest influence for the group but also for all the risk variables, closely followed by low availability of construction materials (0.738). For Liu, Zhao and Yan (2016), project cost is influenced by economic, social and legal risks.

For legal risks, the most influential variable is the restriction on repatriation of funds (0.715) and the least influential is the restriction for foreign companies (0.475). In addition to legal risks reported by Liu, Zhao and Yan (2016), an adverse country condition such as restrictions for foreign companies also have an impact (Eybpoosh, Dikmen and Birgonul, 2011)

Low availability of qualified local labour or subcontractors (0.384) was not only the lowest rank in the social risks but also the lowest in all risk factors, while hostility to foreigners (0.722) and public opposition to projects (0.749) were seen as important risks. Similar factor loading on hostility to foreigners was obtained by Chang et al. (2018).

For global risk, the most influential component is the external conflicts (0.803) and the least is the imported materials price fluctuation (0.646). For Liu, Zhao and Yan (2016), resources' price fluctuation increases the cost and for Chang et al. (2018), international environment factors like external conflicts and external interferences can destabilise the social safety of the host countries and can even lead to the economic depression.

CONCLUSION

There are significant differences in the results obtained in earlier studies, and those differences seem to be influenced by the regions or countries where the investigations were made, macro-conditions when conducted, including the respondents or the methodology of the study.

In general, the existing literature suggests that external risks are more relevant in developing countries, yet a few studies including the present one suggest that when there is political and economic stability, the impact of external risks is less perceptible.

This contribution helps to address a knowledge gap for the ICP risks for the Caribbean region and the findings may help international entrepreneurs to venture into the Caribbean region, or another region or country with similar characteristics. This study provides a better perspective of the impacts of external risks for them to create their specific risk management plan. The Caribbeans is a region attractive not only to foreign investors but also to professional talent globally, as shown in the respondents' origin diversity.

A validity achieved for the SEM in this region opens opportunities for researchers to use either the model or the results on the CCI or in regions with similar characteristics. Further, empirical results obtained confirm that it is possible to use a SEM with a small amount of collected data when homogeneous non-probability samples are used. With the results obtained, further comparisons of the Caribbean region with other regions around the world might be useful.

Considering the Caribbean region, English-speaking Caribbean Islands are a limitation. A future study may either select Caribbean islands with different languages or other territories around the globe with British influence to provide additional comparisons to determine how such differences affect the results.

Because the hypotheses about the studied risks impacting the success of the projects could not be validated in this study, further investigations could include internal risk in addition to the external risk tested, or even evaluate different success constructs. It is also suggested to further explore the risk mitigation measures and their influence on the risk factors for the region.

Overall, the Caribbean is a prosperous region with potential benefits to international construction enterprises and further studies in the region may attract more investors and professionals.

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