Achievements in the First Decade of the Modern Tobago House of Assembly: The 1980s

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Abstract

This paper outlines, in chronological fashion, the development of Tobago brought about by the accomplishments of the Tobago House of Assembly (THA or Assembly) during the first decade after its re-establishment in 1980. Using a qualitative approach, the work examines a number of primary sources from the THA, debates in the Trinidad and Tobago legislature, and Colonial Office Papers. The article first provides a brief overview of Tobago from the late eighteenth century to the late twentieth century when Tobago gained internal self-government. It then establishes a baseline of development on the island as articulated by A.P.T. James, Tobago's sole legislative representative in the mid-twentieth century. Finally, the paper outlines the achievements of the THA in the 1980s. The picture that emerges from a review of the contributions and impact of the THA is one of significant transformation of Tobago's physical and social infrastructure. That transformation was evident in the development of roads, water supply, providing meals for school-aged children, upgrading and constructing community centres, provision of enhanced international access facilities for trade and tourism, supporting fisheries, preserving and promoting the island's unique cultural heritage, as well as providing employment for Tobagonians as a social safety net.

Keywords: A.P.T. James, Assembly, Development, Legislative Council, THA, Tobago

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Introduction

This paper examines the issues of development in Tobago. "International development focuses on the improvement of various facets of quality of life within a society" (Internationalrelations.org, para. 2). The development of Tobago within the unitary state of Trinidad and Tobago has been a contentious issue for more than a century since the two islands were unified as one colony in 1889, even though development issues pre-date the union. Claims of neglect and second-class status of Tobago and Tobagonians have echoed in the Trinidad and Tobago legislature for many decades. These claims, in part, led to calls for autonomy and fueled a movement to secure internal self-government for Tobago, which was achieved in 1980 with the re-establishment of the Tobago House of Assembly. Since that time, the Assembly has worked vigorously on improving infrastructure, social and economic development in Tobago. This paper examines the broad areas of development on the island in the first decade after the modern Tobago House of Assembly was established.

In support of its claims of significant development in Tobago in the 1980s, the article examines and cites a number of primary sources such as Minutes of meetings and debates of the Legislative Council of Trinidad and Tobago, Colonial Office Papers, as well as financial statements and administrative reports of the Tobago House of Assembly. Along with those contemporary sources, key secondary sources by authors who have researched Tobago's history such as Eric Williams, Douglas Archibald, and C. R. Ottley were used to add texture to the narrative. A review of the above-mentioned sources highlights a call to action to develop Tobago by A.P.T. James, and the response from the Tobago House of Assembly in the 1980s.

Theoretical Framework

International development deals with various initiatives to improve the facets of the quality of life of people in a society. According to website internationalrelations.org, the broad historical trend in the concept of international development includes:

> "both economic and social development and encompasses many issues such as humanitarian and foreign aid, poverty alleviation, the rule of law and governance, food and water security, capacity building, healthcare and education, women and children's rights, disaster preparedness, infrastructure, and sustainability" (Internationalrelations.org, para. 2).

For some researchers, the emphasis is on economic growth expressed in increased "gross domestic product (GDP), import-export figures, and industrialization." For others, the focus on social development is critical. Yet others emphasize the human element of people to provide for their basic needs through their own initiative (Internationalrelations.org, para.2). Sustainability is also an important factor with a focus on development that does not leave natural resources depleted to the extent that future generations cannot benefit from them. Some scholars advocate for the

"reorganization and reorientation of entire economic and social systems … [even] radical changes in institutional, social, and administrative structures" (Internationalrelations.org, para 3).

This article embraces a multidimensional view of international development that includes, economic and social improvement, capacity building, infrastructure improvement, water and food security, preserving cultural heritage, and the like. Having achieved the radical change in the administrative structure that came with internal self-government in 1980, the leaders of the Tobago House of Assembly embarked on an ambitious plan to achieve development in as many facets of life in Tobago as possible to improve the lives of the residents of Tobago. This can be seen in their efforts to improve road infrastructure, water winning and distribution, nutrition of school children, community centres, fishing, the preservation of land for residents, construction of sporting facilities, provision of an economic safety net for residents using part-time employment, harbor and airport facilities to increase tourism and enhance tourism revenue, and preserving the unique cultural heritage of the island. The leaders of the Tobago House of Assembly attempted a multidimensional approach to development on the island that made a positive impact on the lives and prospects of Tobagonians.

Review of the Literature

There is a paucity of secondary sources on the history, economic and social development of Tobago. Therefore, this article is fundamentally based on primary sources gleaned from the Public Records Office in London, the National Archives of Trinidad and Tobago, the Parliament of Trinidad and Tobago, and the Tobago House of Assembly. The Colonial Office papers provide firsthand accounts of British officials who dealt with the administration of Tobago in the nineteenth century. Those sources are a treasure throve of correspondences between high-ranking British administrators giving their perspectives of the island, and its political, economic, and administrative character.

The state of development of Tobago in the period prior to the re-establishment of the Tobago House of Assembly in 1980 is captured in the minutes and debates of the Trinidad and Tobago Legislative Council. The Council was the body responsible for development of the country, and it was, *inter alia*, charged with making laws and passing budgets to promote the welfare of the country. The advocacy of its elected representatives articulated the plight as well as aspirations of the populace. With respect to Tobago, the Minutes and debates of the Council that captured the advocacy of the lone Tobago representative from 1946 to 1961, A.P.T. James, reflects the yearnings of Tobagonians for the development of their island-home and establishes a baseline for what was lacking economically, socially, and in terms of infrastructure on the island. No other written source is as rich and descriptive of the state of Tobago for the period as those recorded in

the documents of the Legislative Council. The elected representatives articulated the kind of development that Tobagonians cared most about.

As the Tobago House of Assembly tried to address the challenges on the island from the 1980s, the official source of the accomplishments of the institution is best found in its own publications. These are its Annual Financial Statements and Administrative Reports. Apart from oral history, which needs to be conducted, these statements and reports bear witness to the work of the Assembly and provide a basis for which the institution can be held accountable in carrying out its plans to improve development on the island.

Selected secondary sources from the small number of scholars who research and write the history of Tobago provide context and help fill in documentary gaps. Thus, the works of Eric Williams, Douglas Archibald, C. R. Ottley, and Learie Luke are used to help paint, with broad strokes, the story of Tobago's political, administrative, economic, social, and infrastructure development.

Missing from these fruitful sources is oral history of key figures who served in the modern Tobago House of Assembly, as well as recordings of civil servants and ordinary Tobagonians in the 1980s. Indeed, oral history, when compiled, will add texture to the tapestry of the history of Tobago.

Research Question and Methodology

Governments exist, *inter alia*, to govern and address the needs of the populations they serve. This includes improving the welfare of the citizenry by providing conditions and initiatives that foster social, economic, and political improvement. This improvement is called development. The challenge that scholars who have delved into the history of Tobago have faced is answering the question: How has the government served the people of Tobago with respect to the issues Tobagonians care most about? In examining this research question for the decade of the 1980s under consideration, the paper seeks to fill the gap in the development discourse, not from a national viewpoint, but from a regional Tobagonian perspective.

This paper first provides a very brief overview of Tobago's political and administrative development. Then it delves into the articulation of issues critical to Tobagonians as laid out by A.P.T. James who can be viewed as the voice of Tobagonians in early to mid-twentieth century. Finally, it provides data on improvements made in Tobago by Tobagonians themselves through the Tobago House of Assembly after it was re-established in 1980. An examination mainly of primary sources weave a tapestry of development on the island, when one compares the concerns of Tobagonians prior to the existence of the modern Tobago House of Assembly with the impact of that institution in the initial period when Tobagonians were given political, administrative, and budgetary agency to determine how their concerns should be addressed.

One type of qualitative research is historical research, which examines past events to draw conclusions and make predictions about the future. This paper utilizes the historical model of qualitative research to describe and examine past events in Tobago to chronologically document Tobago's history in order to better understand development on the island in the decade after the re-establishment of the Tobago House of Assembly in 1980. This approach is useful because of the dearth of published scholarly sources on Tobago. As a result, there is not a great deal of information that catalogs development in Tobago. In large measure, Tobago has been seen as a neglected rural appendage of Trinidad, not only politically and administratively, but in the scholarly realm as well. The autonomists who advocated for secession and internal self-government over the years decried the paltry social and economic development on the island in the period prior to 1980. This article provides a chronological account of development and achievements in Tobago from 1980 to 1990.

Historical Overview of Tobago 1763-1980

Tobago's separate identity as a British colony began in 1763 at the conclusion of the Seven Years' War between France and England. The Treaty of Paris on February 10, 1763 gave the British sovereignty over the island (Archibald, 1987, p. 97). "By the Order in Council of 7 October 1763, King George III established Tobago as one of several independent, self-governing territories under the Grenada government (Archibald, 1987, p. 98). In June 1768, the first governor of Tobago, General Robert Melville, upgraded the Tobago Island Council, which was an extension of the General Council of the Grenada Government. Melville's upgrade resulted in a bicameral legislature with an upper chamber called the Legislative Council consisting of nine members appointed by the governor, and a lower chamber called the Legislative Assembly with an elected body of thirteen members drawn from the various parishes and the town of Plymouth (Luke, p. 4, 5). The Tobago House of Assembly ran the affairs of the colony independently until it surrendered its powers and became a Crown Colony after the Belmanna Riots in 1876. Subsequently, Tobago was united with Trinidad in 1889.

On 1 November 1879, Lieutenant-Governor Augustus Frederick Gore, concerned about the declining state of the island's finances, made the first formal recommendation to unify the two colonies. He believed that the union would result in savings to the Crown. Writing to the lieutenant-governor of the Windward Islands, he stated: "I am of the opinion that there is no necessity for maintaining the colony as a separate government" (CO 288/28). By 7 April 1883, the Crossman Commission visited Tobago and found a heavy burden of taxation on the masses, little expenditure on infrastructure, and poorly paid government officials because of the impoverished condition of the treasury. This led the commissioners to recommend the federation of St. Vincent, St. Lucia, Grenada, Tobago and possibly Dominica, with headquarters in Grenada (Williams, 1963, p. 136). The publication of the Commission's report in 1884 tragically coincided with the

bankruptcy of the London Mercantile firm of A. M. Gillespie and Company, which held interest in nineteen or three-quarters of Tobago's estates (Ottley, 1973, 89; CO 321/99). This was the death knell of the Tobago sugar industry and foreshadowed the demise of the first Tobago House of Assembly. The Trinidad and Tobago Act of 1887 provided the authority to unite the two colonies. Under that Act, on 17 November 1888, Queen Victoria proclaimed the Order in Council uniting Tobago and Trinidad as one colony called Trinidad and Tobago, effective 1 January 1889 (CO 289/5).

Thus, the first Tobago House of Assembly was dissolved, and a Financial Board was established with the powers to enact local regulations, collect revenues, and pay expenses. The union did not solve Tobago's chronic economic problems. Therefore, the 1897 West Indian Royal Commission recommended the "complete amalgamation of Tobago and Trinidad." Consequently, on 20 October 1898, an order in council made Tobago a ward or mere administrative district of the colony of Trinidad and Tobago, effective 1 January 1899 (CO 298/62). The aspirations of Tobagonians for greater autonomy and regional development grew continuously from that date. After a protracted political and parliamentary struggle in the latter part of the 1970s, Tobago was granted internal self-government in 1980. Thereafter, the THA responded positively to the calls for development in Tobago that were made by advocates such as A.P.T. James.

A.P.T. James' Advocacy for Development in Tobago 1946-1961

While strong advocacy for development in Tobago can be traced to early twentieth century Tobagonian representatives such as James A. A. Biggart and others (Luke, 2007, pp. 125-146), the contribution and impact of the THA can be placed within the context of the advocacy of one of Tobago's most vocal and unrelenting legislators, A.P.T. James from the village of Patience Hill. James was the sole Tobagonian representative in the Trinidad and Tobago Legislative Council from 1946-1961. In 1957, trade union leader and fellow legislator Uriah Butler described James in the following words: "Since his advent here I am certain that I speak the truth when I say that Tobago has never had in this hon. Chamber a greater champion of its cause" (Trinidad and Tobago, 1957, p. 1971). While the purpose of this paper does not include a critique of James' views or claims of development needs of Tobago, his vision for development in Tobago encapsulates the advocacy of his legislative predecessors, and that vision was taken up by the modern THA with significant results.

Two of the first issues that A.P.T. James addressed in the Legislative Council were land and sea communications. James was a strong advocate for road construction and improvement in Tobago. He constantly asked the government to declare how much of the colony's budget was allocated to road development in Tobago, which roads were under construction, and the nature of road improvement work on the island. James kept the matter of the construction of the North Coast

Road before the legislature. That road linked the rural areas, where much of the agricultural produce was grown, to Scarborough, the main town and port. The North Coast Road was key to stimulating agribusiness development and food security on the island. It gave planters and peasants ground access to the capital for shipping their produce (Luke, 2007, p. 170). In 1949, he asked the government to increase its budgetary allocation for roads in Tobago so that it would be proportionate with expenditure on roads in Trinidad (Trinidad and Tobago, 1949, p. 655).

The need for roads in the rural districts of Tobago at that time was urgent because of the inability of the coastal steamers to dock at some of the village ports during bad weather. During debates on the budget of the colony, James repeatedly appealed to the government to improve the roads between either Castara and Parlatuvier or Roxborough and Parlatuvier. In the debate on the 1951 budget, James again urged government to construct the North Coast Road. He argued that the road would reduce the cost of operating the coastal steamers, since they would only have to operate between Port of Spain and Scarborough. To James' proposal that the road would cost $400,000, one Council member retorted, "But Tobago is not worth that" (Trinidad and Tobago, 1951, p. 595). In 1952, James continued urging the government to construct the North Coast Road, which by then was estimated to cost $500,000 (Trinidad and Tobago, 1952, p. 338-40).

The steamship service between Tobago and Trinidad was another major bone of contention. In 1946, the two old ships were slow, and unreliable. James constantly urged the government to purchase new ships to service the inter-island route. "The steamer service was crucial to the commercial viability of the island, as well as for transporting Tobagonians who needed to access government services in Port of Spain. The poor state of the island's roads made the steamer service even more important" (Luke, 2007, p. 169). By January 1950, James called on the government to replace the coastal steamer *Tobago*, which was in a state of disrepair (Trinidad and Tobago, 1950, p. 485). He echoed this demand in his 1953 contribution to the colony's budget debate. In May 1955, he called on the government to purchase modern ships to replace the old coastal steamers, *Tobago* and *Trinidad* (Trinidad and Tobago, 1955, p. 1425). These steamers serviced the entire colony, not Tobagonians alone. They supported tourism and transported produce from Tobago to Trinidad and overseas. In February 1955, the government sold the old ships. In 1958, James' advocacy resulted in the purchase of two new ships, the *Scarlet Ibis* and the *Bird of Paradise* (Trinidad and Tobago, 1960, p. 1972-75).

A.P.T. James also tried to improve healthcare delivery in Tobago. He called for additional medical staff for the island as well as the erection of health centres and the extension of ambulance services on the island. In a speech in the Legislative Council in January 1949, James highlighted a litany of woes concerning conditions at the Tobago colonial hospital (Trinidad and Tobago, 1949, p. 282-83). He noted that there were only six beds for females in the general hospital and no X-ray machines. Further, the boilers for sterilization promised seven years earlier had not yet been delivered, while the thirty-one-year-old Norwegian stove used for that purpose failed periodically.

In addition, the operating theatre was not separated from the ward and unsanitary conditions persisted especially with respect to waste disposal. Moreover, separate wards for patients with infectious diseases did not exist. By 1951 the government had provided three million dollars to improve health facilities in the colony, including Tobago (Trinidad and Tobago, 1951, p. 834).

A.P.T. James was also interested in education. In 1950 he urged the government to construct at least one other secondary school in Tobago because Bishop's High School was the only one at the time; and to repair the elementary schools on the island (Trinidad and Tobago, 1951, pp. 788, 790-92). He promoted the study of agriculture, which he believed was one of Tobago's greatest assets, and advocated the establishment of a farm school on the island, a trade school, and a secondary school in the windward district (Trinidad and Tobago, 1952, pp. 341-42). In 1952, James became very frustrated with the government's delay in establishing a secondary school in the rural section of Tobago. Therefore, he founded the James Foundation Secondary School in Roxborough devoted exclusively to studying agriculture (Luke, 2007, p. 173). "He was happy to hear that the government had made provision in the 1957 Tobago Development Programme for a school at Roxborough" (Luke, 2007, 173). During his tenure in office, the government built two elementary schools to replace some of the nine dilapidated schools on the island that were acquired from the Moravian Board (Luke, 2007, 173).

A.P.T. James was also passionate about the development of industries in Tobago, in part, to help staunch the constant migration of young Tobagonians from the island in search of employment in Trinidad. In early 1947, he pointed out the economic potential of the island that could include trade in tobacco, a cooking oil factory, the production of sugar, and a cattle industry. In 1948, he paid his own fare to London to take his grievances to the Secretary of State for the Colonies, Sir Arthur Creech Jones. James outlined Tobago's needs and potential in animal husbandry, the production of dairy products and cocoa, secondary processing industries, telephone service, electrification, health personnel and services, education, road development, and other areas (Phillips, 1994). James recommended the provision of a $15 million grant from the Colonial Development Corporation for the island's development (Phillips, 1994, p. 35). He also raised the issue of Tobagonians having greater authority in determining policies that directly affected them (Tobago MLC Meets Mr. Creech Jones, 1948, p. 2).

At home, in 1949, A.P.T. James promoted the development of the fishing industry, electrification of Scarborough, and the elevation of tourism. Scarborough finally received electricity in 1952 (Trinidad and Tobago, 1954, p. 58). While the Hillsborough Dam was completed in 1952, he pressed for the extension of water distribution in Tobago, urging the government to provide the pipelines needed for that service (Trinidad and Tobago, 1954, p. 58). In 1947 he alleged that Tobago had not benefited from the $80,000 government allocation for tourism (Trinidad and Tobago, 1947, p. 133). In 1948, he moved a motion to make lands in the Crown Point-Storebay

area available to individuals interested in building hotels and developing tourism (Trinidad and Tobago 1948, p. 66).

James pushed for constitutional development that would allow Tobago to have more than one seat in the Legislative Council. He also championed the cause of full representative government, taking a position that all members of the Council should be elected. To this end, he supported the 1948 Constitutional Reform Committee's minority report written by Dr. Patrick Solomon (Trinidad and Tobago, 1948, p. 407). He even submitted his own minority report demanding two seats for Tobago in the legislature (CO 295/649/8). His demands for increased Tobagonian representation also envisioned involvement on the Executive Council and a permanent seat on the Estimates Committee which made the colony's annual budget. James pointed out that because Tobago was separated from Trinidad by sea, no one on the larger island knew the conditions of Tobago well enough, and no one was competent enough to explain what happens in Tobago other than its residents (Luke, p. 179).

James was a member of the Tobago Citizens Political and Economic Party. On 29 October 1950 that party passed a resolution and sent it to the Secretary of State for the Colonies, the governor, the speaker of the Legislative Council, and senior members of the legislatures in the British West Indies. The signatories argued that Tobagonians should be seen as a "Minority Group" and be accorded "privileged" representation (CO 295/649/8). The Party also proposed an amendment to the 1950 constitution to include provision for Tobagonians to have a permanent representative on the Executive Council.

In 1951, the Party wrote a memorandum to the Secretary of State for the Colonies entitled, "Setting out the Grievances, Disabilities and Complaints of the Inhabitants of Tobago." The memorandum requested more than one seat in the Legislative Council for Tobago, and a representative on the Executive Council. It advised that a "Grant-in-Aid, coupled with better communication and Free Trade with the outside world, would not only increase the island's population, but would produce a wealthy and prosperous Tobago" (CO 295/654/70778/1/1). The 1951 memo recommended the development of cotton, tobacco and sugar cane cultivation, and the development of the fishing industry, the tourist industry, and the potential for a banana industry. The signatories complained about the lack of electricity and cold storage facilities on the island, the lack of proper roads and the non-existence of communication with the outside world, which led to the transshipment of perishable items from Trinidad (Luke, p. 186). The slow pace of development of Tobago led James to join the Tobago Independence Movement, which by 1960 recommended a referendum to consider the separation of Tobago from Trinidad within or outside of the West Indies Federation (Luke, p. 196-198).

The referendum never occurred. A.P.T. James died on 5 January 1962. While his vision for Tobago did not materialize in his day, the modern Tobago House of Assembly during its first 10

years addressed many of the issues he advocated. This is evidenced by road construction and maintenance, improved sea and air communication, electrification, improvement of water winning and distribution, provision of better health facilities, the promotion of tourism, a focus on agricultural industries and fisheries, the sourcing of significant sums of funding for development of the island, and even the matter of constitutional development. An examination of the Tobago House of Assembly record in the 1980s provides highlights of the THA's significant contribution to the development of Tobago when compared to the litany of woes outlined by A.P.T. James.

The First Decade of the Modern THA: The 1980s

The first 10 years of the modern Tobago House of Assembly were fraught with tension between the THA and the Central Government, especially over release of funds to the Assembly. There were constant complaints by the Clerks of the Assembly about delays in the monetary releases, and funding below the level requested. It was also a decade of financial contraction of the economy which impacted the entire nation of Trinidad and Tobago.

On 23 September 1980, Sir Ellis Clarke, President of the Republic of Trinidad and Tobago, assented to Act No. 37 of 1980, the Tobago House of Assembly Act: "An Act to establish the Tobago House of Assembly for the purpose of making better provision for the administration of the island of Tobago and for matters connected therewith." The inauguration of the Assembly was held on 4 December 1980, presided over by President Clarke, at which Arthur Napoleon Raymond Robinson was elected as Chairman of the Tobago House of Assembly. Thus, the Tobago House of Assembly was re-established after a nine-decade hiatus.

The re-establishment of the Tobago House of Assembly is one of the greatest achievements of Tobagonians in recent history and represents a capstone experience of Tobagonian identity. The idea was conceived by Tobagonians and the cause was fought for with an indomitable spirit by Tobagonians. Despite its skeptics and naysayers, the institution embodies the Tobagonian spirit and values of intelligence, industriousness, determination, concern for fellow citizens, the "len-han" mentality of village cooperation, strong religious conviction, a high regard for authority balanced with an intolerance for abuse or neglect, a love for indigenous culture, and a passion for the concept of "homeland".

One of the most significant contributions of the THA to Tobago is the improvement of the island's physical infrastructure, particularly road construction and maintenance. Before the advent of the THA, Tobago's roads were notoriously narrow, and not maintained in the best of conditions. Many were simply unpaved, and the rainy seasons wreaked havoc on them. All this negatively affected the cost of transportation, the cost of maintaining vehicles, and the ability of Tobagonians to move from place to place regardless of the weather. Thus, the Assembly's emphasis, from its inception,

on improving roadways, bridges, and drainage alongside roads had a positive impact on development on the island.

As early as 1983, the Acting Clerk of the Assembly listed the opening of Phase III of the Claude Noel Highway as one of the major accomplishments of the Assembly (THA Financial Statement, 1983). This achievement occurred despite the shortage of construction materials such as bitumen, and the irregular manner in which funds were released by the Central Government (the THA received $237.1 million from the Central Government in 1983). The commencement of operations of the Studley Park Quarry was another accomplishment that had a significant impact on road development and improvement in 1983. That led to the local production of road building materials for construction, repair, and maintenance of roads on the island.

Despite the inordinate delays in the release of funds, the "disproportionate relationships between releases received and those applied for" along with inadequate staff, one of the major accomplishments of the THA was the completion of the Claude Noel Highway in 1984. It spent $24,170,751 on its Roads and Bridges Programme including the Claude Noel Highway, the Northside Road (Parlatuvier/Bloody Bay), Charlotteville/L'Anse Fourmi Road, the Roxborough/Bloody Bay Road, and the Auchenskeoch/Buccoo Road (THA Financial Statement, 1984). The THA also spent $2,910,563 on drainage improvements (THA Financial Statement, 1984).

In 1984, the THA received $190,397,380 from the Central Government. Besides roads, that money was used to start a school nutrition program, improve the water supply on the island and expand telephone services. Three kitchens were constructed and equipped, which launched the School Nutrition Programme in Tobago on 17 September 1984. It first started with a centre in Bon Accord distributing food to the schools (THA Financial Statement, 1984). Centres at Charlotteville and Mason Hall were added. "Initially, all Centres operated on a three-day basis; but by 4 October, 1984, …189,677 meals were distributed" (THA Financial Statement, 1984, p. 50).

The water supply in Tobago has always been inadequate. Water mains and pipes often run dry, even in the rainy season, because of the lack of adequate facilities for water winning. In 1984, the THA added 2,950,000 litres per day to the water supply system. It spent $4,701,357 on water projects at Green Hill, Courland, King's Bay, Little Englishman's Bay, Old Government Farm Project, and on extension of water mains (THA Financial Statement, 1984). The THA Financial Statement of 1984 also indicated that there was a "significant expansion of the telephone service throughout Tobago."

Also in 1984, the Community Development Division reported that there were 33 functioning Village Councils, and 34 Women's Groups of which 17 were active (THA Financial Statement, 1984, p. 52). That division focused on the following areas:

- reviving the centre construction and repairs programme
- reviving and strengthening dormant and weak community organisations
- adult education programmes
- fostering efficient group leadership through lectures, discussions, and leadership training programmes
- promoting and monitoring Aided Self-Help Programmes among community organizations, and
- promotion of the Prime Minister's Best Village Competitions and Exhibitions

The THA's support of community groups through technical assistance and funding was critical in the preservation of village cohesiveness and culture.

The Assembly put priority on upgrading and construction of communal spaces such as community centres on the island. In 1984, construction of three new Community Centres at Lambeau, Castara, and Patience Hill was completed; repairs of three existing centers at Plymouth, Bethel and Belle Garden were done, and the construction of the Goodwood centre was ongoing. The community centres were important places of education. In 1984, Pre-School Programmes in Tobago were held at the following five community centres: Speyside, Belle Garden, Carnbee/Mt Pleasant, Mt. Grace/Harmony Hall, and Moriah (THA Financial Statement, 1984). Thirty-three Adult Education classes were conducted and trained 501 students in the following areas:

- Business and Academic Studies (typing and shorthand)
- Music (guitar)
- Nutrition Education (food preparation and cake decorating)
- Vocational Education (garment construction and tailoring), and
- Handicraft including crochet, macramé, straw, and coiling (THA Financial Statement 1984, p. 54).

The THA was able to parley that support later for successfully launching the Tobago Heritage Festival, which has garnered national, regional, and international acclaim. Besides upgrading community centres in 1984, the THA began renovations to the Assembly Chamber.

In 1985, despite receiving only $175.7 million from the Ministry of Finance, leaving most divisions to "operate under severe financial constraints," the Clerk reported the following achievements:

- "the commissioning and inauguration of the Tobago House of Assembly Hall
- state land distribution from which twenty farmers benefited
- massive improvement to the Windward Main Road
- the completion and commissioning of the Auchenskeoch/Buccoo Road, and

- the completion and commissioning of the Shirvan Road" (THA Financial Statement, 1985, p. 1).

The Assembly Chamber was refurbished and officially opened as the seat of the current Tobago House of Assembly, 160 years after its original construction in 1825 (THA, 25th Anniversary, pp. 11, 14). Queen Elizabeth II unveiled the plaque of the refurbished Assembly Chamber on 2 November 1985. Other projects that were under varying stages of implementation included the new Scarborough Abattoir, the Mt. Dillon Castara Road, and substantial improvement to the Windward Road.

By 1986, the Clerk of the THA noted with frustration: "The deterioration in the funds allocated to the Tobago House of Assembly by the Ministry of Finance and Planning . . . primarily as a result of the serious deterioration in the general economic circumstances" (THA Financial Statement 1986). While Parliament approved $167,359,350, "the THA only received $127,655,744. . . ." That represented a shortfall of $39,683,606 or 23%, which in the mind of the Clerk "threatened the very existence of the Assembly" (THA Financial Statement, 1986, p. 1). To deal with the shortfall and "to meet its statutory commitments and to prevent serious social disruption in the community, the Assembly authorized expenditure [of $29,952,439] from its 'Unspent Balances' to satisfy $17,301,586 in recurrent expenditure and $12,651,843 in capital projects" (THA Financial Statement 1986, p. 1). The Mt. Dillion/Castara Road was the only major project completed in 1986, however, several other projects were ongoing including the Roxborough Sports Complex, the New Works Division Office and Mechanical Workshop, and the Louis D'Or Marketing Depot (THA Financial Statement 1986).

The financial woes continued in 1987. The Clerk of the THA noted: "We experienced our share of the rigours of the financial strictures imposed upon the country as a whole . . ." (THA Financial Statement, 1987, p. 1). While $224,080,829 was allocated to the Assembly, it received only 78% of that amount (THA Financial Statement 1987). The Clerk described the Assembly's progress as "modest but significant." He cited "Physical development plans … commissioned and presented for five (5) estates in Windward, Tobago (Belle Garden, Richmond, Goldsborough, Lure, Studley Park)" and pointed to "Substantial progress . . . in some of the major construction projects which were started in 1986 – Roxborough Sports Complex, Louis D'Or Marketing Depot, and the Works Division Mechanical Workshop" (THA Financial Statement 1987, p. 1).

The Settlements Division was created in 1987 (Report of the THA, 1990). The purchase of large tracts of land by the Assembly was not only visionary since land prices on the island skyrocketed in the latter part of the twentieth century. Tobagonians attach great importance to land and home ownership, which gives them a sense of self-worth. Therefore, the Assembly's land ownership initiative reflected the culture of the people. The THA also foresaw that once development began in earnest on the island, many wealthy individuals and firms who were not native to the island

would purchase the land at the disadvantage to Tobagonians who did not have the resources to seize the moment. Thus, the preservation of Tobago's land for its residents is a major contribution of the Assembly to the people of Tobago.

In 1986, the Clerk of the THA also expressed alarm over a "…most worrying aspect of the Assembly's operation…its inability to generate the much-needed employment in Tobago. The absence of major private sector programmes in Tobago puts the onus on the Tobago House of Assembly to create jobs but with the serious curtailment of its Parliamentary allocation, there must of necessity, be a reduction in job opportunities" (THA Financial Statement 1987, p. 2). Apart from political considerations, the THA worked to provide an economic safety net for its people by providing temporary employment relief programmes. Eventually, the Assembly became the employer of choice for most Tobagonians as they deemed it a stable and permanent institution.

Probably the brightest star in the Assembly's contribution to Tobago in the 1980s was the establishment of the Tobago Heritage Festival founded by Dr. Jacob D. Elder, a Councillor of the Assembly, and a cultural anthropologist. The Tobago Heritage Festival has preserved much of the traditions of the island, put them on local, national, regional, and international stages, and has brought thousands of local and international tourists to the island, thus boosting tourism which contributed to a large share of the island's gross domestic product. The Tobago Heritage Festival also gave Tobago its start as a festival tourism destination. Among other features, the festival includes the Moriah Wedding, performances of "Games We Used to Play" held at Mason Hall, "Pulling the Seine" at the Black Rock Fishing Festival, and "Dance the Cocoa" at the Charlotteville "Natural Treasures Day." The revenue benefits to the island, its people, and entrepreneurs are significant. The Tobago Heritage Festival has become the premiere event on the island's social calendar.

Despite the "deepening of the National Economic decline in 1988" with Parliamentary appropriation for the THA at $280,090,233, but with actual receipts at $208,270,373 or 74% of the allocation, "major construction projects were undertaken" (THA Financial Statement, 1988, p. 1). Notably, those included the expansion of the Scarborough Harbour and the extension of the Crown Point Airport Runway (THA Financial Statement, 1988). The appeals for a harbor and an airport that would allow direct international access to and from the island were longstanding. Therefore, work on these projects, apart from their immediate economic benefit, was a source of great pride for Tobagonians. "Other significant projects undertaken were the continuation of construction of a new Works Division Complex at Old Government Farm and a Sports Complex at Roxborough; completion of the Louis D'Or Marketing Depot which became operational in November 1988; and the commencement of production of a documentary film on the Tobago Bele' Dance" (THA Financial Statement, 1988, p. 2).

The THA also paid attention to the development of fisheries as a traditional economic activity of its people. With its support, 139,942 pounds of flying fish were recorded as landed at Buccoo, Mt. Irvine, and Milford/Pigeon Point beaches in 1988 (THA Administration Report, 1992, p. 27).

The decline in the national economy continued in 1989, which affected the financial releases from the Central Government. Of the $270, 411, 006 appropriated, only $243,263,531 or 90% was released to the Assembly (THA Financial Statement 1989). The major projects in 1989 continued to be the expansion of the Scarborough Harbour and the extension of the Crown Point Airport Runway. The construction of the new Works Division Complex at Old Government Farm and the Sport Complex at Roxborough also continued. In addition, the THA bought the Roxborough Estate in 1989 for $543,250 (THA Financial Statement, 1996). Notably, the amount of flying fish landed at Buccoo, Mt. Irvine, and Milford/Pigeon Point beaches increased to 144,910 pounds (THA Administration Report, 1992).

Thus, year after year, the development initiatives undertaken by the modern Tobago House of Assembly sought to address issues that Tobagonians cared most about. In many areas, those issues correlated with the advocacy interests of A.P.T. James. Were he alive in 1990, he would have been proud of the development taking place on the island. However, given his legislative record of championing Tobago's cause and his historical frustration with the slow pace of development on the island, he would have been more vociferous than the Clerk of the THA in his denunciation of the Central Government for not providing the amount of funds approved for development in Tobago.

Conclusion and Recommendations

From the chronological account laid out above, it is clear that in the first decade of its existence, despite the constraints related to the national economic challenges and limited financial releases from the Central Government, the modern Tobago House of Assembly made a concerted effort to address development issues that Tobagonians cared most about over the years as articulated by their leaders such as A.P.T. James. There were successful and transformative accomplishments in road improvement and construction, improving water winning and distribution, providing for the nutrition of school children, upgrading and constructing community centres as central to village life, purchasing and preserving large tracts of land for its residents, providing enhanced international access points for trade and tourism, supporting fisheries, building sporting facilities, preserving the island's unique cultural heritage, and providing an economic safety net for its people. The THA also restored the icon of its legislative, executive, and administrative power, the Assembly Hall.

The historical account of the first 10 years of the modern THA demonstrates resolute development efforts, year after year, to improve the lot of the residents of Tobago. Indeed, the improvements were in some of the problematic areas Tobagonians complained about over the years, and which they wanted addressed in a positive way. Those achievements engendered a sense of pride among the residents because they were accomplished as a result of their own agency by an institution they fought to have reestablished. Certainly, the THA's achievements of those early years reflect significant multidimensional development in Tobago.

Research on Tobago's recent past from the mid-twentieth century can benefit from more scholars and students focusing on the island in the context of the aspirations of its people. Moreover, augmenting available official government documents with oral history sources as well as opinions reflected in newspaper articles will present a more nuanced account that may call into question whether the THA did enough with the limited resources made available to it during a period of economic stringency. Since most of the sources used in this article to document the development initiatives in the 1980s are from the THA, future study should seek to determine the perspectives of the residents of the island and officials in the central government on the achievements in the period under review. Such an approach would allow for a deeper interpretation of the chronological account presented here. It would also be instructive to examine the second decade of the existence of the Tobago House of Assembly to see whether its development initiatives were sustained.

References

Archibald, D. (1987). *Tobago melancholy isle: 1498-1771*. Vol. 1. West Indiana Ltd.

CO (Colonial Office Papers). (1880, June 19). 288/28, Gore to Dundas, 1 Nov. 1878. In *Minutes of the Legislative Council.*

CO. (1888, Dec. 15). 289/5, *Tobago Gazette*.

CO. (1949, Nov. 14). 295/649/8: Minority report of the Honourable A.P.T. James. In *Constitution: Delimitation of Electoral Districts* folder.

CO. (1950, July 3). 295/649/8, Resolution passed at a General Meeting of the [County] Council held at the Office on Monday 3rd July 1950. In *Constitution: Delimitation of Electoral Districts* folder.

CO. (1951) 295/654/70778/1/1, Memorandum from the Tobago Citizens Political and Economic Party" in *Tobago Affairs* folder.

CO. (1898) 298/62: CP 177 of 1898, *The Secretary of State's Despatch and Royal Order in Council Constituting Tobago a Ward of Trinidad*.

CO. (1886, Sept. 29). 321/99, Young to Stanhope, Tobago, Despatch 17688, Domestic.

Internationalrelations.org. (2023). "International Development." https://internationalrelations.org/international-development/.

Luke, L. B. (2007). *Identity and secession in the Caribbean: Tobago versus Trinidad, 1889-1980*. University of the West Indies Press.

Ottley, C. R. (1973). *The story of Tobago: Robinson Crusoe's island in the Caribbean*. Longman Caribbean.

Phillips, A. (1994). *Governor Fargo: A short biography of Alphonso Philbert Theophilus James.* Tobago Printery.

Tobago House of Assembly. (1990). Report of the Tobago House of Assembly. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1992). Administration Report (1992). Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1983). Financial Statements for the Year Ended December 31st. 1983. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1984). Financial Statements for the Year Ended December 31st. 1984. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1985). Financial Statements for the Year Ended December 31st. 1985. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1986). Financial Statements for the Year Ended December 31st. 1986. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1987). Financial Statements for the Year Ended December 31st. 1987. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1988). Financial Statements for the Year Ended December 31st. 1988. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. (1996). Financial Statement for the Year 1996. Secretariat, Tobago House of Assembly, Scarborough, Tobago.

Tobago House of Assembly. *25th Anniversary*. (n.d). Secretariat, Tobago House of Assembly. Scarborough, Tobago.

Trinidad and Tobago. (1947). *Debates in the Legislative Council of Trinidad and Tobago.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1948). *Debates in the Legislative Council of Trinidad and Tobago.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1949). *Debates in the Legislative Council of Trinidad and Tobago*. Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1950). *Debates in the Legislative Council of Trinidad and Tobago*. Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1954). *District Administration Reports for the Year 1952.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1951). *Legislative Council Debates.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1952). *Legislative Council Debates.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1955). *Legislative Council Debates.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1957). *Legislative Council Debates.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad and Tobago. (1960). *Legislative Council Debates.* Parliament Library, Red House, Port of Spain, Trinidad.

Trinidad Guardian. (1948, May 19, p. 2). Tobago MLC Meets Mr. Creech Jones.

Williams, Eric. (1963). *History of the people of Trinidad and Tobago*. Andre Deutsch.

The Impact of Job Stress and General Health on Burnout among Police Officers: The Moderating Role of Ways of Coping, Social Support and Attitudes toward Seeking Psychological Help

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Abstract

The current cross-sectional study examined job stress, general health and demographic variables as predictors of job burnout among police officers in Trinidad. Social support, ways of coping and attitudes toward seeking psychological help were used as moderators of the relationship between job stress and general health on burnout. Data were collected from 337 police officers. A demographic data sheet as well as the Maslach Burnout Inventory, Ways of Coping Questionnaire, Job Stress Scale, Social Support Scale, the General Health Questionnaire and the Attitudes Toward Seeking Professional Psychological Help Scale were administered to respondents. Findings revealed that job stress, general health, social support and ways of coping were significant predictors of job burnout. Ways of coping and social support were found to moderate the relationship between job stress and job burnout and general health and job burnout, respectively. The study's findings are discussed within the context of interventions to reduce police burnout.

Keywords: police, job burnout, job stress, general health, moderators

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Introduction

A country's populace is heavily reliant on its police service to ensure its safety and security. Police officers can perform this task effectively only if they are physically, emotionally and mentally capable. In fact, the health of a police service is regarded as fundamental, not only to a country's safety and security, but also its overall development (Rothmann & Van Rensburg, 2002). Given the importance of policing to a country, the individual and collective health and well-being of police officers are indeed paramount. Unfortunately, officers' health and well-being are constantly being jeopardized by their predisposition to experience job burnout, brought on by the inherently stressful nature of their jobs (Aydin & Tekiner, 2016).

The concept of job burnout first came into being with the work of Freudenberger in the 1970s. Following a systematic analysis and observation of his behaviour and that of his colleagues, Freudenberger, a psychologist and psychotherapist by profession, observed a state of mental decline among his colleagues and himself, and which his colleagues referred to as being *burned out* (Heinemann & Heinemann, 2017). More than a decade later, Maslach and Jackson (1981) advanced a theoretic model of the psychological syndrome of job burnout comprising three dimensions: emotional exhaustion (a weakening of affective resources), depersonalization (a sense of detachment from the job), and reduced personal accomplishment (a negative evaluation of oneself based on one's accomplishments). Employees who experience high levels of both depersonalization and emotional exhaustion and low levels of personal accomplishment are likely to experience high degrees of job burnout (Maslach et al., 1986). Conversely, low job burnout levels are reported by those exposed to low levels of emotional exhaustion and depersonalization, and high levels of personal accomplishment (Houdmont, 2013). Job burnout is not an instantaneous occurrence, but instead is the result of chronic stress brought about by stressful events over a prolonged period, as is often evident in jobs that require intense human interaction and risk, with policing being one of them (Russell, 2014).

Attempts have been made to examine the key contributors of job burnout among police officers, revealing personal, social and organizational factors as major contributors. At the individual level, socio-demographic variables such as age, gender, ethnicity, marital status, rank, educational level, and personality variables such as self-esteem, locus of control and

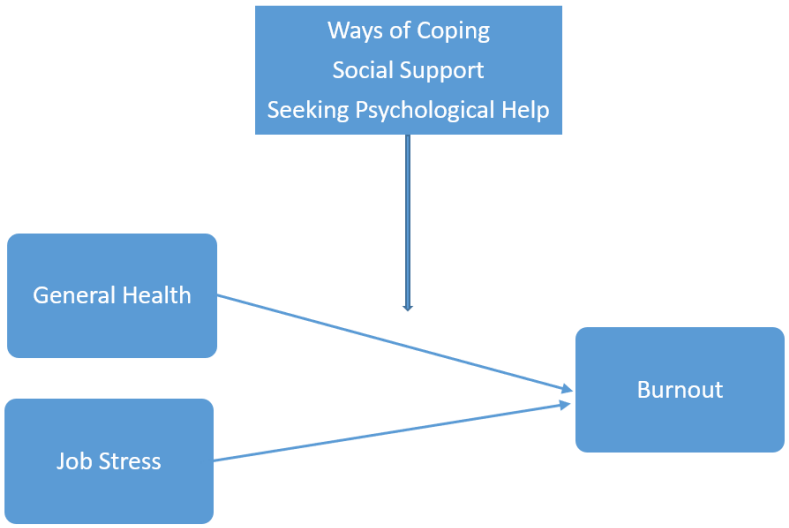
self-efficacy as well as personality type, have all been associated with employee job burnout (Anderson & Iwanicki, 1984; Glass & McKnight, 1996). Prior studies have established the importance of workplace factors such as shiftwork, duration of work hours, lack of a sense of belongingness to the organization, absence of recognition for work accomplishments, role conflict, role ambiguity and perceptions of unfair workplace treatment as some of the precursors of job burnout (Aydin & Tekiner, 2016; Bawa, 2012). Other variables associated with job burnout include organizational climate, poor prospects for promotion, salary inequities, staff turnover and inadequate staffing and resources (Glisson et al., 2008; Morse et al., 2012).

An investigation of job burnout among police officers is important for several reasons. Job burnout can affect not only officers' physical and psychological health and well-being, but can also adversely impact their family life, work relationships, job commitment and job performance, and even result in job loss (Maslach et al., 2001). Schaufeli and Enzmann (1998) claim that job burnout has been associated with job dissatisfaction, diminished organizational commitment, truancy, intent to quit and elevated turnover, all of which are related to diminished performance on the job. The excessive use of force among police officers is also associated with job burnout (Kop et al., 1999).

While several studies have been done on job burnout, the focus has predominantly been on occupations other than law enforcement. Moreover, the few studies that have been done on job burnout among law enforcement officers have been conducted in developed nations, and to date no known study on officer job burnout has been undertaken in Trinidad and Tobago. Trinidad and Tobago is a twin-island Republic within the Caribbean, and is located just north of Venezuela. As of 2023, Trinidad and Tobago had population of 1.37 million inhabitants and approximately 7,500 police officers. Its economy is primarily based on petroleum and tourism. Trinidad and Tobago has one of the highest murder rates in the Caribbean, second only to Jamaica. Within recent times the police service has come under severe criticism from several sectors of society as a result of the increasing crime rates. The very high crime rates and consequent dangers associated with policing, coupled with ongoing criticisms of the police service, can contribute to high levels of stress and burnout among police officers in Trinidad and Tobago.

In order to contribute to an understanding of job burnout, the present study utilizes a range of demographic variables as controls, as well as job stress and general health as predictors of burnout among police officers. The study also hypothesizes that ways of coping, social support and attitudes toward seeking psychological help moderate the relationship between job stress and general health and burnout. The main research model which will be examined is presented in Figure 1.

Figure 1
Research Model



Literature Review

Theoretical Considerations

Several theoretical models have been developed to explain work-related burnout. The mediation model (Leiter & Maslach, 2005) suggests that job-related factors play a primary role in burnout. This theory identifies six key factors which include work overload, lack of control, insufficient reward, breakdown of community, absence of fairness and value conflict. These factors produce job stress which in turn can lead to burnout. The job strain model (Karasek & Theorell, 1990) and the job demand resources model (Demerouti et al., 2001) also identify job characteristics as important, but argue that other factors interact with such characteristics to determine whether or not job-related factors lead to burnout. The job strain model assumes that job-related factors which produce stressors interact with the level of job control and social support which employees receive. In contrast, the job demand resources model indicates that job-related demands which produce stress interact with personal or job resources to determine whether job-related stress leads to burnout.

Taken together, the models described above suggest that factors related to the job, as well as factors external to the job (which include personal as well as non-personal factors) affect burnout. While each of these models specifies a range of possible factors the present study focuses on two key factors. The first relates to job stress which can be a result of a range

of work-related factors. The second factor which will be focused upon is general health which is considered to be a personal factor. The present study utilizes job stress and general health as predictors of burnout, but does not assume that both variables will always lead to burnout. Instead, the key argument of this study is that job stress and poor health can lead to burnout, but other factors may mitigate (that is, moderate) this relationship. The mitigating factors used in this study include the use of adaptive coping strategies, the availability of social support, and attitudes toward seeking psychological help. Several other variables, including demographic variables, will be used as controls in testing the moderating effects of the aforementioned variables. The literature review will first examine several demographic variables, following which the relationships depicted in Figure 1 will be examined.

Demographic variables and Job Burnout

Research regarding the relationship between the demographic variables of age, gender, ethnicity, marital status, educational level, rank and job burnout has provided inconsistent findings, which may be attributed to several factors. With respect to the age-burnout relationship, age may have been confounded by work-experience (Maslach et al., 2001) while gender differentials in job burnout levels may be due to the unique stressors faced by female police officers (McCarty et al., 2007). While the disparities in educational level and job burnout could be attributed to confounds such as occupation and status (Birch, 1986), ethnic variations in the ethnicity-job burnout relationship may be explicated by the inequalities in perceived fairness between ethnicities (McDonald, 2012). The inconclusive nature of the relationship between rank and marital status in relation to job burnout may lie in the fact that these two demographic variables are among the least studied in relation to job burnout, and as such further research may be necessary before any conclusive statement can be made.

Job Stress and General Health as predictors of Burnout: The moderating role of Social Support, Ways of Coping and Willingness to seek Psychological Help

The above sections have looked at the relationship between a number of demographic variables and job burnout. This section focuses on two substantive variables, job stress and general health, as predictors of burnout. As the literature will show, there are inconsistencies in the findings with respect to the impact of each of these variables on burnout. While several researchers have hypothesized that job stress should increase rates of burnout, not all have found this relationship (Mehta, 2010). In a similar manner, several researchers have hypothesized that poor health can lead to job burnout (Peterson, et al., 2008). Despite this, other researchers have not found a relationship between health and burnout. Useche et al. (2019), for example, utilized the Maslach Burnout Inventory and examined the relationship between the subscales in the Inventory and several health-related indicators. They found no relationship between body mass index and the three subscales

of the Inventory. Alcohol consumption, another health-related indicator used by Useche et al. (2019), was not related to the emotional exhaustion and depersonalization subscales of the Inventory, while physical exercise was unrelated to the personal accomplishment subscale of the Inventory. It is a fundamental argument of this paper that job stress and poor health could lead to burnout, but that there may be some conditions under which the effects of stress and poor health could be tempered such that they do not lead to burnout. In this paper these conditions are specified as three moderating variables. More specifically, it is hypothesized that officers who receive social support, or who utilize effective coping strategies, or who are more willing to seek psychological help are less likely to experience burnout, even if they are stressed on the job or have poor health.

Job Stress and Burnout

Prolonged stress has been found to result in burnout among human service professionals (Maslach et al., 2001). Several researchers have reported significant positive associations between job stress and burnout (Abarghouei et al., 2016; Jamal & Baba, 2000; Wang et al., 2014; Wu et al., 2021). These findings indicate that the likelihood of burnout increases as job stress increases. Other research, however, has not found this relationship. For example, Mehta (2010) in his examination of job stress and burnout among 153 regulatory affairs professionals in New Jersey, found no significant relationship between job stress and burnout. This finding led Mehta to conclude that the relationship between job stress and burnout requires further research in order to resolve this inconsistency. Given that job stress does not always lead to burnout, it is important to determine the conditions under which stress will and will not lead to burnout.

General Health and Burnout

Research between burnout and health, though limited, suggests that burnout is related to both physical and mental health, either as an antecedent to burnout or an effect of it (Golembiewski et al., 1992). As it relates to physical health, the various dimensions of burnout have been found to correlate significantly with an increased risk for somatic diseases (von Känel, et al., 2020). Research has found that the emotional exhaustion component of burnout is highly predictive of mental health outcomes (Maslach et al., 2001), suggesting therefore, that burnout leads to poor mental health. The findings of Abkhou and Janaabadi (2015) are consistent with this. In their study of job burnout and general health among high school teachers, using the General Health Questionnaire, they found that burnout accounted for 20% of the variance in teachers' general health. Further, in their investigation of burnout, job stress, job satisfaction and mental health among 500 University medical staff, Khamisa et al. (2015) reported that the highest amount of variance in mental health (21%) was attributed to burnout.

In contrast to the above, Peterson et al. (2008) posit that poor physical and mental health can lead to higher job burnout levels. Mental health is paramount in order for police officers to perform well at their jobs. Poor mental health can negatively impact officer judgment, resilience and stress levels and ability to appreciate their jobs (Kelley, 2005). Further, some researchers have reported associations between depression and anxiety and various phases of burnout (Golembiewski & Munzenrider ,1988). Given the important role that general health may have on burnout, as well as inconsistencies in previous research (for example, Useche et al., 2019), it becomes important to understand the relationship between both variables, and to determine whether there are any factors which could mitigate the relationship between health and burnout.

Ways of Coping as a Moderator

Coping constitutes the cognitive and behavioural strategies that persons use to manage stressful events in their lives. A significant body of research suggests that coping strategies may play a critical role in ameliorating job burnout (Alsoofi et al., 2000). While many coping strategies exist, some are more suitable for coping with police stressors than others. According to Violanti (1992), unlike escape avoidance and self-control coping, strategies of planful problem solving and distancing were more likely to assist police officers in coping with stressful events. Specific coping strategies have also been found to attenuate the stress-job burnout association as evident in the study by Mostert and Joubert (2005) which used a sample of 340 police officers. This study found that occupational stress and job burnout was moderated by avoidance-coping. Moreover, in a later study, Betoret (2006) found that coping resources moderated the stress-burnout relationship among 247 secondary school teachers in Spain. Specifically, this researcher found that teachers who had access to more coping resources reported suffering less stress and burnout when compared to their counterparts who had fewer coping resources. Further, Wallace et al. (2010) in their study of 232 counselors reported that coping strategies either mediated or moderated the stress-burnout relationship. The study suggested that type of coping strategy determined whether it served as a mediator or moderator. Despite the above findings, police officers have been reported to use maladaptive coping mechanisms, and officers with poor mental health are more likely to utilize inappropriate coping strategies, thus not being able to mitigate the resultant burnout that may occur (Burke, 1993).

Social Support as a Moderator

One factor that may mitigate the impact of stress on job burnout for police officers is social support. Social support could be provided by supportive individuals from within one's social network, which incorporates colleagues, friends, family, supervisors and the community (Cohen, 2004). Workplace stress cannot be eliminated but can be mitigated against by administrative, peer and colleague support (Wisniewski & Gargiulo, 1997).

Vigfúsdóttir (2017), in his study of 93 police officers in Iceland, found that less stress and job burnout were reported by officers who received higher levels of co-worker support. This study also found that social support mediated the stress-job burnout relationship, while family and friend support only impacted officers' stress levels. Abu Al Rub, et al. (2009) found that co-worker support was important in mitigating the effects of job stress. Other research has shown that supervisor support, in mitigating the effects of burnout, may be more important when compared to co-worker support (Maslach et al, 2001). While this does not negate the importance of family and friend support, it does seem to underscore the importance of co-worker support as it relates to stress and subsequent job burnout reduction among police officers. Other research suggests that emotional support could buffer the negative effects of job stress on job burnout (Zellars & Perrewé, 2001). The variation in the sources of social support makes this a variable of interest that requires additional investigation.

Attitudes Toward Seeking Psychological Help as a Moderator

Seeking psychological help, like social support, could play an instrumental role in mitigating the relationship between job stress or mental health and burnout among police officers. Policing is a high-stressed profession and officers are confronted with daily hassles and traumatic events, the cumulative effect of which can increase their stress levels. If the impact of stresses on the job, or that of poor health are not addressed, this could result in burnout. While families, friends and colleagues may be able to offer some degree of support, in instances where stress levels are chronic, or where mental health issues arise, professional psychological intervention may be warranted. Trained mental health personnel are more readily positioned to offer the kind of counseling and support which may ameliorate the effects of stress as well as mental health issues. Officers who express attitudes which suggest that they are more willing to seek psychological help, on average, may be more likely to seek such help when it is needed. Even if they do not seek professional help, the propensity to seek help suggests that they may seek help from others, including family and friends. While such forms of help may differ from that offered by professional psychologists, it may nevertheless provide the support that is needed to help officers to deal with issues surrounding their stress or mental health. If such support occurs, then this should reduce the likelihood that such stress or mental health issues would lead to burnout.

Method

Procedures

Permission was obtained from the Ministry of National Security to administer a quantitative survey to a cross-section of in-service police officers in Trinidad. In-service officers were surveyed at randomly selected police stations in each of the eight police

divisions in Trinidad. The superintendent attached to each police division was contacted and five police stations from within each police division were randomly selected for participation in the study. Dates and times were arranged for the administration of the survey at each police station. Upon visits to the police stations, officers were informed about the purpose of the survey and were told that participation was voluntary. Officers who agreed to participate were given printed copies of the survey. Completed surveys were retrieved from an average of eight police officers per station. A total of 337 surveys were completed by in-service officers. Surveys were self-administered and trained research assistants were on hand to answer questions which arose. Each survey took approximately 35 minutes to complete. The study was approved by the University of Trinidad and Tobago Research Ethics Committee.

Sample

The sample consisted of 337 in-service police officers from the eight police divisions within Trinidad. Sixty-five point six percent of the respondents were male while 34.4% were female. Participants ranged in age from 19 to 64 years (Mean = 35.7 years, SD = 9.5). Of these, 1.2% were 18 to 20 years of age, 32.2% were 21 to 30 years of age, 38.6% were 31 to 40 years of age, 19.6% were 41 to 50 years of age, and 8.3% were older than 50 years of age. Twenty-two point eight percent of the sample were of East Indian descent, 45.4% were of African descent, 31.2% were Mixed, while 0.6% were of other ethnicities. With respect to educational levels, 2.7% possessed primary education, 59.1% obtained secondary education, 20.8% had a Bachelor's degree, 3% had a Master's degree or higher while 14.5% indicated other types of educational achievements. Of the sample, 49.9% were married or in a relationship, while 50.1% were single, divorced, separated or widowed. With respect to the number of years employed, 40.9% of respondents had been employed for five years or less, 20.2% for 6 to 10 years, 16.6% for 11 to 15 years, 10.4% for 16 to 20 years and 11.0% had more than 20 years of service as a police officer (Mean = 10.3, SD = 9.2). When asked to indicate their rank, 63.8% indicated that they were constables, 16.3% were corporals, 10.4% were sergeants, 2.4% were inspectors, while 1.7% had other ranks.

Measures

Data for the current study were collected via a questionnaire which included a demographic data sheet. In order to yield the demographics, participants were asked to indicate their age, gender, ethnicity/race, educational levels, rank and number of years of service. Several instruments, as indicated below, were used to collect data on the other variables used in this study. Descriptive statistics appear in Table 1 while the correlations among variables appear in Table 2.

Maslach Burnout Inventory

The Maslach Burnout Inventory (MBI) developed by Maslach and Jackson (1986) was used to measure job burnout among police officers. The MBI is a 22-item scale with three subscales: emotional exhaustion (9 items) depersonalization (5 items) and low personal accomplishment (8 items). Each item on each of the subscales was measured using a 7-point scale ranging from 0= never, 1= a few times a year or less, 2= once a month of less, 3= a few times a month, 4= once a week, 5= a few times a week to 6= every day. All measures were computed as the mean of the responses within each subscale. A high score on the emotional exhaustion subscale reflects being emotionally overworked (mean = 2.17, SD = 1.33, α = .896). A high score on the depersonalization subscale reflects an unsympathetic and detached response to one's service (mean = 1.85, SD = 1.33, α = .716). A high score on the personal accomplishment subscale reflects feelings of incompetence (mean = 2.35, SD = 1.22, α = .795). A total burnout measure was also computed as the mean of the responses to all items (mean = 2.09, SD = 1.11, α = .837).

Job Stress Scale

Job stress was measured by the Job Stress Scale developed by McCreary and Thompson (2006). This is a 40-item scale with 20 items each measuring operational and organizational stress. Items were rated on a 5-point Likert-type scale with responses ranging from "strongly disagree" = 1 to "strongly agree" = 5. Items that measured operational stress included "*Shift work has caused me stress over the past 6 months"* and *"Traumatic events have caused me stress over the past 6 months*." Organizational stress was measured by items such as "*Staff shortages have caused me stress over the past 6 months*" and "*Excessive administrative duties have caused me stress in the last 6 months."* This scale was computed as the mean of the responses to all questions. This was used as a measure of total stress and items were coded such that a high score represented a high level of job stress (mean = 3.0, SD = .628, α = .932).

General Health Questionnaire

The General Health Questionnaire, developed by Goldberg (1978) is a 28-item questionnaire comprising 4 subscales (somatic symptoms, anxiety/insomnia, social dysfunction and severe depression) each of which contains 7 items. Items are rated on a 4-point rating scale ranging from 0 = "not at all" to 3 = "much more than usual". Sample items in this scale include *"Have you been getting scared or panicky for no good reason?"* and *"Have you been able to enjoy your normal day-to-day activities?"* A measure for general health was computed as the mean of the responses to all items. Items were coded such that a high score represented poor health (mean = 2.16, SD = .403, α = .897).

Social Support Scale

The Social Support Scale developed by Cullen et al. (1985) was used. This comprised 23 items and was subdivided into 4 subscales measuring peer, supervisor, family and community support. Items were rated on a Likert-type scale ranging from "strongly agree" = 1 to "strongly disagree" = 5. Higher scores on this scale indicated higher levels of social support. Sample items on this scale included "*My fellow officers often encourage each other to do the job in a way that we would be really proud of*" (peer support); "*My supervisors often encourage us to do the job in a way we would really be proud of*" (supervisor support); "*I have people in my family I can talk to about problems I have at work"* (family support) and "*Residents in the communities that I serve are supportive of police officers"* (community support). Total social support was computed as the mean of the responses to all items (mean = 3.46, SD = .468, α = .811).

Ways of Coping Scale

Developed by Folkman and Lazarus (1988), the Ways of Coping Scale is a 66-item process measure, containing a variety of thoughts and actions utilized by people to deal with internal and external stressful encounters. Items are rated on a 4-point Likert scale ranging from 0 = "Does not apply or not used" to 3 = "Used a great deal". The questionnaire comprises 8 subscales; positive reappraisal, planful problem solving, escape avoidance, accepted responsibility, seeking social support, self-controlling, distancing, and confrontive coping. Sample items on the scale included: "*I tried to forget the whole thing*," "*I talked to someone about how I was feeling*," and "*I changed something about myself.*" Factor analysis indicated a one-factor solution, and the scale was computed as the mean of the responses to all items. Items were coded such that a high score represented the use of effective coping strategies (mean = 1.45, SD = .531, α = .875).

Attitude Towards Seeking Psychological Help - Short Form

This scale developed by Fischer and Farina (1995) measures one's attitude towards seeking psychological help. It is a 10-item scale with items rated on a five-point Likert scale with response choices ranging from 1= "disagree" to 5 = "agree". This measure was computed as the mean of the responses to all items. Higher scores on the scale indicate greater willingness to seek psychological help (mean = 3.39, SD = .813, α = .662). Items include: "*I might want to have counseling in the future*", "*I would want to get psychological help if I were worried or upset for a long period of time*" and "*The idea of talking about problems with a psychologist strikes me as a poor way to get rid of emotional conflicts*".

Table 1
Descriptive Statistics

	Mean	Std. Deviation	Cronbach's Alpha
Job Stress	3.00	.628	.932
General Health	2.16	.403	.897
Social Support	3.46	.468	.811
Ways of Coping	1.45	.531	.875
Seeking Psychological Help	3.39	.813	.662
Burnout (Total)	2.09	1.11	.837
Burnout (Emotional Exhaustion)	2.17	1.33	.896
Burnout (Depersonalization)	1.85	1.33	.716
Burnout (Low Personal Accomplishment)	2.35	1.22	.795

Table 2
Correlation among Variables

	Job Stress	General Health	Social Support	Ways of Coping	Seeking Psychological Help	Burnout (Total)	Burnout (Emotional Exhaustion)	Burnout (Depersonalization)
General Health	-.314**							
Social Support	-.230**	.352**						
Ways of Coping	.139**	-.055	.114*					
Seeking Psychological Help	-.070	.143**	.110*	.103*				
Burnout (Total)	.488**	-.493**	-.283**	.164**	-.141**			
Burnout (Emotional Exhaustion)	.481**	-.557**	-.329**	.181**	-.153**	.974**		
Burnout (Depersonalization)	.396**	-.507**	-.224**	.170**	-.206**	.803**	.675**	
Burnout (Low Personal Acc.)	-.010	-.128*	-.145**	-.282**	-.268**	-.049	-.075	.051

* $p < .05$, ** $p < .01$

Results

Multiple regression analysis was used to determine whether the predictors which were specified were significant predictors of job burnout and whether social support, ways of coping, and attitudes toward seeking psychological help moderated the relationship between job stress/general health and burnout. Four models were computed. The dependent variables were total burnout, as well as the three subscales in the Maslach Burnout Inventory (emotional exhaustion, depersonalization and low personal accomplishment). Predictors included age, gender, level of education, rank, number of years of service, marital status, job stress and general health. Moderation effects were computed using the method specified by Aiken and West (1991) where moderators were specified as interaction terms.

Prior to computing the regression models, several tests were conducted to ensure that the basic conditions required for analysis were met. Linearity tests were conducted using scatterplots, while tests for univariate and multivariate outliers were conducted using the criteria specified in Tabachnick and Fidell (2014). Variance inflation factors as well as an examination of correlations among the predictors indicated that there were no issues of multicollinearity. Tests for homoscedasticity, normality and independence of errors, and autocorrelation of residuals were also conducted and indicated no issues.

Regression models appear in Table 3. Significant predictors of total burnout were job stress ($\beta = .327$, $p < .001$), general health ($\beta = .336$, $p < .001$), social support ($\beta = -.079$, $p < .05$), ways of coping ($\beta = .128$, $p < .001$) and health * social support ($\beta = -.090$, $p < .05$). The results indicate that officers who experienced high levels of job-related stress or officers who had poor health were more likely to be burnt out. Officers who received high levels of social support were less likely to be burnt out while officers who used adaptive ways of coping were more likely to be burnt out. The significant health * social support interaction term indicated that officers who had poor health but who received social support were less likely to be burnt out.

Significant predictors of emotional exhaustion were job stress ($\beta = .273$, $p < .001$), general health ($\beta = .405$, $p < .001$), social support ($\beta = -.095$, $p < .05$), ways of coping ($\beta = .151$, $p < .001$) and job stress * ways of coping ($\beta = -.113$, $p < .05$). These findings indicate that officers who are stressed on the job or who have poorer health are more likely to be emotionally exhausted. The results also indicate that officers who receive more social support are less emotionally exhausted. The results also indicated that officers who utilized better coping strategies were emotionally more exhausted. The significant job stress * ways of coping interaction term indicated that officers who were stressed on the job but who utilized more effective coping strategies were less emotionally drained.

Significant predictors of depersonalization were job stress ($\beta = .215$, $p < .001$), general health ($\beta = .375$, $p < .001$), ways of coping ($\beta = .143$, $p < .01$) and willingness to seek psychological help ($\beta = -.114$, $p < .05$). The results indicate that officers who experience a high level of job stress or those who have poorer health feel unsympathetic and detached from their jobs (that is, have a high level of depersonalization). Officers who utilized more effective coping strategies experienced higher levels of depersonalization. The results also indicate that officers who were more willing to seek psychological help experienced lower levels of depersonalization.

Significant predictors of low personal accomplishment were ways of coping ($\beta = -.245$, $p < .001$), willingness to seek psychological help ($\beta = -.208$, $p < .001$), job stress * ways of coping ($\beta = -.151$, $p < .05$) and health * social support ($\beta = .125$, $p < .05$). The results indicate that officers who use adaptive coping strategies as well as officers who are willing to seek psychological help when faced with stressful situations have high feelings of personal competence. The results also indicate that officers who experience stress on the job but who utilize effective coping strategies have high feelings of personal competence. Finally, the results show that officers who are unhealthy but who receive social support have high feelings of personal competence.

Overall, the most important predictors of the dependent variables were job stress, general health, social support and ways of coping. Not surprisingly, high levels of job stress was a predictor of total burnout and was also related to high levels of emotional exhaustion and depersonalization. Social support acted as a buffer against burnout and also reduced levels of emotional exhaustion. Poor health was also related to total burnout, emotional exhaustion and depersonalization. While ways of coping was an important predictor, its impact was in a direction which was predominantly not what was expected. More specifically, officers who used adaptive coping strategies were more likely to be burnt out, had higher levels of emotional exhaustion and higher levels of depersonalization. In contrast, officers who used effective coping strategies had higher feelings of personal competence.

Ways of coping was an important moderator where job stress was concerned. More specifically, officers who were stressed but who utilized effective coping strategies were less likely to be emotionally exhausted and had high feelings of personal competence. The findings also show that social support was an important moderator where general health was concerned. More specifically, officers who had poor health but who received social support were less likely to be burnt out. In addition, officers who were unhealthy but who received social support had higher feelings of personal competence.

Table 3

Predictors of Job Burnout

	Total Burnout			Emotional Exhaustion			Depersonalization			Low Personal Accomplishment		
	β	Std. Error	t	β	Std. Error	t	β	Std. Error	t	β	Std. Error	t
Age	-.090	.008	-1.363	-.063	.010	-.882	-.074	.011	-.960	-.034	.011	-.397
Gender	.005	.092	.126	-.008	.123	-.175	-.071	.133	-1.47	.066	.135	1.223
Education	.024	.079	.623	.059	.104	1.36	.052	.112	1.12	-.032	.114	-.616
Years of Service	-.012	.008	-.210	.035	.010	.483	-.046	.011	-.591	-.091	.011	-1.053
Marital status	.011	.091	.275	.006	.117	.137	.028	.126	.589	-.002	.129	-.047
Rank	-.041	.119	-.897	-.061	.350	-1.42	-.067	.376	-1.46	-.010	.384	-.194
Job Stress	***.327	.073	7.948	***.273	.087	5.81	***.215	.094	4.24	-.040	.096	-.705
General Health	***.336	.121	-7.668	***.405	.172	-7.91	***.375	.185	-6.79	.067	.189	-1.087
Social Support	*-.079	.099	-1.909	*-.095	.133	-2.00	-.007	.143	-.142	-.060	.146	-1.056
Ways of Coping	***.128	.081	3.288	***.151	.105	3.50	**.143	.112	3.07	***-.245	.115	-4.715
Seeking Psychological Help	-.063	.053	-1.628	-.065	.072	-1.49	*-.114	.078	-2.41	***-.208	.079	-3.937
Job Stress * Social Support	-.059	.147	-1.455	-.063	.175	-1.37	.021	.189	.427	.023	.193	.412
Job Stress * Ways of Coping	.064	.119	1.452	*-.113	.144	2.23	.026	.155	.475	*-.151	.158	-2.484
Job Stress * Seeking Psych Help	.005	.078	.120	-.016	.092	-.338	.031	.099	.621	.068	.101	1.206
Health * Social Support	*-.090	.243	2.216	-.062	.348	1.31	-.034	.374	.667	*.125	.383	-2.181
Health * Ways of Coping	.008	.204	-.176	-.043	.283	.848	.021	.304	-.376	-.009	.311	.154
Health * Seeking Psych Help	.047	.137	-1.142	.049	.186	-1.07	-.068	.200	1.38	-.081	.205	1.474
Adjusted R^2	.392			.427			.334			.172		

* p < .05, ** p < .01, *** p < .001

Discussion

The current study examined the extent to which job stress and general health as well as several demographic variables (age, gender, marital status, rank, educational levels and years of service) predicted job burnout among police officers in Trinidad. The moderating roles of social support, willingness to seek psychological help and ways of coping were also examined. It was expected that these variables could moderate the relationship between job stress and general health, and the dependent variable, job burnout. In examining these relationships job burnout was conceptualized as total burnout as well as three subscales which included emotional exhaustion, depersonalization and low personal accomplishment.

Job stress, general health, social support, ways of coping and a health * social support interaction term were found to be significant predictors of total burnout. Regression models using the three subscales of job burnout provided further insight into the relationships which were examined. Job stress, general health, social support ways of coping and job stress * ways of coping were found to be significant predictors of emotional exhaustion. Significant predictors of depersonalization included job stress, general health, ways of coping and willingness to seek psychological help. Significant predictors of low personal accomplishment included ways of coping, willingness to seek psychological help, job stress * ways of coping and general health * social support. Ways of coping was found to be a significant moderator in the job stress-burnout relationship, while social support was found to be a significant predictor in the general health-burnout relationship.

Overall, the findings suggest that officers who are stressed, or who have poor health or receive low levels of social support are more likely to experience job burnout. Contrary to expectations, officers who utilized effective coping strategies were also more likely to be burnt out. In addition, officers who experienced job stress, but who utilized effective coping strategies were less likely to have emotional exhaustion and low personalized accomplishment, and officers who had poor health, but who received adequate social support were less likely to be burnt out. These findings have implications for police organizations as they seek to institute measures to mitigate against officer burnout.

Job stress increased the likelihood of job burnout among police officers. This finding is consistent with prior research (for example, Russell et al., 1987). There are numerous measures that police administrations can introduce to mitigate the effect of employee stress. Stress reduction programmes and interventions can be implemented to mitigate the effects of job stress and therefore pre-empt the issue of job-burnout among officers. Instituting such actions would serve to not only lower job burnout levels, but may also reduce absenteeism, prevent job turnover and increase productivity among officers. It is not surprising that high job stress levels are related to emotional exhaustion and depersonalization among officers. This is consistent with Günüşen et al. (2014) who found that nurses who experience greater amounts of stress tend to suffer from

emotional exhaustion. The finding that higher levels of depersonalization were exhibited by officers who experienced greater stress is also not surprising. It might be expected that such officers can become somewhat detached from their jobs and treat persons in a callous and insensitive manner.

The literature on general health and burnout has not provided clear findings. While researchers contend that a relationship exists between health and burnout (for example, Masouleh et al., 2007) the body of literature has been largely inconclusive on whether burnout leads to poor health or whether poor health increases the likelihood of burnout. Leiter et al. (2013) and Tang et al. (2001) assert that burnout leads to poor mental health, while Peterson et al. (2008) argued that poor physical and mental health lead to job burnout. In addition, other researchers contend that burnout is a "work-related mental health impairment" (Awa et al., 2010). In the current study, poor health (physical and mental) was related to job burnout among police officers. Overall, the findings in this study suggest that officers who are in excellent health, mentally and physically, are less likely to experience burnout on the job. While burnout arises due to prolonged stress, such officers may be able to manage their stress levels well because they do not have health issues to contend with. Better health may also imply a greater level of resilience and resistance to the effects of stress.

While it is difficult to say whether burnout leads to poor mental health, or the reverse, it seems less likely that burnout could lead to poor physical health since there are many other factors which may play a more important role in overall physical health (for example, diet and exercise). As such, it seems more likely that officers who are in poor physical health may be prone to a range of outcomes, one of which may be burnout. The measure of general health which was used in the current study included measures for mental health, but also included a somatic symptoms subscale which measured physical health. This suggest that it may be possible to determine whether physical or mental health is more important as a predictor of burnout. In this regard, regression analysis showed that somatic symptoms ($\beta = -.411$, $p < .001$) and anxiety/insomnia ($\beta = -.557$, $p < .001$) were significant predictors of total burnout while social dysfunction ($\beta = .112$, ns), and severe depression ($\beta = -.172$, ns) were non-significant. Unfortunately, these findings do not lend sufficient clarity to the issue. While the somatic symptoms subscale is related to burnout, so too is the anxiety/insomnia subscale. While it can be argued that anxiety/insomnia are physical symptoms which could be related to physical health, these have also been shown to be related to mental health (Castellano & Soderstrom, 1997; Dammeyer & Nunez, 1999). It is interesting to note, however, that the depression subscale is not related to burnout. Depression is an important component of mental health, and this finding appears to suggest that physical health may be more important than mental health as a predictor of burnout.

Social support was found to be a significant predictor of job-burnout among police officers. The findings indicate that officers who received social support from their community, peers, supervisors or families were less likely to experience burnout on the job. This suggests that social

support may have acted as a buffer, mitigating the effects of stresses on the job which could lead to burnout. This finding is consistent with previous literature (for example, Russell, 2014; Vigfúsdóttir, 2017). Social support could also lead to reduced levels of emotional exhaustion, one of the three key components of job burnout. Given that emotional exhaustion suggests that one has become emotionally overextended and tired at one's job, it makes sense that if they receive support, such support could circumvent the occurrence of becoming emotionally exhausted and therefore reduce the likelihood of experiencing burnout on the job.

An unexpected finding was that officers who utilized adaptive coping strategies reported higher levels of burnout. Given that adaptive coping strategies are usually positive and constructive, this finding suggests that the type of coping strategy alone may not necessarily be the only aspect of coping that needs to be investigated when examining coping in relation to job burnout. According to Heffer and Willoughby (2017), it is not only important to investigate what strategies are utilized, but also how many. These researchers found that the use of a greater number of positive coping strategies led to more positive adjustment than using a smaller number of positive coping strategies. They further argued that when confronted with stress, having access to a large number of positive coping strategies equips individuals with more resources with which to deal with stress. Another possible explanation for the unexpected finding is that officers who are under excessive stress (that is, those who are tending toward burnout) may develop better coping strategies to deal with the increasing demands on the job. This argument suggests that the use of more adaptive coping strategies is a response to burnout. Additional research is required to determine whether this is an anomalous finding. Coping strategies can be taught, and if future research shows that the use of better coping strategies reduces the likelihood of burnout, then this can represent on approach to mitigate job burnout.

The results also show that social support served as a moderator of the relationship between general health and burnout. The findings indicate that officers who have poor health, but who also receive social support, are less likely to become burnt out, than officers who do not receive social support. Supplemental analysis which used interaction terms with general health and each source of social support as predictors of burnout revealed that the only interaction term which was a predictor of burnout was health * social support from family. Interaction terms with social support from other sources (peers, supervisors and the community) were non-significant as predictors of burnout. These findings suggest that the family is the most important form of social support to mitigate the effects of poor health. This is not surprising as health issues are normally treated as a personal issue, and persons tend to turn to personal settings such as the family for support with health-related issues.

The results seem to indicate that the police organization may not be able to mitigate the effects of poor health on burnout, even if organizational support is provided. At the same time, police organizations should recognize the important role which mental and physical health can play in

job burnout and can put measures in place to improve the health of officers. Psychological support, or the provision of opportunities for physical exercise are examples of things which can be provided by police organizations. Where officers are experiencing health issues, measures should be taken to reduce the levels of job stress which they experience. Officers should also be made aware of the important role which familial support plays in mitigating the effects of poor health.

Ways of coping was found to moderate the relationship between job stress and burnout. More specifically, the findings show that officers who experience job stress, but who use effective coping strategies are less likely to experience emotional exhaustion and more likely to feel a sense of personal accomplishment. This suggests that officers who are stressed, but who utilize effective coping strategies, are less likely to experience job burnout. There is an abundance of literature that points to an association between coping strategies, stress and burnout (Montero-Marin et al., 2014). Research suggests that coping strategies are seen as a psychological intervention in the stress-strain relationship (Lowe & Bennett, 2003; Tidd & Friedman, 2002). Stresses on the job can come from many sources and occur over time. Where officers are able to utilize effective coping strategies, they are able to more effectively deal with the stresses which they encounter, and mitigate their effects. This reduces the likelihood that stress could accumulate and build up to the point where they become unmanageable, reducing the likelihood of burnout and other negative consequences of job stress. These findings suggest that police organizations can provide training to increase the usage of effective coping strategies by officers.

The Trinidad and Tobago Police Service has a Support Unit which may be able to assist in the provision of social support and which can foster the development of more effective coping strategies. The Support Unit is staffed with social workers and psychologists who provide counseling and other services to officers who experience traumatic events in the course of duty. The Support Unit can also refer officers to private consultants in instances where the Unit does not have the capacity to carry out counseling or interventions which are needed. The costs of support services, whether provided internally or by external consultants, is borne by the Police Service. This Unit can also engage in training which, among other things, can be used to improve coping effectiveness and to build a more supportive environment within the TTPS. Unfortunately, many officers within the TTPS are reluctant to utilize the services of the Support Unit. This is consistent with research in other countries which show that police officers are unwilling to seek psychological help (Blum, 2000; Cooper et al., 2003; Toch, 2002; Violanti, 1995). This suggests that measures must be put in place to encourage officers to utilize support services when they are needed. The results of this study suggest that the Support Unit can be used to reduce the incidence of burnout among officers and that in order to do so, the Unit can focus on reducing job stress, improving social support and developing effective coping strategies among officers.

Limitations and Suggestions for Future Research

There are several limitations to this study. The correlational nature of this study does not allow for an assessment of causal relationships. In addition, the study was cross-sectional in nature. Longitudinal designs where predictors occur prior to outcomes would be useful in this area of research and would help to establish causality. There was also a reliance on self-report data obtained through the use of various standardized measures. Self-report data are subject to bias and responding in a socially desirable way. The common method bias may also have occurred since all measures were assessed at the same time using the same method. Future research could utilize different approaches to collecting data (such as a combination of official records, behavioural outcomes and survey data) to minimize this effect.

It is also not possible to determine the extent of generalizability of the findings. While police stations were randomly selected within each of the eight police divisions in Trinidad, the study relied on voluntary participation within each police station. It is also not possible to compare the demographic characteristics of the sample to that of the Police Service as a whole, as the Service was unwilling to release personnel data.

It may be important for future studies to focus on different types of stresses to determine which ones are more important as determinants of job burnout. In addition, future studies could examine the relative importance of different coping strategies to determine which types are more important for mitigating the effects of job stress.

Conclusion

This study found that officers who are stressed, or who have poor health or receive low levels of social support are more likely to experience job burnout. Contrary to expectations, officers who utilized effective coping strategies were also more likely to be burnt out. Ways of coping was found to be a significant moderator in the relationship between job stress and job burnout, while social support was found to be a significant moderator between general health and job burnout. These findings underscore the need for law enforcement to educate and sensitize their officers via a range of strategies. These can include organizing stress management workshops and lectures, emphasizing the importance of officer health to their job performance, providing the necessary support to mitigate stress levels, and exposing officers to a variety of positive coping strategies, bearing in mind that no one strategy could adequately eliminate all the stress being experienced. A combination of such measures is likely to diminish the occurrence of job burnout among police officers.

References

Abarghouei, M., Sorbi, M. H., Abarghouei, M., Bidaki, R., & Yazdanpoor, S. (2016). A study of job stress and burnout and related factors in the hospital personnel of Iran. *Electronic Physician*, *8*(7), 2625-2632. doi: 10.19082/2625.

Abkhou, Tahere & Jenaabadi, Hossein. (2015). Comparative analysis of the relationship between job burnout and general health of male and female high school teachers in Zabol. *Natural Science*, *7*, 391-399. doi:10.4236/ns.2015.78042.

Abu al rub, R. F., Omari, F. H., & Abu Al Rub, F. A. (2009). The moderating effect of social support on the stress–satisfaction relationship among Jordanian hospital nurses. *Journal of Nursing Management*, *17*(7), 870-878.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

Alsoofi, M. A., Al-Heeti, K. N., & Alwashii, A. (2000, July 21). Burnout and its relationship with job stress and coping with stress for Yemeni teachers [Conference paper]. 28th International Congress of Psychology, Stockholm, Sweden.

Anderson, M. B., & Iwanicki, E. F. (1984). Teacher motivation and its relationship to burnout. *Educational Administration Quarterly*, *20*(2), 109-132.

Awa, W. L., Plaumann, M. & Walter, U. (2010). Burnout prevention: A review of intervention programs. *Patient education and counseling*, *78*(2), 184-190.

Aydin, R., & Tekiner, M. A. (2016). Analysis of burnout level of police officers: Evidence from Malatya, Turkey. *Epiphany*, *9*(1), 99-113.

Bawa, N. (2012). A study of job burnout relative to occupational stress, self-efficacy, hardiness and coping strategies among police officers. Guru Nanak Dev University. http://hdl.handle.net/10603\29743

Betoret, F. D. (2006). Stressors, self- efficacy, coping resources, and burnout among secondary school teachers in Spain. *Educational psychology*, *26*(4), 519-539.

Birch, N. (1986). Perceived role conflict, role ambiguity, and reference librarian burnout in public libraries. *Library and Information Science Research*, *8*(1), 53-65.

Blum, L. N. (2000). *Force under pressure: How cops live and why they die*. Lantern Books.

Burke, R. J. (1993). Work- family stress, conflict, coping, and burnout in police officers. *Stress Medicine, 9*(3), 171-180.

Castellano, T. C., & Soderstrom, I. R. (1997). Self-esteem, depression, and anxiety evidenced by a prison inmate sample: Interrelationships and consequences for prison programming. *The Prison Journal*, *77*(3), 259-280.

Cohen, S. (2004). Social relationships and health. *The American Psychologist*, *59*, 676-684. doi:10.1037/0003-066X.59.8.676.

Cooper, A. E., Corrigan, P.W. & Watson, A. C. (2003). Mental illness stigma and care seeking. *The Journal of Nervous and Mental Disease,191*(5), 339-341.

Cullen, F. T., Lemming, T., Link, B. G., & Wozniak, J. F. (1985). The impact of social supports on police stress. *Criminology*, *23*(3), 503-522.

Dammeyer, M., & Nunez,N. (1999). Anxiety and depression among law students: current knowledge and future directions. *Law and Human Behavior*, *23*(1), 55-73.

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied psychology*, *86*(3), 499-512.

Fischer, E. H., & Farina, A. (1995). Attitudes toward seeking professional psychological help: A shortened form and considerations for research. *Journal of College Student Development*, *36*, 368-373.

Folkman, S., & Lazarus, R. S. (1988). Ways of coping questionnaire (Research edition). Consulting Psychologists Press.

Glass, D.C. & Mc Knight, J.D. (1996). Perceived control, depressive symptomatology and professional job burnout: A review of the evidence. *Psychology & Health*, *11*(1), 23-48.

Glisson, C., Schoenwald, S. K., Kelleher, K., Landsverk, J., Hoagwood, K. E., Mayberg, S., & Green, P. (2008). Therapist turnover and new program sustainability in mental health clinics as a function of organizational culture, climate, and service structure. *Administration and Policy in Mental Health and Mental Health Services Research*, *35*(1), 124-133.

Goldberg, D. P. (1978). *Manual of the general health questionnaire*. Nfer-Nelson Publishers.

Golembiewski, R.T., & Munzenrider, R. F. (1988). *Phases of burnout: Development concepts and applications*. Praeger.

Golembiewski, R. T., Lloyd, M., Scherb, K., & Munzenrider, R. F. (1992). Burnout and mental health among police officers. *Journal of Public Administration Research and Theory*, *2*(4), 424-439.

Günüşen, N. P., Üstün, B., & Erdem, S. (2014). Work stress and emotional exhaustion in nurses: the mediating role of internal locus of control. *Research and Theory for Nursing Practice*, *28*(3), 260-268.

Heffer, T., & Willoughby, T. (2017). A count of coping strategies: A longitudinal study investigating an alternative method to understanding coping and adjustment. *PloS One*, 12(*10*): e0186057. doi: 10.1371/journal.pone.0186057.

Heinemann, L. V., & Heinemann, T. (2017). Burnout research: Emergence and scientific investigation of a contested diagnosis. *Sage Open*, *7*(1), https://doi.org/10.1177/2158244017697154

Houdmont, J. (2013). UK police custody officers' psychosocial hazard exposures and burnout. *Policing: An International Journal of Police Strategies & Management*, *36* (3), 620-655.

Jamal, M., & Baba, V. V. (2000). Job stress and burnout among Canadian managers and nurses: An empirical examination. *Canadian Journal of Public Health*, *91*(6), 454-458.

Karasek, R. & Theorell, T. (1990). *Healthy work: Productivity and the reconstruction of working life*. Basic Books.

Kelley, T.M. (2005). Mental health and prospective police professionals. *Policing: An International Journal*, *28*(1), 6-29.

Khamisa, N., Oldenburg, B., Peltzer, K., & Ilic, D. (2015). Work related stress, burnout, job satisfaction and general health of nurses. *International Journal of Environmental Research and Public Health*, *12*(1), 652–666.

Kop, N., Euwema, M., & Schaufeli, W. (1999). Burnout, job stress and violent behaviour among Dutch police officers. *Work & Stress*, *13*(4), 326-340.

Leiter, M. P., & Christina Maslach. (2005). A mediation model of job burnout. In *Research companion to organizational health psychology*, Alexander-Stamatios G. Antoniou and Cary L. Cooper (Eds.), pp. 544-564. Edward Elgar Publishing. https://doi.org/10.4337/9781845423308.00046

Leiter, M. P., Hakanen, J. J., Ahola, K., Toppinen- Tanner, S., Koskinen, A., & Väänänen, A. (2013). Organizational predictors and health consequences of changes in burnout: A 12-year cohort study. *Journal of Organizational Behavior*, *34*(7), 959-973.

Lowe, R., & Bennett, P. (2003). Exploring coping reactions to work-stress: Application of an appraisal theory. *Journal of Occupational & Organizational Psychology*, *76*(3), 393–400.

Maslach, Christina, & Susan E. Jackson. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, *2*(2), 99-113.

Maslach, C., & Jackson, S. (1986). *Maslach burnout inventory manual* (2nd ed.). Consulting Psychologists Press.

Maslach, Christina, Schaufeli, W. B., & Leiter. M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*(1), 397-422.

Masouleh, F.A., Hossein, K., Khaghanizadeh, M., & Momeni Araghi, A.A.F. (2007). The relationship between burnout and mental health among nurses. *Tehran University Medical Journal*, *65*(6), 65-75.

McCarty, W.P., Zhao, J., & Garland, B.E. (2007). Occupational stress and burnout between male and female police officers: Are there any gender differences? *Policing-an International Journal of Police Strategies & Management*, *30*(4), 672-691.

McCreary, D. R., & Thompson, M. M. (2006). Development of two reliable and valid measures of stressors in policing: The operational and organizational police stress questionnaires. *International Journal of Stress Management*, *13*(4), 494–518.

McDonald, J. (2012). Correlates of police and correctional officer job burnout: An exploratory study [Doctoral dissertation, University of Central Florida]. Electronic Theses and Dissertations. https://stars.library.ucf.edu/etd/4480

Mehta, D. (2010). *An examination of job stress and its effects on burnout, job satisfaction and job turnover intentions among regulatory affairs professionals in New Jersey*. Long Island University.

Montero-Marin, J., Prado-Abril, J., Demarzo, M. M. P., Gascon, S., & Javier García-Campayo, S. (2014). Coping with stress and types of burnout: Explanatory power of different coping strategies. *PloS One*, *9*(2) e89090. doi: 10.1371/journal/pone.0089090.

Morse, G., Salyers, M. P., Rollins, A. L., Monroe-DeVita, M., & Pfahler, C. (2012). Burnout in mental health services: A review of the problem and its remediation. *Administration and Policy in Mental Health and Mental Health Services, 39*(5), 341-352.

Mostert, K. & Joubert, A.F. (2005). Job stress, job burnout and coping strategies in the South African police service. *South African Journal of Economic and Management Sciences,* 8*(*1). *DOI: https://doi.org/10.4102/sajems.v8i1.1282*

Peterson, U., Demerouti, E., Bergström, G., Samuelsson, M., Åsberg, M., & Nygren, Å. (2008). Burnout and physical and mental health among Swedish healthcare workers. *Journal of Advanced Nursing*, *62*(1), 84-95.

Rothmann, S., & Van Rensburg. P. (2002). Psychological strengths, coping and suicide ideation in the South African Police Services in the North West Province. *South African Journal of Industrial Psychology*, *28* (3), 39-49.

Russell, D.W., Altmaier, E., & Van Velzen, D. (1987). Job-related stress, social support, and burnout among classroom teachers. *Journal of Applied Psychology*, *72*(2), 269-274.

Russell, L. M. (2014). An empirical investigation of high-risk occupations: Leader influence on stress and burnout among police. *Management Research Review*, *37* (4), 367-384.

Schaufeli, W. B. & Enzmann, D. (1998). *The job burnout companion to study and practice: A critical analysis*. Taylor & Francis Ltd.

Tabachnick, B. & L. Fidell. 2014. *Using multivariate statistics*. Pearson.

Tang, C. S., Au. W, Schwarzer, R. & Schmitz, G. (2001). Mental health outcomes of job stress among Chinese teachers: Role of stress resource factors and burnout. *Journal of Organizational Behavior, 22*(8), 887–901. https://doi.org/10.1002/job.120

Tidd, S. T., &. Friedman, R. A. (2002). Conflict style and coping with role conflict: An extension of the uncertainty model of work stress. *International Journal of Conflict Management*, *13*(3), 236-257.

Toch, H. (2002). *Stress in policing*. American Psychological Association.

Useche, S. A., Montoro, L. V., Ruiz, J. I., Vanegas, C., Sanmartin, J., & Alfaro, E. (2019). Workplace burnout and health issues among Colombian correctional officers. *PLoS One*, *14*(2), e0211447. doi: 10.1371/journal.pone.0211447.

Vigfúsdóttir, Röskva. (2017). Social support, stress, and burnout among Icelandic police officers [Doctoral Dissertation]. Reykjavik University.

Violanti, J. M. (1992). Coping strategies among police recruits in a high-stress training environment. *The Journal of Social Psychology, 136*(2), 717-727.

Violanti, J.M. (1995). Trends in police suicide. *Psychological Reports*, *75*, 824-826.

von Känel, R., Princip, M., Holzgang, S. A., Fuchs, W. J., van Nuffel, M., Pazhenkottil, A. P. Spiller, T. R. (2020). Relationship between job burnout and somatic diseases: A network analysis. *Scientific Reports, 10*. https://doi.org/10.5167/uzh-196108

Wallace, S. L, Lee, J., & Lee, S. M. (2000). Job stress, coping strategies, and burnout among abuse- specific counselors." *Journal of Employment Counseling*, *47*(3), 111-122.

Wang, Y., & Zheng, L., Hu, T., & Zheng, Q. (2014). Stress, burnout, and job satisfaction: Case of police force in China. *Public Personnel Management, 43*, 325-339.

Wisniewski, L., & Gargiulo, R. M. (1997). Occupational stress and burnout among special educators: A review of the literature. *The Journal of Special Education, 31* (3), 325-346.

Wu, F., Ren, Z., Wang, Q., He, M., Xiong, W., Ma, G., Fan, F., Guo, X., Liu, H., & Zhang, X. (2021). The relationship between job stress and job burnout: The mediating effects of perceived social support and job satisfaction. *Psychology, Health & Medicine*, *26*(2), 204-211. doi: 10.1080/13548506.2020.1778750

Zellars, K. L., & Perrewé, P. L. (2001). Affective personality and the content of emotional social support: Coping in organizations. Journal of Applied Psychology, 86(3), 459-67. doi: 10.1037/0021-9010.86.3.459.

Use and Attitudes towards Mobile Technology for Learning during COVID-19 Pandemic

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Abstract

This study examined students' use and attitudes towards mobile technology for learning during the COVID-19 pandemic. The study also sought to determine whether there was a relationship between students' attitudes towards mobile technology and sex, age and year group. Participants were also asked to identify the types of assistance they needed to support their academic activities, and suggest measures to enhance their use of mobile technology for learning. The study employed a survey research methodology to examine use and attitudes towards mobile technology. Participants consisted of 364 students from one university in Trinidad and Tobago. Questionnaire responses were analyzed quantitatively through the use of means, standard deviation, t-tests, and Analysis of Variance (ANOVA) using the Statistical Package for Social Scientists (SPSS) software. Results revealed that students used their mobile devices for various academic activities such as accessing course materials, finding and sharing resources, and communicating with peers. Overall, students had positive attitudes towards the use of mobile technology for learning. Female students had more positive attitudes than males. The types of assistance students identified included training in the use of mobile devices for educational purposes, improved access to the internet and access to software. Implications and recommendations are suggested to support students' use of mobile technology in an online environment.

Keywords: mobile learning, teacher training, smart phones, mobile technology, online learning

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Introduction

The Corona Virus (COVID-19) pandemic interrupted education systems globally, requiring schools and universities to physically close. Institutions invariably adopted immediate, diverse measures to address the crisis, and like many countries across the world, Trinidad and Tobago embraced remote learning as an emergency response. During this transition, mobile technology emerged as a crucial tool for students and educators to facilitate learning continuity in Higher Education Institutions (HEIs) (Marinoni & van't Land, 2020). Instructors were forced to use several technologies to facilitate teaching and learning. Lectures and assessments were delivered using learning management systems (e.g., Moodle, CANVAS), virtual meeting platforms (e.g., Zoom, Microsoft teams, Google Meet), and other educational portals. While students have different options to access learning materials, such as desktop computers and laptops, research suggests that most students prefer to use mobile devices (Al-Emran & Salloum, 2017; Almaiah & Alyoussef, 2019). However, further exploration is needed to delve into the essential aspects of challenges that undergraduate students encounter while utilizing mobile technologies.

Research Problem and Purpose

The COVID-19 pandemic necessitated a shift to remote learning, with mobile technology playing a significant role in facilitating educational continuity. Despite the high adoption rate of technology in many countries, there are many students who do not have access to a functional mobile device. Furthermore, several researchers (Blackman, 2022; Figaro-Henry & James, 2015; Oguntuase & Bakare, 2022) found that there is poor readiness on the part of universities to fully adopt mobile learning to bridge the wide gap created by COVID-19. Therefore, there is a need to explore the specific challenges, benefits, and perceptions associated with mobile technology use in this context.

Recent studies of mobile learning in the Caribbean have highlighted both opportunities and challenges. A study by Kalloo et al. (2020) found that while adding online learning components can enrich students' learning experiences beyond the walls of the classroom, there was the likelihood that the most vulnerable groups in society could be marginalized and alienated if steps were not taken to provide needed technology resources. Concerns about the impact on disadvantaged groups, and learning loss generally, are not misplaced because of the potential to affect human development and economic growth in small and large societies alike as the world emerges from the pandemic. Parsanlal (2020), for example, found that disparities in household income and resources led to an estimated sixty thousand students not having the necessary hardware or social support to access online education. The urgency to find ways to address and in future to avoid increasing disparities in education outcomes is apparent.

A study conducted in an Australian university found that students were not sure about the benefits that mobile learning brought to them (Kinash et al., 2012). Additionally, a study by Botros (2020) reported that students used their electronic devices in both online and face-to-face classes for purposes other than classroom activities and were easily distracted by these devices. As such, there is a need to investigate whether students hold positive attitudes towards mobile learning. The problem is further complicated by the fact that technological and internet access in many areas may not be good enough to support students' learning.

The majority of studies about educational technologies using behavioural intentions took place in formal school settings and very few are conducted in informal settings (Crompton et al., 2017). The COVID-19 epidemic made online learning a necessary and vital learning approach for students. As such, students' perception of mobile learning may be different, because mobile devices are applied as formal learning tools on a large scale in an informal context such as the home. The purpose of this research was therefore to investigate students' use and attitudes towards mobile technology for learning during the COVID-19 pandemic and post-pandemic. The study aimed to:

1. Examine the extent to which students utilized mobile technology for learning during the pandemic.
2. Explore the attitudes and perceptions of students towards the use of mobile technology for learning.
3. Investigate any differences in mobile technology use and attitudes based on demographic factors such as age, gender, and year group.
4. Identify how mobile technology was used by students during remote learning.
5. Identify what kinds of assistance students would like to support their academic learning using mobile technologies.
6. Provide recommendations and insights for educational policymakers, institutions, and educators to enhance the effective use of mobile technology for learning in emergency and post-pandemic contexts.

Background

Trinidad and Tobago is a post-colonial society that gained independence from Britain in 1962. The educational system in the country follows the model of the British education system and is overseen by the Ministry of Education. Students can access free education from kindergarten up to secondary school. Internet access is widely available through several companies on the island. According to Hunte (2021), only a small percentage of homes in Trinidad and Tobago are without internet access or mobile coverage. Those who do not have connectivity either cannot afford the service, or live in rural areas where service may not be available. The former Chief Executive Officer (CEO) of the Telecommunication Services of Trinidad and Tobago (TSTT), Lisa Agard, stated that a study showed that 84 percent of households are connected with high-speed broadband while 55 percent utilise mobile internet (Hunte, 2021). The current study was conducted at the education faculty of a university in Trinidad and Tobago. At this university, prospective teachers are exposed to a four-year Bachelor of Education Degree Programme consisting of a wide range of content, professional and pedagogical courses and the practicum.

Definition of mobile learning

Mobile learning has been defined and conceptualised in diverse ways since the idea was introduced. Talan (2020) defined mobile learning as the ability of learners to access information independently of time and space through mobile devices and to manage their own learning processes based on their individual differences and needs. In the broader sense, mobile learning extends from the use of mobile computing devices in a formal, physical location (such as a physical classroom or laboratory); to the use of personal mobile technologies to support informal, contextualised learning anywhere, anytime, and on the move; to an even wider conceptualisation of learning in a mobile society characterised by the mobility of people and knowledge alike (Sung et al., 2016).

Crompton (2017) defined mobile learning as "learning across multiple contexts, through social and content interactions, using personal electronic devices" (p. 4). This definition, which we utilized in this article, incorporates more than technical attributes, and combines the five central constructs to mobile learning: pedagogy, mobility, technological devices, context, and social interactions.

Mobile learning is a multifaceted educational approach encompassing five key constructs that collectively contribute to its holistic understanding. First, pedagogy emphasizes the instructional methods employed, acknowledging that mobile learning extends beyond devices to encompass how learning is facilitated and structured (Talan, 2020). Second, mobility distinguishes mobile learning by freeing it from physical constraints, allowing learners to engage with educational content on-the-go, promoting flexibility in schedules and locations. The concept of mobility aligns with the idea that learning is not confined to a specific place or time, enabling learners to access information independently (Sung et al., 2016). Third, technological devices, such as smartphones and tablets, play a central role and impact the learning experience significantly (Crompton, 2017). The fourth construct, context, recognizes the diverse settings and situations in which mobile learning occurs, highlighting the adaptability of learning experiences (Talan, 2020). Lastly, social interactions emphasize that learning is not solitary; mobile devices facilitate collaborative and social learning experiences, fostering connections and shared knowledge among learners (Crompton, 2017). The selection of these constructs is justified by their collective ability to provide a comprehensive understanding of mobile learning, incorporating technological, pedagogical, social, and environmental dimensions (Talan, 2020; Crompton, 2017; Sung et al., 2016). Therefore, the five constructs capture the versatile nature of learning through mobile devices in various contexts.

Research Questions

1. How did students use mobile technology for learning during COVID-19 pandemic?
2. What are students' attitudes towards the use of mobile technology for learning?
3. Are there differences in students' attitudes towards the use of mobile technology based on sex, age and year groups?
4. How did mobile devices assist students in the Bachelor of Education programme during the COVID-19 pandemic?
5. What kinds of assistance did students require with the use of mobile technology during the COVID-19 pandemic?

Theoretical Framework

The Technology Acceptance Model (TAM) proposed by Davis (1989) provides a theoretical framework to understand users' acceptance and attitudes towards technology. In the context of the use and attitudes towards mobile technology for learning during the COVID-19 pandemic, TAM can help analyze the factors influencing students' acceptance and usage of mobile technology for educational purposes.

The TAM consists of two key constructs: perceived usefulness and perceived ease of use, which directly influence users' attitudes and behavioural intentions towards using technology. The model suggests that these constructs mediate the impact of external variables, such as personal and contextual factors, on users' acceptance and usage behaviour.
Davis (1989) defines perceived usefulness as the prospective user's belief that using a specific technological innovation will enhance his or her job or life performance. Perceived usefulness refers to the extent to which individuals believe that using mobile technology for learning during the COVID-19 pandemic will enhance their learning experience and academic outcomes. Several factors may influence students' perception of usefulness, including: Accessibility, Flexibility and Communication and Collaboration.

Perceived ease of use can be defined as the degree to which the prospective user expects the technological innovation to be free of effort. In this instance, the term is used to refer to the extent to which individuals perceive mobile technology as easy to use for learning purposes during the COVID-19 pandemic. Factors influencing perceived ease of use may include: technical proficiency, user-friendliness and technical support. Examining these factors could provide empirical evidence to facilitate effective use of mobile devices in online classrooms as well as enhance learners' experiences.

Seliaman and Turki (2012) conducted a study of students' use of mobile devices and smart phones using the TAM model. The findings suggested that students' perceived usefulness of mobile learning was closely related to the ease of accessing course materials, searching for information related to their disciplines, sharing knowledge, and finishing their assignments.

The applicability of the TAM has been well supported by a considerable body of previous research across a wide range of educational settings (Pituch & Lee, 2006). By applying the TAM framework, researchers can explore the relationships among perceived usefulness, perceived ease of use, attitudes, and behavioural intentions to gain a comprehensive understanding of students' acceptance and usage behaviour of mobile technology in education during challenging times.

Literature Review

The consequences of the rapid shift towards remote and online learning necessitated by the COVID-19 pandemic have been extensively explored in research literature. During that time, mobile technology emerged as a crucial tool for facilitating educational continuity. Mobile devices include numerous electronic products, such as laptops, the new iPads, iPhones, iPods, Android phones and Android tablets. The new generation of portable devices, namely smartphones and tablets, has become popular, because they are easy to carry, help people to stay connected to the Internet almost continuously, allowing them to communicate, entertain themselves, and be informed (Alepis & Troussas, 2017). Mobile technology played a crucial role during the pandemic, because it helped students raise their technological awareness, engage in conversations with peers, join social media, and find answers to their questions. The technology also facilitated team collaboration, allowed knowledge sharing, and hence leveraged students' learning outcomes (Al-Emran et al., 2016).

There are numerous ways that mobile technology can be used by students for educational purposes. Rossing et al. (2012) found that the mobility of mobile devices has reduced the limitations of time and location associated with traditional learning methods. This advancement allows users to conveniently access educational content. Matzavela and Alepis (2021) state that students acquire knowledge through the use of dedicated online applications designed for academic purposes. For instance, social networking platforms such as Twitter and game-based learning platforms are used. Additionally, students benefit from frequent communication with both peers and teachers, interactive sessions that foster collaboration and effective learning, as well as mobile assessments (Matzavela & Alepis, 2021).

Furthermore, studies have shown that mobile technology facilitates the maintenance of students' engagement outside the classroom (Garrett & Jackson, 2006). In a study conducted by Bere and Rambe (2016) that explored mobile learning in higher education within a developing nation, it was revealed that mobile learning facilitated collaborative learning by encouraging knowledge sharing, fostering academic communities, and enabling instant communication. This approach to education transcends physical boundaries, allowing teaching and learning to take place at any location and at any time (Corbeil & Valdes-Corbeil, 2007). Moreover, it was observed that mobile learning contributed to the enhancement of students' technological skills, promoted knowledge sharing, and fostered the development of their learning abilities (Al Emran et al., 2016).

In research conducted by Dashti and Aldashti (2015) at the College of Basic Education in Kuwait, students' attitudes towards the utilization of mobile learning were investigated. The study involved 300 female students, and the findings revealed that 80.3% of them expressed satisfaction with the use of mobile devices as a learning tool. Furthermore, they reported that mobile learning had a positive impact on their English language proficiency, contributing to the enhancement of their knowledge in this area (Dashti & Aldashti, 2015).

According to a survey conducted by the Educause Center for Applied Research [ECAR] (2012) regarding the utilization of mobile technology in higher education, students are at the forefront of integrating mobile devices into their learning environments. Additionally, 67% of the surveyed students emphasized the significant role of mobile technology in their academic accomplishments and activities. According to Gikas and Grant (2013), mobile technology has become an essential component of the educational process in higher education institutions. Its integration presents numerous opportunities and challenges for both students and educators. Additionally, smartphones have been recognized as a motivating factor and a tool that aids in learning and the development of individual capabilities (Campbell, 2007).

Positive sentiments among students reveal a high level of acceptance toward mobile learning, with more than 80% expressing agreement or strong agreement regarding the use of mobile devices in the classroom (Nikolopoulou, 2018). Hong et al. (2012) argued that mobile phones are popular among students, because they increase their social communication and expand their opportunities for establishing social relationships. Similarly, Oguntuase and Bakare (2022) revealed that undergraduate students in Nigerian Universities make use of their mobile phones to access applications such as Facebook messenger, WhatsApp, Google Talk, MSN, WordPress, Blogger, and also to access Library resources.

Many studies have found that there are no significant differences between male and female students with respect to their attitudes towards mobile technology. For example, Pruet et al. (2016) observed comparable positive attitudes among both male and female learners concerning the utilization of tablet computers. According to research conducted by Diemer et al. (2013), gender did not play a significant role in classroom activities involving iPads. Likewise, Al-Emran et al. (2016) found that while there were no gender differences, attitudes towards mobile technology varied significantly based on age within a university in the Arab Gulf region.

Studies (Sabah, 2016; Wang et al., 2009) have also indicated that students' attitudes towards mobile technology were not significantly influenced by their gender. However, studies by Taleb and Sohrabi (2012), and Khaddage and Knezek (2013) suggested significant gender-based differences in students' attitudes. Specifically, female students exhibited a more positive attitude towards mobile technology compared to their male counterparts. This suggests that there is no consensus in the literature on the differences between males and females in their attitudes to mobile technology.

Methodology

The study is quantitative and employed a survey research methodology. The survey collected data from a diverse sample of students to understand their experiences, perceptions, and utilization of mobile technology in the context of remote learning during the COVID-19 pandemic. Three hundred and sixty-four students participated in the study. The sample consisted of 86 (23.6%) male and 278 (76.4%) females. There were 147 (40.4%) Year 1, 125 (34.3%) Year 2, 64 (17.6%) Year 3, and 28 (7.7%) Year 4 students. The ages of students ranged from 20 years and under, 206 (56.6%), 21-25 years, 107 (29.4%) and over 25 years, 51 (14.0%).

The data collection instrument for the study was a questionnaire survey. The items for the questionnaire were derived from existing literature (Alfawareh & Jusoh, 2014; Al- Emran et al., 2016). The survey instrument consisted of 6 sections. The first section elicited demographic data (gender, age and academic year group) of the participants. The second section focused on the type of mobile technology/devices used by students and access to the internet. The third section required students to indicate the general uses of mobile technology such as for e-mails, chat with friends, and listening to music. The fourth section asked students to indicate the different ways they used mobile technology for learning during the COVID-19 pandemic such as to access course modules, read lecture notes, consult online with lecturer or classmates; and the mobile applications they found useful for learning. The fifth section consisted of 11 attitude statements that assessed students' attitudes towards mobile learning (Al-Emran et al., 2016). Students were required to indicate their level of agreement with each statement on a 5- point Likert scale ranging from Strongly Disagree to Strongly Agree with 1 being Strongly Disagree and 5 being Strongly Agree. Examples of these statements are: 'Mobile technology is a useful tool for my study' and 'Mobile technology can help me in finding resources related to my study'. The Cronbach alpha reliability coefficient of the attitude scale was 0.98, indicating the scale was highly reliable.

The sixth section consisted of two open-ended questions which asked students to state how mobile phones assisted them during the COVID-19 pandemic, and what kinds of assistance they need with regards to the use of mobile technology for learning. A pilot test of the questionnaire was conducted on a sample of 20 students to check for any ambiguity and clarity of instructions. Results revealed that questions were clearly understood by students.

Data Analysis

The questionnaire responses were analyzed quantitatively. Statistical tests such as means, percentages, t-tests and Analysis of Variance were computed using the Statistical Package for Social Scientists software (SPSS). Frequency distribution and percentages were used to analyze demographic data, general use of mobile technology and use of mobile technology for learning purposes during the COVID-19 pandemic and educational applications used by students. Means and standard deviations were used to rate students' attitudes to the use of mobile

technology. Independent sample t-tests and Analysis of Variance (ANOVA) were computed to determine differences in students' attitudes based on sex, age and year group.

Analysis of Data and Findings

Out of 364 participants, 350 (96.2%) had smart phones, 81 (22.3%) used a tablet computer, 21 (5.8%) used a smart watch, while 11 (3%) had a pocket PC, and 5 (1.4%) used a PDA (personal digital assistant).

With respect to access to WiFi Internet, the majority - 355 (97.5%) - of participants had WiFi access at home and at the University, and 186 (51.1%) stated they had access elsewhere such at the cafeteria, or at a neighbour's or relative's residence.

General uses of mobile technology

The most common uses of mobile technology were for chatting with friends 356 (97.8%), taking pictures 342 (94.0%), listening to music 341 (93.7%), uploading pictures on the Web such as Facebook 295 (81%), creating and editing texts 290 (79.7%), editing pictures 286 (78.6%), managing their schedule 281 (77.2%) and posting comments on social media 255 (70.1%). Other general uses that were cited were bank transactions/shopping 147 (40.4%), drawings 128 (35.2%), recording movies 122 (35.5%), animations 98 (26.9%), uploading movies 93 (25.5%) and editing movies 86 (23.6%) (Table 1).

Table 1
General Uses of Mobile Technology

General uses of mobile technology	Number	%
E-mail	338	92.9%
Chat with friends	356	97.8%
Take pictures	342	94.0%
Listen to music	341	93.7%
Upload pictures	295	81.0%
Create and edit texts	290	79.7%
Edit pictures	286	78.6%
Manage schedule	281	77.2%
Post comments on social media	255	70.1%
Synchronize with home computer	236	64.8%
Bank transaction/shopping	147	40.4%
Drawings	128	35.2%
Record movies	122	33.5%
Animations	98	26.9%
Upload movies	93	25.5%
Edit movies	86	23.6%
Other	211	58.0%

Research Question 1: How did students use mobile technology for learning?
This question asked students to indicate how they used mobile technology for learning in their academic programme. Over 90% stated that they used their mobile devices for checking Canvas announcements, checking time tables, sharing notes with colleagues, surfing the web for learning material, taking photos of content/work and managing group assignments (Table 2).

Other frequent uses reported by students were: communicating with colleagues (88.5% (322)) and consultations with lecturer (83.5% (304)), access to social media to share content and materials (81.0% (295)) and online discussion with regard to academic issues (86.8% (316)). These findings are supported by Hong et al. (2012) who found that students used mobile technology, because it increased their social communication and expanded their opportunities for establishing social relationships. Students also used mobile technology for the submission of assignments (73.1 % (266)), conducting literature searches (72.8% (265)) and reviewing lecture notes (66.5% (242)).

Table 2
Uses of Mobile Technology for Learning

Learning	**Number**	**%**
Canvas announcements	350	96.2%
Look up course timetable	341	93.7%
Share notes with classmates	340	93.4%
Surf web for learning material	339	93.1%
Take photos of work	339	93.1%
Manage group assignments	339	93.1%
E-mail lecturer/classmates	322	88.5%
Read lecture notes	320	87.9%
Discuss academic issues/online discussion	316	86.8%
Consult online with lecturer	304	83.5%
Access social media to help with studies	295	81.0%
Submit assignments	266	73.1%
Library/literature searches	265	72.8%
Watch lecture capture	242	66.5%
Watch academic related movies	182	50.0%
Make movies of their work	96	26.4%

Research Question 2: What are students' attitudes towards the use of mobile technology for learning?

This research question investigated students' attitudes towards the use of mobile technology for learning. Students generally had very positive views with regard to the use of mobile phones for learning. Students viewed mobile technology as most valuable for finding educational resources (M= 4.23, SD=1.29), providing opportunities for communication and team work (M= 4.23, SD=1.31) and as a useful tool for enhancing learning (M= 4.18, SD=1.32). Students also valued the flexibility of mobile technology as they can access course material anytime and anywhere (M= 4.18, SD=1.31). Other characteristics of mobile devices that students rated favorably were obtaining feedback from instructors (M = 4.13), and increased opportunities to share course material with their peers (M = 4.13). Learning tools of mobile devices also allowed students to manage their study time (M = 3.88) and to become more independent and self-regulated learners (Table 3).

Table 3
Attitudes toward Mobile Technology for Learning

Learning	Mean	Standard Deviation
Mobile technology is a useful tool for my study	4.18	1.32
Mobile technology can offer opportunities for communication and teamwork	4.23	1.31
Mobile technology can help me in finding resources related to my study	4.24	1.29
Mobile technology can bring many opportunities to the learning process	4.15	1.27
Mobile technology can help me to access the course material anytime anywhere	4.18	1.31
Mobile technology can be an easy way to get feedback and notifications from my instructors	4.13	1.30
Mobile technology can help me to exchange the course material with my friends	4.13	1.29
Mobile Apps can help me to manage my study	3.88	1.34
Mobile technology can help me do my coursework	3.91	1.35
Mobile technology can help me to develop my learning skills	3.96	1.32
Mobile technology can help me to learn more independently	3.96	1.33

Research Question 3: Are there differences in students' attitudes towards the use of mobile technology based on sex, age and year groups?

(a) **Differences based on Sex**
The results of the t-tests showed that there was a significant difference between male and female students' attitudes towards the use of mobile technology. Female students had a more

positive attitude (M=4.18) than males (M= 3.79) towards the use of mobile technology for learning
(Table 4).

Table 4
T-test Results Comparing Male and Female Students' Attitudes

Sex	N	Mean	S.D.	t	Sig
M	86	3.79	1.43	-2.31	.022*
F	278	4.18	1.12		

*p < 0.001

(b) **Differences between Age Groups**
Results of the Analysis of Variance indicated that there was no statistically significant difference in students' attitudes according to age groups (F (2, 361) = .466, p = .628) (Table 5).

Table 5
Analysis of Variance Results for Age Groups

	Sum of Squares	df	Mean Square	F	Sig
Between Groups	1.38	2	.691	. 466	.628
Within Groups	535.5	361	1.48		
Total	536.9	363			

P < 0.05

(C) **Differences between Year Group**
The Analysis of Variance showed that there was no statistically significant difference in students' attitudes towards the use of technology according to year group (F (3, 360) = .186, p = .906)
(Table 6).

Table 6
Analysis of Variance Result for Year Groups

	Sum of Squares	df	Mean Square	F	Sig
Between Groups	.831	3	.277	.186	.906
Within Groups	536.1	360	1.49		
Total	536.9	363			

P < 0.05

Research Question 4: How have mobile devices assisted students in the Bachelor of Education Programme during the COVID 19 pandemic?

Table 7
Uses of Mobile Technology During Covid-19 pandemic

Category	No. of students	Percentage of Students
Convenient Communication	310	85.2%
Creating a community to share information	221	60.7%
Flexibility in attending classes	293	80.5%
Ease of completing assignments	252	69.2%
Access to resources	301	82.7%
Create resources	107	29.4%
Digital Assistant	56	15.4%

Three hundred and sixty-four respondents were asked how mobile devices assisted them in the Bachelor of Education Programme during the COVID 19 pandemic. Twenty-six respondents (7%) did not answer the question. The remaining respondents (93%) stated many ways mobile devices assisted them during the COVID 19 pandemic. The majority of the respondents (85.2%) indicated that their mobile devices allowed for convenient communication between their colleagues and their lecturers. A large percentage (82.7%) indicated that their mobile devices allowed them to access resources necessary for completing assignments. Many respondents (80.5%) reported flexibility in attending classes, submitting assignments and collaborating with colleagues. More than two-thirds (69.2%) of participants suggested that mobile devices allowed them to complete assignments easier. Less than two-thirds (60.7%) of the respondents reported that mobile devices allowed them to create a community to share information and resources. The ability to create resources with their mobile devices was reported by less than one-third of the respondents (29.4%). It was interesting to note that about 15.4% of the respondents used their mobile devices as a digital assistant to provide due dates for assignments, meetings with colleagues and events (Table 7).

About two-thirds of the students (60.7% or 221) also indicated they used applications related to Education. Educational applications that they found most valuable to their studies were Free Dictionary, Calculator, Classcraft, Word Cloud, Microsoft Word, PowerPoint, DuoLingo, SignLang App, Canvas, PhotoMath, Pinterest, Mimix, Braille and Grammarly.

Research Question 5: What kinds of assistance do students require for the use of mobile devices for learning?

Table 8
Kinds of Assistance Students Require for the Use of Mobile Devices for Learning

Category	No. of students	Percentage of Students
Pedagogical Training		
Creation of resources, in the use of apps	282	77%
Better internet infrastructure		
Stable Internet	102	28%
Access to software		
Financial assistance to purchase software	96	26%
No assistance	28	8%

Three hundred and sixty-four respondents were asked about the kinds of assistance they require to use their mobile devices for learning. Sixty-seven respondents (18.4%) did not answer the question. The remaining respondents gave answers that were placed into four categories. The majority (77%) of the respondents indicated that they require training in the creation of resources and the use of different types of apps that they believe can assist in their learning. Less than one-third (28%) of the respondents reported that they require a stable internet connection. About one-quarter of the respondents stated that they need to acquire different types of software to assist in the creation of resources. It is important to note that a very small number (8%) of respondents wrote that they did not require any assistance with the use of their mobile devices for learning (Table 8).

Discussion

The findings showed that the majority of the participants used their mobile devices for pedagogical purposes, entertainment, and communication. When students have their own mobile devices, they are more inclined to use them for academic purposes (Al Emran et al., 2016). In this study, students were using their mobile devices in a variety of ways to support their learning such as access course material, read lecture notes at any time and place, collaborate on group assignments and online discussion. These findings are consistent with other researchers such as Matzavela and Alepis (2021), and Alfawareh and Jusoh (2014) who also found that students use mobile technology for pedagogical uses, communications between students and teachers, interactive sessions which increase collaboration and promote effective learning, and mobile assessments.

Rossing et al. (2012) found that the portability of mobile devices has diminished the time and place restrictions of learning with traditional practices and provides the opportunity to the users to access educational content as it is convenient to them. According to Matzavela and Alepis (2021), students learn by using specific online applications for academic purposes like social

networking sites, for example Twitter and game-based learning. A study by Bere and Rambe (2016) also found that mobile technology created opportunities for collaborative learning through knowledge sharing, developing academic communities, and immediate communication.

Students generally had very positive views about the use of mobile technology for learning. They viewed mobile technology as most valuable for finding educational resources**,** providing opportunities for communication and teamwork, and as a useful tool for enhancing learning. Students also valued the flexibility of mobile technology as they can access course material anytime anywhere. Other characteristics of mobile devices that students rated favorably were obtaining feedback from instructors and increased opportunities to share course material with their peers. These findings support those of Seliaman and Turki (2012) whose study also found that students' use of mobile devices and smart phones was linked to the perceived usefulness and ease of use in accessing course materials, searching for information related to their disciplines, sharing knowledge and finishing their assignments. In the Trinidad context, Ahmad (2020) found that students valued mobile phone use for collaboration (84%), communication (75%) and seeking teacher assistance (79%).

Indeed, from observation of students in class (prior to COVID-19), it appears that smart phones or IPads were becoming an integral part of their lives as many students had replaced their personal computer with mobile technologies and seemed comfortable using these technologies in a variety of ways to support their learning.

The results of the t-tests showed that there was a significant difference in male and female students' attitudes towards mobile technology. Female students had a more positive attitude than males towards the use of mobile technology for learning. These findings differ from many researchers (Diemer et al. 2013; Al-Emran et al. 2016) who found that there were no significant differences due to gender. However, the findings from studies by Taleb and Sohrabi (2012) and Khaddage and Knezek (2013) have indicated that there are significant differences among the students' attitudes in terms of their gender where female students held more positive attitudes towards the use of mobile technology when compared to male students. In the South African context, North et al. (2014) reported gender differences, with female students showing increased mobile phone use for the purposes of safety and socializing. This suggests that there is no consensus on the differences between males and females in their attitudes to mobile technology, and this area requires further investigation.

The findings also revealed that there were no significant differences in students' attitudes according to age and year groups. For example, a study by Nikolopoulou et al. (2020) also found no age difference when they evaluated students' intention to use or accept mobile phone devices for their studies, although the study reported gender differences.

Indeed, the majority of students had a smart phone and were very familiar with mobile technologies and were already using mobile phones for socializing, taking pictures, chatting

with friends, listening to music and posting comments on social media (Table 1). Prensky (2005) and Haverila (2013) described university students today as digital natives who have grown up in the age of smartphones and are likely to be more accepting of using mobile technologies for academic purposes**.**

Students valued features of mobile phones that allowed them to learn independently and also work collaboratively in groups. During the COVID-19 Pandemic, students liked the easy and convenient communication and rapid access to course content and resource materials for their programme. In the absence of face-to-face classes, mobile devices provided opportunities for students to communicate directly with lecturers and receive quick feedback on assignments. Students were also able to keep track of their group assignments on WhatsApp group chat and collaborate with their peers on group projects. Some studies (Alturki & Aldraiweesh, 2022; Masadeh, 2021) have reported on how mobile phone applications supported learning and communication during the COVID-19 pandemic. In their study of students' perceptions of the use of social networking sites for educational purposes, Hamid et al. (2015) found that students felt that social networking could enhance their interactions with each other, with their instructors and with the educational content. Bere and Rambe (2016) also reported that mobile technology created opportunities for collaborative learning through knowledge sharing, developing academic communities and immediate communication.

Students gave several suggestions that can be adopted to assist the use of mobile devices for learning. For example, the data showed that the majority of students (77%) would benefit from training in the use of mobile devices for educational purposes, such as the creation of resources and the use of apps. This is likely because many students are not familiar with the latest educational technologies and how to use them effectively. As a result, they require training on how to use mobile devices for learning, such as how to access and use educational apps, how to create and share content, and how to collaborate with others online.

Additionally, less than one third (28%) of the students indicated that they require a more reliable internet service. This is necessary, because mobile devices cannot access online resources with an unreliable or unstable internet service. According to Hunte (2021), many students who do not have internet connectivity either cannot afford the service, or live in rural areas where service may not be available. There is therefore an urgent need to expand the internet service network to include students who live in rural areas.

Some students (26%) would benefit from financial assistance to purchase software. This is important, because many students cannot afford to purchase the software they need for their studies. In addition, some students were unable to afford the cost of mobile devices or mobile data plans. As a result, they require financial assistance to purchase or upgrade their devices and to pay for mobile data plans.

By providing the necessary assistance, higher education institutions can help students to succeed in their studies even when they are learning remotely. It is important to note that the

data does not specify the needs of each student. For example, some students may need training on how to use specific apps, while others may need help with their internet connection. Additionally, some students may need financial assistance to purchase specific software. As a result, it is important to conduct a needs assessment in order to determine the specific needs of each student.

Conclusion

The results of this study contributed to the existing literature on mobile-learning by unpacking undergraduate university students' attitudes towards the use of mobile technologies during the COVID-19 isolating period. It is also relevant in situations where blended or fully online modes of delivery continue to be used. This study found that university students held positive attitudes towards the use of mobile learning, and they mostly tended to use smartphones, followed by tablets and laptops. Students valued the portability and flexibility of mobile devices which provided access to resources and course material anytime and anyplace, especially during the COVID-19 pandemic when the library services shifted from the physical to an online environment. The use of educational applications such as WhatsApp fostered interactions with peers and allowed for direct communication with instructors. The findings also support Davis' (1989) TAM framework which posits that students' positive attitudes towards mobile technology can positively influence students' use of smartphones for their academic activities.

The results have important implications for teaching and learning, as well as for instructors, educational administrators and policy makers. Instructors can provide more opportunities for students to experience the usefulness of mobile technologies and educational applications in the delivery of courses at the university. Educational administrators can design training course for both teachers and students to improve technology skills to ensure technology integration in teaching and learning.

Recommendations

The following recommendations are made based on the findings of the study. The University should address:

1. Support and Resources: a. Provide adequate technical support and resources to ensure seamless access to mobile technology and online learning platforms for all students. b. Develop comprehensive guidelines and tutorials to help students navigate and utilize mobile technology effectively for learning purposes. c. Establish a dedicated support system, such as a helpline or online chat service, to address technical issues and provide timely assistance to students.
2. Digital Skills and Literacy: a. Incorporate digital skills training into university curricula to equip students with the necessary competencies to use mobile technology effectively for learning. b. Offer workshops or online courses to instructors and students to enhance

their digital literacy, information literacy, and critical thinking skills related to mobile technology usage.

3. Engagement and Interaction: a. Encourage active student engagement through interactive mobile learning applications, virtual discussion boards, and collaborative online platforms.
4. Flexibility and Personalization: a. Design mobile learning experiences that offer flexibility in terms of time, location, and pace, allowing students to learn at their own convenience and adapt to their individual learning preferences.

By implementing these strategies, universities can support students' academic success, engagement, and well-being in the digital learning environment.

References

Ahmad, T. (2020) Student perceptions on using cell phones as learning tools. *PSU Research Review: An International Journal, 4*(1), 25-43. https://doi.org/10.1108/PRR-03-2018-0007

Al-Emran, M., El Sherif, H. M., & Shaalan, K. (2016). Investigating attitudes towards the use of mobile learning in higher education. *Computers in Human Behavior, 56*, 93-102. *https://doi.org/10.1016/j.chb.2015.11.033*

Alepis, E., & Troussas, C. (2017). M-learning programming platform: Evaluation in elementary schools. *Informatica, 41*(4), 471–478.

Alfawareh, H. M., & Jusoh, S. (2014). Smartphones usage among university students: Najran University case. *International Journal of Academic Research*, *6*(2), 321-326.

Almaiah, M. A., & Alyoussef, I. Y. (2019). Analysis of the effect of course design, course content support, course assessment and instructor characteristics on the actual use of E-learning system. *Ieee Access, 7*, 171907–171922.

Alturki, U., & Aldraiweesh, A. (2022). Students' perceptions of the actual use of mobile learning during Covid-19 Pandemic in Higher education. *Sustainability 14*, 1125.

Bere, A., & Rambe, P. (2016). An empirical analysis of the determinants of mobile instant messaging appropriation in university learning. *Journal of Computing in Higher Education*, *28*(2), 172-198.

Blackman, S. (2022). The impact of Covid-19 on education equity: A view from Barbados and Jamaica. *Prospects, 51*(4), 611-625.

Botros, S. (2020, November 19). Online learning distractions at home. *Rutgers School of Arts and Science*. https://writingctr.rutgers.edu/blog/164-online-learning-distractions-at-home

Campbell, H. (2007). "What hath god wrought?" Considering how religious communities culture (or kosher) the cell phone. *Continuum: Journal of Media & Cultural Studies, 21*(2), 191-203.

Crompton, H., Burke, D., & Gregory, K. H. (2017). The use of mobile learning in PK-12 education: A systematic review. *Computers & Education, 110*, 51–63. https://doi.org/10.1016/j.compedu.2017.03.013

Corbeil, J.R. & Valdes-Corbeil, M.E. (2007). Are you ready for mobile learning? EDUCAUSE Quarterly, 30(2), 51-58.

Dashti, F., & Aldashti, A. (2015). EFL college students' attitudes towards mobile learning.International Education Studies, 8(8), 13-20.

Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly*, *13*(3), 319- 339.

Diemer, T., Fernandez, E., & Streepey, J. W. (2013). Student perceptions of classroom engagement and learning using iPads. *Journal of Teaching and Learning with Technology*. *1*(2)13–25

Education During COVID-19 and Beyond: Commentary on the Secretary-General's Policy Brief | United Nations. (n.d.). United Nations. https://www.un.org/en/un-chronicle/education-during-COVID-19-and-beyond-commentary-secretary-general%E2%80%99s-policy-brief

Educause Center for Applied Research [ECAR]. (2012). ECAR study of undergraduate students and information technology. *Educause Center for Applied Research*. http://net.educause.edu/ir/library/pdf/ERS1208/ERS1208.pdf

Figaro-Henry, S., & James, F. (2015). Mobile learning in the 21st century higher education classroom: Readiness experiences and challenges. *Caribbean Curriculum, 23*, 99–120.

Garrett, B. M., & Jackson, C. (2006). A mobile clinical e-portfolio for nursing and medical students, using wireless personal digital assistants (PDAs). *Nurse Education in Practice, 6*(6), 339-346. Doi:10.1016/j.nedt.2006.07.020

Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *Internet and Higher Education Mobile, 19*, 18–26. https://doi.org/10.1016/j.iheduc.2013.06.002

Hamid, S., Waycott, J., Kurnia, S. & Chang, S. (2015). Understanding students' perceptions of the benefits of online social networking use for teaching and learning. *The Internet and Higher Education, 26*, 1-9. https://doi.org/10.1016/j.iheduc.2015.02.004

Haverila, M. (2013). Cell phone usage and broad feature preferences: A study among Finnish undergraduate students. *Telemat Inform, 30*(2), 177-88.

Hunte, C. (2021, April 21). T & T's broadband penetration high. *Trinidad Express.* https://trinidadexpress.com/business/local/t-t-s-broadband-penetration-high/article_43352612-a300-11eb-8173-dbe4fe7d3f5a.html

Hong, F., Chiu, S. & Huang, D. (2012). A model of the relationship between psychological characteristics, mobile phone addiction and use of mobile phones by Taiwanese university female students. *Computers in Human Behavior* , *28*(6), 2152–2159. DOI: 10.1016/j.chb.2012.06.020

Kalloo, R., Mitchell, B. & Kamalodeen, V. (2020). Responding to the COVID-19 pandemic in Trinidad and Tobago: Challenges and opportunities for teacher education. *Journal of Education for Teaching, 46*:4, 452-462, DOI: 10.1080/02607476.2020.1800407 https://doi.org/10.1080/02607476.2020.1800407

Khaddage, F., & Knezek, G. (2013). "iLearn via mobile technology: A comparison of mobile learning attitudes among university students in two nations." In *Advanced Learning Technologies* (ICALT), 2013 IEEE 13th International Conference (pp. 256–258).

Kinash S., Brand, J., & Kordyban, T. (2012). Challenging mobile learning discourse through research: Student perceptions of Blackboard Mobile Learn and iPads. *Australasian Journal of Educational Technology*, *28*(4), 639-655. DOI:10.14742/ajet.832

Marinoni, G., van't Land, H., & Jensen, T. (2020). The impact of COVID-19 on higher education around the world – IAU Global Survey Report. https://www.iau-aiu.net/Covid-19-Higher-Education-challenges-and-responses

Masadeh, T.S.Y. (2021). Smartphone use in learning as perceived by university undergraduates: benefits and barriers. *International Journal of Research*, 9, 56-65.

Matzavela, V., & Alepis, E. (2021). M-learning in the COVID-19 era: Physical vs digital class. *Education and Information Technologies*, *26***,** 7183–7203. https://doi.org/10.1007/s10639-021-10572-6

Nikolopoulou, K., Gialamas, V., & Lavidas, K. (2020). Acceptance of mobile phone by university students for their studies: an investigation applying UTAUT2 model. *Educ. Inf. Technol*. *25*, 4139-4155.

Nikolopoulou, K. (2018). Mobile learning usage and acceptance: Perceptions of secondary school students. *Journal of Computers in Education, 5*(4), 499-519.

North, D., Johnston, K., & Ophoff, J. (2014). The use of mobile phones by South African university students. *Issues in Informing Science and Information Technology, 11*, 115-138. http://iisit.org/Volii/IISITV11p115-138North0469.pdf.

Oguntuase, M. O., & Bakare, O. D. (2022). Covid-19 and education: effects of integrating mobile devices with undergraduate learning process. *Library Philosophy and Practice (e-journal).* 6966. https://digitalcommons.unl.edu/libphilprac/6966

Parsanlal, N. (2020, April 14). MOE - Almost 60k students can't access online learning. *LOOP News*. https://www.looptt.com/content/moe-almost-60k-students-cant-access-online-learning.

Pruet, P., Ang, C. S., & Farzin, D. (2016). Understanding tablet computer usage among primary school students in underdeveloped areas: Students' technology experience, learning styles and attitudes. *Computers in Human Behavior, 55*, 1131-1144.

The Draft Education Policy Paper 2017- 2022. https://trinihomeschooling.files.wordpress.com/2018/10/Abridged-Education-PolicyPaper-2017-2022-final.pdf

Pituch, A. K., & Lee, Y. (2006). The influence of system characteristics on E-learning use. *Computers & Education*, *47*(2), 222-244. https://doi.org/10.1016/j.compedu.2004.10.007

Prensky, M. (2005). Learning in the digital age. *Educational Leadership. 63*(4), 8-13.

Rossing, J., Miller, W. M., Cecil, A. K., & Stamper, S. E. (2012). iLearning: The future of higher education? Student perceptions on learning with mobile tablets. *International Journal for the Scholarship of Teaching and Learning, 12*(2),1-26.

Sabah, N. M. (2016). Exploring students' awareness and perceptions: Influencing factors and individual differences driving m-learning adoption. *Computers in Human Behavior, 65*, 522–533.

Seliaman, M. E., & Al-Turki, M. S. (2012). Mobile learning adoption in Saudi Arabia. *World Academy of Science, Engineering and Technology*, *69*, 356-358.

Sung, Y., Chang, K., & Liu, T. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, *94*, 252–275. https://doi.org/10.1016/j.compedu.2015.11.008

Talan, T. (2020). The effect of mobile learning on learning performance: A meta-analysis study. Educational Sciences: *Theory and Practice*, *20*(1), 79 - 103. http://dx.doi.org/10.12738/jestp.2020.1.006

Taleb, Z. & Sohrabi, A. (2012). Learning on the move: The use of mobile technology to support learning for university students. *Procedia – Social and Behavioral Sciences, 69*, 102-1109.

UNESCO COVID-19 Education Response Education Sector Issue Notes. Issue Note N° 7.1 Developed by the Section of Education Policy and UNESCO International Institute for Educational Planning with support from UNESCO Offices in Abuja, Bangkok and Santiago School reopening.

Wang, Y., Wu, M., & Wang, H. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Educational Technology*, *40*(1), 92-118.

Yang, T. (2012). The decision behaviour of Facebook users. *Journal of Computer Information Systems*, *52*(3), 50-59.

Perceptions About Being On-call Among Doctors and Significant Others: A Qualitative Inquiry

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Abstract

Previous research has not adequately considered the subjective evaluations of being on-call for doctors who provide these services on-site (i.e., proximal doctors) versus those who wait offsite to be called in cases of emergencies (i.e., distal doctors). The current article reports the findings associated with on-call doctors' and significant others' (SOs) evaluations of their experiences when they or their partners were on-call. Eighteen doctors who worked on-call and seven SOs whose partners worked on-call were purposively recruited and interviewed. The data were analysed thematically. Findings revealed that the doctors accepted their on-call duties despite them describing the experience as tiring, stressful, and dangerous. SOs' perceptions of their partners' on-call experiences were that while they had grown accustomed to the limitations the working arrangement presented, it was distracting and there were anxieties about their partners' safety when they were responding to callouts. The participants' experiences differed according to their on-call classification and gender (the latter differences were discussed at greater length in an earlier paper). Recommendations for improving doctors' on-call experiences should acknowledge the individual variation in those experiences and the experiences of those with whom they share their lives.

Keywords: on-call doctors, distal on-call, proximal on-call, active on-call, inactive on-call, psychological detachment

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Introduction

The increasing incidence of burnout among doctors in Trinidad and Tobago (T&T) was exacerbated by the COVID-19 pandemic (Nayak et al., 2021). In a local study on the psychological impact of the pandemic on T&T's healthcare workers (HCWs), results showed a high prevalence of depression, anxiety, and stress associated with the spread of the virus, the threat of infection, an increased workload, isolation from family and lack of sufficient rest (Nayak et al., 2021). However, even before the pandemic, the Trinidad and Tobago Medical Association (TTMA), reported that there was a growing incidence of burnout among local physicians (Doughty, 2018), which echoed empirical findings of high levels of stress, burnout, and depression among T&T medical students (Youssef, 2016).

One aspect of work that has been found to be related to burnout among doctors around the world and across various specialties is being on-call (Balch et al., 2010; Heponiemi et al., 2014; Heponiemi et al., 2015; Irwin et al., 2019). Being on-call is defined as a situation in which "workers are called to work either between regular hours or during set on-call periods" (Glasgow 2019, p. 10). However, to date, no empirical research on the on-call experience has been done in T&T or the wider Caribbean region. Yet, in an article in the T&T Guardian Newspaper (2020), job pressure, in addition to little or no rest between shifts, was believed to be a major contributory factor to high burnout and dissatisfaction rates among local doctors. This anecdotal evidence was supported by claims by Dowlat and Islam (2023) that the frequency with which senior physicians are rostered for on-call duty is unsustainable and inadequate. The authors based their claims on evidence at a local rural hospital.

The TTMA has thus called for improvements in the on-call working arrangements for doctors, specifically identifying that on-call rosters that do not negatively impact sleep and include a reasonable amount of rest time and proper on-site facilities such as bathrooms, lounges, and on-call rooms for short naps during shifts, are needed (Doughty, 2018). Given that being on-call remains a requirement at least at lower ranks within the local medical profession, the relationship between being on-call and burnout, and the evidence that suggests that higher levels of burnout and depression are associated with reduced performance, addictive behaviour, and suicide ideation (Balch et al., 2010), research that seeks to understand perceptions of being on-call, at least from the perspectives of those whom it impacts, is warranted to support the

TTMMA's recommendations. The implications of the findings can improve the health and well-being of those we entrust with our care, especially since their own health and well-being needs have been perceivably largely ignored (Doughty, 2018).

Health Care Workers' Perspectives on Being On-Call

In a literature review, Glasgow (2019) found that on-call stress was experienced due to its disruptive impact on participants' family and social lives and the uncertainty of the period. Female general practitioners (GPs) reported perceived stress due to the role conflict and overload they experienced as they attempted to balance their professional and personal commitments while on-call. On the other hand, men reported perceived stress due to the unpredictability of the period (Rout, 1996). These findings suggest that there may be gendered differences in the perceptions of on-call experiences and the meaning of these perceptions for men and women. However, past evidence has largely reported on associations between variables such as on-call work and stress based on scores on various scales with few investigating other ways in which participants evaluate their on-call experiences and the meaning behind those evaluations (French et al., 2001; Lindfors et al., 2006).

Nevertheless, of those who did, the evidence revealed conflicting results concerning the evaluation of on-call experiences (Cuddy et al., 2001; Imbernon et al., 1993; Smithers, 1995). For instance, in that same review of the literature (i.e., Glasgow, 2019), while being on-call was described as stressful, it was also considered to be a rewarding experience and a "reasonable and important" part of HCWs' jobs (Bamberg et al., 2012, p. 310) because it provided them with the opportunity to comfort the ill and allowed for continuity of care (Cuddy et al., 2001). Interpersonal work relationships (including those with senior doctors) also influenced HCWs' perceptions of being on-call. Being on-call provided doctors with the opportunity to improve team relationships and was believed to enhance learning and buffer against its harmful impacts.

Another reported benefit of being on-call was the educational opportunities it afforded, particularly for junior doctors on proximal call, to obtain unique clinical experiences which stimulated career growth and development (Callaghan et al., 2005; Corriere et al., 2013). In most instances, proximal doctors are on-call at night and during the inactive on-call period may be allowed to sleep for a few hours. Proximal on-call refers to a situation whereby the worker remains on-site for the duration of the on-call period (Glasgow, 2019, p.13). While being on proximal call provided doctors and medical students with valuable clinical experiences such as opportunities to manage unstable patients and informal sessions with seniors, participants often reported being fatigued due to the frequency at which they were called out during their duties (Corriere et al., 2013; Tucker et al., 2010). Additionally, feeling fatigued was associated with the quantity of off-duty days following consecutive nights on-call and with the length of time between on-call shifts and regular work shifts in past studies (Balch et al., 2010; Heponiemi et al., 2014; Tucker et al., 2010).

In the context of being on distal call, fatigue may not merely be due to exposure to active on-call duty (Bamberg et al., 2012; Smithers, 1995; Ziebertz et al., 2015). Distal on-call doctors are relatively senior doctors and are usually off-site during inactive on-call duty. Consequently, they primarily only respond to emergencies such as when proximal doctors are experiencing difficulties in managing patients. "Unlike proximal on-call workers, for distal workers […] being on-call is unpredictable because they are not certain if they will be called out to work, when, for what, and for how long" (Glasgow, 2019, p. 13). Therefore, the characteristic unpredictability of being on distal call might distinguish it from the proximal on-call experience in which workers are almost continuously exposed to work demands. However, the distinctions between the meanings ascribed to the experience of being on-call for proximal and distal on-call workers were hardly established in the literature. Furthermore, in the absence of theoretical frameworks presented in past studies, the review concluded that it was unclear how exactly fatigue was experienced when distal doctors were physically away from work. Since the current study was concerned with understanding physicians' evaluations and how they came to hold those evaluations, Meijman and Mulder's (1998) Effort-Recovery (E-R) model (which will be examined after the following discussion) was believed to be applicable for explaining the fatigue distal workers' felt during the inactive on-call period.

Significant Others' Perspectives on Being On-Call

The evidence on the perceptions of significant others (SOs) about their experiences when their partners are on-call is sparse. Significant others are defined as intimate partners of on-call doctors who live with them, including but not limited to spouses. Few existing studies have emphasized the experiences of partners of distal doctors and not those of proximal doctors. Furthermore, except in one study (Rout, 1996), the spouses were predominantly women which may have had implications for how they constructed their realities. The partners of on-call doctors generally described their experiences when their partners were on-call as tiring and stressful (Emmett et al., 2013). Feelings of depression, frustration, and anger were also reported (Emmett et al., 2013). This was primarily due to the effect of their partners' call on their professional and personal lives, their partners' lack of intimacy and disengagement from family life during the on-call period, their partners' workload and changes in moods, and patients who encroached on their personal space and time (Cuddy et al., 2001; Emmett et al., 2013; Rout, 1996).

Nevertheless, SOs generally believed that their partners' on-call work was valuable because of its opportunities to enhance their skills, foster career satisfaction, increase their financial stability, and offer community service (Emmett et al., 2013). There was also an added advantage (for those with distal on-call partners) of having their partners at home with them and their families during the inactive on-call period (Emmett et al., 2013). Married participants in Emmett et al. (2013) compared their then-current experiences with earlier times in their partners' careers when they had to be on-call more frequently and had to remain on-site. In those times, there were more detrimental impacts on their non-working lives.

Theoretical Framework: The Effort-Recovery Model

As previously alluded to, the distinctions between how proximal and distal on-call workers experience the on-call period were not always clarified in the included studies in the review of the literature and became a point of interest in the current study. According to the E-R Model, recovery occurs during periods of non-exposure to work demands "so that the psychophysiological systems which are activated when effort is expended" return to their baselines (Glasgow, 2019, p. 45). Therefore, the immediate effects of work demands (i.e., the accumulation of negative load reactions) are reversed. Prolonged exposure to work forces the psychophysiological systems to remain in a state of activation depleting those resources for the next work situation and causing a greater accumulation of negative load reactions. Over time, the situation can lead to long-term impairments in health and well-being (Meijman & Mulder, 1998). Therefore, having time after work or between shifts to recover is crucial; however, it is during these same periods that doctors are placed on-call (Guerts & Sonnentag, 2006; Nicol & Botterill, 2004).

Even if on-call doctors are not responding to an emergency (i.e., are not physically confronted with work demands), they may be still psychologically preoccupied with work (Bamberg et al., 2012; Sonnentag, 2011). For instance, distal on-call doctors may have invasive thoughts or ruminations about whether they will have to respond to an emergency, when they will have to respond, and what they may be required to do when they respond, although they may not be actively working (Guerts & Sonnentag, 2006; Ziebertz et al., 2015). Expectations of interruption may make it difficult to mentally detach from work (Bamberg et al., 2012).

While other experiences contribute to recovery, psychological detachment is argued to be a critical component because mental preoccupation with work draws upon the same resources utilized when physically exposed to work (Sonnentag et al., 2008; Sonnentag & Fritz, 2015). This reasoning may give credence to the meaning behind distal on-call doctors' unfavourable evaluations of the on-call period which should be distinguished from those of proximal on-call doctors (Derks et al., 2014; Sonnentag, 2001; Sonnentag & Bayer, 2005; van der Hulst & Geurts, 2001; Ziebertz et al., 2015). Unlike proximal doctors, who are almost always physically confronted with work demands, a large part of distal doctors' time on-call is spent waiting to respond to a call out (Jay et al., 2018).

Research has found that the largely unacknowledged period in which distal doctors spend waiting on-call has physiological, psychological, and social effects (Bamberg et al., 2012; Jay et al., 2018; Nicol & Botterill, 2004). In addition, mental preoccupation with work can extend beyond the on-call period. For instance, research has shown that junior doctors on proximal call complained of "anticipatory" and "hangover" stress on the nights surrounding their on-call duties (French et al. 2001, p. 172). Thus, it is not clear when recovery starts or stops, especially in medical professions characterized by mental demands (Zijlstra et al., 2014), and this brings the conceptualization of recovery as a static construct as suggested by the E-R model into question. Therefore, in the current study, the principal investigator remained alert to the taken-

for-granted ways in which proximal versus distal on-call doctors talked not only about being physically but psychologically exposed to their work demands (during and beyond the on-call period) and the implications that had on their ability to recover.

Other assumptions of the E-R model have been largely criticized, namely, its failure to consider how personality traits influence the recovery process in individuals (Geurts & Sonnentag, 2006). For instance, work demands may be perceived as more stressful to anxious individuals who may expend more energy to meet those demands relative to non-anxious individuals (Geurts & Sonnentag, 2006). Consequently, this can result in a greater need for recovery for them after work. Similarly, neurotic, extraverted, Type A personalities and people for whom their jobs are an integral part of who they are, may be more susceptible to ruminative thoughts and a reduced ability to psychologically detach themselves from work (Geurts & Sonnentag, 2006; Zoupanou et al., 2013). While these are valid concerns, the study's objectives emphasized group rather than individual-level experiences and highlighted differences in those experiences such as those existing between and within the proximal and distal on-call participant groups.

Research Purpose

Distinctions between the proximal and distal on-call systems have not been made in the literature, yet there may be important differences between them that might produce different challenges and experiences. Therefore, there is a need to consider proximal and distal on-call doctors' experiences separately since the impact of being on-call may be different for each category. Furthermore, the insights of others who may be affected either directly or indirectly by the on-call worker's demands have been largely neglected in the literature (Karan et al., 2019). The evidence on the experiences of SOs is scarce, antiquated, and based mainly on samples of women. Consequently, the current study aims to understand how proximal doctors perceive their on-call experiences relative to their distal counterparts and the meaning ascribed to these perceptions. Additionally, the study aims to explore the on-call experience from the perspectives of SOs. The participants' perceptions of being on-call will be appropriately situated within the theoretical context of the E-R model.

Methodology

Qualitative Descriptive Design

The current study aimed to unearth the underlying meanings doctors and SOs attributed to their on-call experiences. In light of that aim, a qualitative descriptive methodology based on a collective-idealist ontology and a constructionist epistemology was considered appropriate (Cuddy et al., 2001). The shared social constructions among proximal versus distal doctors, doctors working on-call in primary care versus those working in secondary care, doctors versus SOs, and even male versus female doctors were emphasized (Guba & Lincoln, 1994). It was

also believed that knowledge about the various "groups' constructions could not be acquired objectively nor observed with the senses as is consistent within positivist frameworks" (Glasgow, 2019, p. 65). Instead, understanding participants' constructions of their on-call experiences meant gaining an insider view of their realities through dialogical exchanges (Alvermann & Mallozzi, 2010; Ormston et al., 2014). What this meant was that the principal investigator was directly part of the construction of the participants' realities of their on-call experiences as she spoke with them and interpreted and re-told their stories. Furthermore, her interpretations were a function of her pre-assumptions and past experiences as a daughter of a mother who worked on-call (Ormston, et al., 2014). The collective idealist "ontological and constructivist epistemological beliefs placed the study within the interpretive tradition and influenced how" the participants were recruited, and the data collected and analysed (Glasgow, 2019, p. 65).

Sampling Procedure

Trinidadian doctors working on-call were purposively selected to provide rich and meaningful data about the phenomenon based on their ability and willingness to talk about their experiences (Koerber & McMichael, 2008; Latham, 2007). The exclusion criterion was doctors who did not work on-call at the time of recruitment. The majority of distal on-call doctors (who were District Medical Officers [DMOs]) were mainly invited to the study, specifically through snowballing techniques and referrals since recruiting this group proved to be relatively difficult (Koerber & McMichael, 2008; Latham, 2007; Marshall, 1996). DMOs are medical-legal officers who provide clinical support to the T&T Police Service. Their work can be compared to the work of coroners or forensic pathologists in other jurisdictions.

Maximum variation was utilized to select equivalent numbers of distal and proximal doctors and men and women doctors. Additionally, the doctors represented a range of medical specialties, ages, ranks, lengths of on-call experience, and Regional Health Authorities (RHAs) which were thought to be pertinent where there were variations in the on-call experiences (Koerber & McMichael, 2008; Marshall, 1996). The RHAs are independent bodies that own and operate health facilities in their respective jurisdictions across T&T to provide health care to the population. The responsibility for the provision of healthcare services was devolved from the T&T's Ministry of Health to the RHAs in 1994. There are currently five (5) RHAs that deliver public healthcare services to the population. Doctors were selected from public institutions across three RHAs namely, the South-West RHA, the North-Central RHA, and the Eastern RHA, which provide health services for approximately 78% of the national population. The on-call burden at public institutions is perceivably greater than at private institutions and in the local article by Doughty (2018), one doctor claimed that "nothing is put in place for their care and well-being, especially in the public health institutions" (para. 9).

The SOs' on-call partners, however, worked at public and private institutions. Although the authors intended to solicit data from the SOs of the doctors in the sample, these doctors prevented access to that group by stating that their SOs did not wish to participate or by not inviting their SOs at all. Thus, SOs were invited from the general population through

snowballing techniques and because they were not matched to the doctors in the study, the sample size of the group also was not matched to the sample size of the doctors. It is worth noting that reliance on snowballing methods for the recruitment of SOs only occurred after exhausting other means (e.g., invitation through relevant social media groups). Nevertheless, similar to the sample of doctors, SOs across a variety of occupations and representing various ages and number of years married were recruited. Furthermore, almost equal numbers of men and women SOs participated.

Sample sizes in many qualitative studies are based on data sets that are large enough to allow for saturation (Braun & Clarke, 2014; Joffe, 2012), "yet small enough to allow for rich and complex data on the lived experience to be drawn out" (Glasgow, 2019, p. 72). As such, the study's sample size was 25 participants (i.e., 18 doctors and seven SOs) since at that point, patterns within and across the datasets became apparent.

Data Collection and Analysis

Ethical approval was secured from Lancaster University, the Caribbean Public Health Agency, and the participating RHAs before the participants were approached to secure their written informed consent. Semi-structured interviews lasting an average of 45 minutes were used to stimulate rich and in-depth discussions about being on-call from the participants' frames of reference (DiCicco-Bloom & Crabtree, 2006; Knox & Buckard, 2009). The interview protocol reflected the research purpose which was to explore the meaning of being on-call in the context of everyday life. The doctors were mostly interviewed face-to-face in private offices or empty medical rooms, while the SOs were interviewed by telephone.

The data were analysed using codebook thematic analysis (TA) after the interviews were transcribed, and there was an illustrative account of the findings (Braun & Clarke, 2019). As Braun and Clarke (2019) clarified in their reflexive commentary about TA, codebook TA is positioned in the middle of coding reliability approaches (i.e., those that emphasize consensus among multiple coders) and reflexive TA, in which the codes are constructed by the researcher "at the intersection of the data, the analytic process and his/her subjectivity" (Braun & Clarke, 2019, p. 595).

Codebook TA uses a coding frame or list of codes generated after familiarization with the data and based on theoretical assumptions from the literature similar to Smith and Firth's (2011) framework analysis, to guide the researcher's constructions. However, the approach adopted in the current study was closer to reflexive TA than to coding reliability approaches in that the analytic process was situated within a qualitative philosophy, the development of the codes in the frame was based to some extent on the principal investigator's interpretation of the patterns of meaning across the data sets, and the themes were not conceptualized as "domain summaries" but as shared meanings organized around meaning-based concepts (Byrne, 2022, p. 1393). The process itself was influenced by the six stages identified by Braun and Clarke (2006) while it was acknowledged that they were not meant to be prescriptive or linear (Braun & Clarke, 2019). "Therefore, there were iterative movements across the stages" from coding

the raw data, defining and redefining the themes, and writing the interpretive story (Glasgow, 2019, p. 85).

The interview transcripts were uploaded to the qualitative data analysis software, NVivo 11 Pro, classified per participant group, namely, doctor (i.e., proximal versus distal) and SO, and read twice to become familiar with the initial patterns in the data (Alhojailan, 2012; Braun & Clarke, 2006; Clarke & Braun, 2014; Mason, 2002). Next, NVivo was used to create a coding framework, which is a list of the codes and their descriptions and was consistently applied across the data set (Bazeley, 2012; King, 2004; Liamputtong, 2009; Pope et al., 2000). Initial or lower-level codes were in some cases *in-vivo* (Alhojailan, 2012; Liamputtong, 2009), and the codes were linked to the relevant portions of text in the transcripts so that the data that were coded were always viewed within the context of the wider transcript (Bazeley, 2013; King, 2004; Liamputtong, 2009; Pope et al., 2000).

After coding, all lower-level codes were organized under higher-order themes, along with the coded extracts (Braun & Clarke, 2006; King, 2004). These higher-order themes were interpretive or linked to theoretical constructs in the existing literature (Pope et al., 2000; Spencer et al., 2014). For example, the lower-level code: 'empty nest' was placed under the theme, 'A Non-Issue' to explain the dynamics of the experiences of SOs as it relates to having childcaring responsibilities fall primarily on them during the earlier stages of their partner's career when the on-call burden was heavier. When their children were grown, while those responsibilities lessened and made the experience of their partner's on-call working arrangement easier to bear, women reported feeling lonely because since their children had now left the nest, there was no companionship at home when their partners were off on-call. At that point, unrelated codes were either discarded or merged with others to relate more broadly to the participants' experiences (Braun & Clarke, 2006).

Themes were also refined and as with the codes, some were discarded or merged (Braun & Clarke, 2006). The principal investigator discussed the categorization of the data with the other authors who challenged her interpretive assumptions, thereby, increasing the richness of the interpretations (Barbour, 2013; Fereday & Muir-Cochrane, 2006). The themes were then defined to reflect the data they represented, and their boundaries were fixed (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006; Spencer et al., 2014). The coded data were checked for coherence and consistency with the codes and the codes were checked for coherence and consistency with themes. Themes were also checked for coherence and consistency with each other and where necessary, modifications were made (Braun & Clarke, 2006; Spencer et al., 2014).

Queries were then run in NVivo to facilitate the analysis of the findings per on-call category for the doctors and overall, for the SOs. The principal investigator remained alert to instances where the findings were unique to specific specialties, genders, sectors, and types of distal call. The results were analysed and presented per theme via interpretive stories of the lived

experiences of the participants (Braun & Clarke, 2006) while remaining reflexive and explicit about the assumptions that influenced the interpretations developed.

Results

Sample Demographics

Proximal or first-call officers in the study were stationed at public hospitals and were the first to be called out in the event of an emergency. Their on-call rotas were either one in four or one in five which averaged approximately seven monthly on-call sessions excluding one weekend call per month. The on-call period was from 4 pm one day to 8 a.m. the next but proximal doctors could also be on-call in the day, afternoon, and evening. These doctors were either at the rank of house officer or intern, and the majority were between 21-30 years old, had less than 10 years of on-call experience, and had romantic partners. However, almost all were without children.

Distal on-call doctors in the study were primarily DMOs (i.e., 67%) who worked at primary healthcare centres and clinics while the minority (i.e., 33%) worked as registrars or consultants at public hospitals. The DMOs were essentially medical-legal officers who provided clinical support to the T&T Police Service. Distal doctors' on-call shifts lasted for 24 hours (i.e., 8 a.m. one day to 8 a.m. the next) and their on-call rotas spanned from one in one to one in six days. They also had weekend on-call shifts. Regarding demographics, their ages ranged from 37 to 60 years old, they usually had more than 10 years of on-call experience and all either had partners and/or children. Overall, the doctors represented various medical and surgical specialties such as internal medicine, general medicine, anesthetics, urology, pediatric surgery, and general surgery.

All SOs were married to on-call doctors who for the most part, provided distal call. The majority were married for less than five years; had at least one child and were employed. Additionally, three had partners who worked within the public health sector while the partners of four worked at private health institutions, including at their businesses. Consequently, their ranks could not be compared with the ranks that exist in the public health sector. Still, except for one partner who was at the rank of a junior doctor, all SOs indicated that their partners were middle to senior doctors (i.e. synonymous with either registrars or consultants). The doctors of these SOs represented various specialties such as endocrinology, family medicine, occupational medicine, anesthetics, nephrology, and obstetrics and gynecology. Their on-call rotas ranged from one in every four days to one in every four weeks depending on staffing and skill demand. The on-call period lasted about two hours for house calls to 24 hours on-call at public hospitals and since most partners were relatively senior doctors, they were only called out to manage complex or emergency cases.

Doctors' Experiences

Accepting On-Call Duty

Being on-call came with "the territory of their jobs" (P3) or, to put it differently, was mandatory within the physicians' specialties. Furthermore, it was an eventuality about which they were made aware before they entered the profession. Nevertheless, some doctors explained that if given the choice, they would not perform on-call duties, as exemplified in the quote below.

> I like the idea of not being on-call more and more but in our setting, it is actually quite difficult. If I worked in the UK, there would be more options, more opportunities I think for just doing 8-4 work and not doing on-call. But down here that really isn't so much of an option too much if you're in like my department certainly […]. I know of nobody here in the surgical department who can only do work and not be on-call. (P1, as cited in Glasgow, 2019, p. 98-99)

Proximal and distal doctors also felt that the on-call service offered patients continuity in their care. Concerning the former, the requirement to remain at the worksite meant "that there [was] always […] someone available and that they wouldn't have to wait […] to get someone on-site" (P4, as cited in Glasgow, 2019, p. 99). In that regard, being on-call was perceived as necessary "humanitarian" work for proximal doctors (P3). Distal doctors also believed that in providing patients with continuity of care, they were fulfilling their "duty of care" (P1) obligation. However, they did not share the meaning of care continuity as their proximal counterparts. For them, continuity of care meant that they were able to follow up on patients they may have admitted during their 24-hour on-call shifts, given that they were sometimes scheduled to do a regular shift immediately following their on-call shift. Therefore, their patients' care was in the hands of a doctor who was initially involved in their case as explained in the quote by a distal doctor below.

> So, if we start call 8 this morning, I'm post-call 8 tomorrow morning and then I have my regular day job […] so, I get to see the patient. […] I would be the one to see them when they came through emergency, I would be the one to operate on them and then I would see them tomorrow. So, […] it provides a really good continuity of care. (P6, as cited in Glasgow, 2019, pp. 99-100)

Finally, both proximal and distal doctors acknowledged that being on proximal call especially, increased clinical exposure and promoted professional growth and that this system of working was the only system that allowed them to achieve those benefits. One proximal doctor described the arrangement as "...throwing you in the deep end of the pool and [having] you […] learn to swim" (P3, as cited in Glasgow, 2019, p. 100).

Being On-Call as Tiring

Feeling fatigued was more prominent in the narratives of proximal doctors than distal doctors because being on-call for the former, especially those in surgical specialties, meant that they were more likely to be faced with physical work demands, and as a result felt like they were "always playing catch up" (P10). For example, a surgeon on proximal call explained that

sometimes he is at the hospital for five consecutive days "with a little break to maybe run home, shower, eat and then come back again" (P5, as cited in Glasgow, 2019, p. 101). This is because the on-call period usually either immediately preceded or followed regular duty. Therefore, he felt that the combination and close succession of regular work shifts and on-call shifts contributed to his fatigue.

> If you are only on-call and you have no additional duties and you have a set shift, then I can see the advantages […] because you are fresh […]. I would change having to do a normal day's work the next day. (P5, as cited in Glasgow, 2019, p. 101)

Proximal doctors also experienced insufficient recovery which extended beyond their on-call periods due to implicit expectations by their seniors regarding the need to remain accessible. For instance, P5 lamented that "you never get to escape, you can't turn off cause when you go home your bosses […] texting you for updates on the patient" (Glasgow, 2019, p. 103). Intertwined with these implicit rules was the pressure "to sort of prove yourself to be invincible" and to a large extent, convincing senior doctors of their invincibility was accomplished when proximal doctors remained accessible (P5, as cited in Glasgow, 2019, p. 103).

Contrary to their proximal counterparts, distal doctors' experiences of fatigue were dependent on whether they had a busy on-call duty. However, fatigue was also experienced even when distal doctors were not called in.

> […] and it's not that you're necessarily tired from doing but you just tired because any time your phone could ring, you can't plan anything, you can't set out to do anything because they could call you out. […] you get up very early, whether they wake you up or not […] [and] you always have that phone in your hand, just batting an eye. (P7, as cited in Glasgow, 2019, p. 102)

For P7, tiredness was tied to the uncertainty of whether and when he would have to respond to an emergency. Furthermore, like proximal doctors, distal participants found that they ruminated about being called out even when on vacation, and thus, there was this inability to "switch off" which led to extreme behaviours when off-duty.

> You never switch off. It's a state of being receptive. Switching off only occurs when you are on sanctioned leave and even that switch-off is not immediate because people will still call you when you start leave. (P8, as cited in Glasgow, 2019, p. 103)

> And it's grueling. It severely affects you. […] I mean I telling you from experience, a lot of the guys end up you know either drinking frequently because you don't really have time to breathe. (P7, as cited in Glasgow, 2019, p. 108)

Being On-Call as Stressful

On-call stress among doctors on proximal call was attributed to the intensity of the on-call period, which was characterized by high patient volumes, demands, and time constraints as the following account shows.

> […] you in your mind as that one officer [...] have to be thinking where I'm needed most. […] And all of that adds to […] your stress levels […]. If we got referred any patients, unless they absolutely dying, those patients unfortunately have to wait, because we have to finish clinic. […] So, let's say they come casualty 8 o'clock and casualty refers them like half 8, from half 8 to half 12 when we finish clinic, that patient is just waiting to be seen because we just can't physically be in two places at once. (P11, as cited in Glasgow, 2019, p. 105)

When the above occurred, patients usually became incensed, amplifying the already turbulent situation as evidenced by the quote below.

> So, with [that] environment now, it's stressful in the sense that patients are being aggravated and taking out their stress on us. I mean we are not allowed to defend ourselves really so we just have to sit and take all these verbal abuse and things. (P12, as cited in Glasgow, 2019, p. 105)

Poor organizational interpersonal relationships, the lack of appropriate work equipment and on-call facilities, and the need to be invincible (as was previously mentioned) caused yet "another strain" (P11).

For distal hospital doctors, on-call stress was linked to how confident they felt about the competency of their junior doctors. The experience was "perceivably less demanding" (P1) when they trusted the clinical expertise of those on-site as described below.

> […] if you have an experienced house officer, then it's much easier. But if you have a junior house officer, then it means that almost every patient that they see on-call not only are they calling but […] you're coming in much more often because you have to sort of cover for their lack of experience. So, that can be quite taxing. (P1, as cited in Glasgow, 2019, pp. 106-107)

The above could be contrasted with P1's experience when she was working with a registrar, who is a more experienced doctor.

> If I'm on-call with the registrar, it makes my life easier because [she] fields a lot of the phone calls from the house officers, and then I'm only going to be contacted for the more ill patients [...]. So, that makes the burden a lot less on me. (P1, as cited in Glasgow, 2019, p. 107)

It may be worth noting that the distal doctors' stressful on-call experiences also differed according to their tenure (i.e., those who worked on-call longer felt like they coped better than younger doctors), and whether they provided on-call services at the hospital or as a DMO. The experience was deemed less stressful for those who transitioned from providing hospital on-call services to serving their communities as DMOs. DMOs who had previous hospital experience believed that those experiences prepared them for their current roles. However, this was not every DMO's reality. P7 shared that because he had worked at the hospital for a long time, he still experienced great distress in his new role as a DMO.

> It's not high intensity for the DMO calls but the stress level is always. I'll tell you this: working through the hospital system and the on-call service, develops a level of anxiety and fearfulness in your mind because you don't know what to expect. You could be called at any time and in some of us […], it becomes so engrained […] that even on the non-call days we would find ourselves thinking well, "Am I on-call? When next am I on-call?" You are at this heightened level of attention all the time. (P7, as cited in Glasgow, 2019, p. 108)

Additionally, treating traumatic cases, such as child incest and rape, contributed to the DMOs' perceptions of stress because such cases were difficult to get out of their minds.

> It takes a day or two to get it out of your mind. The rape cases or children you find murdered for example [....]. I had to clear the body of a six-year-old girl. I'd be honest with you that night […] when the call was done […] I sat down and I […], revel in that for a few days […]. (P7, as cited in Glasgow, 2019, p. 109)

Being On-Call as Dangerous

Only distal doctors evaluated the experience of being on-call as dangerous given that responding to a call, for them, required them to journey from their homes to either the hospital or some other location. Unlike the relative safety of responding to a call-out at a hospital for those who were hospital distal on-call doctors, DMO calls usually happened "in fairly remote areas and at fairly odd hours of the morning" (P7 as cited in Glasgow, 2019, p. 109). The threat of danger was particularly believed to be more relevant for women than men, and there were some gender-biased concerns voiced by men regarding the appropriateness of the job for a woman. One male DMO believed that besides having to go to lonely and high-risk areas at night, being on-call presented other challenges for women as illustrated in the following scenario:

> For one of my jobs, we had to get an excavator […], because they buried somebody and […] we had to dig a hole 20 feet by 20 feet. And I had to go down in that hole in the mud, in the rain. I drove home in my [underwear] that day. […] So that's why I say a lady shouldn't really be doing that. […] it might sound sexist but […] I don't know if that is […] safe for a woman to do. (P13, as cited in Glasgow, 2019, p. 110)

Additionally, having to journey at night to respond to callouts was also disruptive to families whose sleep would sometimes be interrupted so that they could accompany especially female DMOs to their destinations or stay awake until their return.

> So, sometimes the whole family is wake up to accompany me. Cause it's a female out there. And it's not like you going to a hospital or a very safe environment. You are out there within the public, sometimes in lonely areas, rural areas. (P16, as cited in Glasgow, 2019, 109)

SOs' Experiences

It Is a Non-issue

SOs expressed that they had grown accustomed to their partners being on-call as they progressed in their relationship. Additionally, those with partners who were senior doctors on distal call felt that their experiences were better now than when their partners were junior doctors on proximal call. As most of their partners were senior doctors on distal call, they did not have to be physically at the hospital all the time nor were they on-call often, and coincidentally, for one SO, the children were grown. However, because her children were grown, she experienced feelings consistent with 'empty nest' syndrome (e.g., loneliness), and these were shared by other women in the sample.

> As our kids are all grown now, it's usually just him and me and he's not here so I'm in the house by myself. […] When the kids were younger it was easier because I had their company. But now the house is like an empty nest. (P14, as cited in Glasgow, 2019, p. 114)

All in all, being a partner of a doctor working on-call had become part of the rhythm of the SOs' lives and they had grown accustomed to it. It also helped that they were preoccupied with either their children, studies, or careers of their own and thus, were able to identify with their partners' on-call commitments.

Distractions and Interruptions

Distractions stemmed from the SOs' partners' inability to switch off post-call and the constant telephone calls that invaded "every single aspect of their lives," especially their sleep (P14). For instance, the doctors had remote access to their worksites and so were able to work at home even after their on-call shifts. Furthermore, when the telephone rang, there was "this level of chatter in the house" that changed everything including the quality of time spent with family (P14).

> […] it doesn't matter physically where he is, when he is on-call he is not with us! There may be […] a slow week and you would find him more present physically as well as in his presence of being with us. But generally, once he's on-call […] there's a disconnect with the family. (P14, as cited in Glasgow, 2019, p. 115)

The inability to switch off for those such as P14's partner was to an extent related to the unpredictable nature of being on-call away from the worksite, particularly when he had to entrust the care of critical patients to others. SOs with distal on-call partners described them as being in a state of "waiting and calculating" which meant the constant checking of messages on their phones and being detached from the rest of the family (P14, as cited in Glasgow, 2019, p. 115).

Concerns about Safety

Safety concerns when called out at night were common among SOs whose partners provided distal call as it was for DMOs. SOs reported feeling anxious when their partners were

responding or returning from callouts at unsocial hours. They usually did not sleep until their partners arrived and returned from work safely. For example, P15 (as cited in Glasgow, 2019, p. 116) explained that because his partner was a "female doctor going out at hours":

> It's always a bit nerve-wracking and a lot of messages, you know "Have you reached, have you reached, have you reached?" And then you just wait until she calls to say that she's arrived and invariably I would stay up until she comes home. […] and it's not just criminals but it could be a drunken driver or anything at that hour. If she's tired, it could be anything.

Discussion

Comparing the Evaluations of On-Call Doctors

Consistent with the perceptions of on-call workers in the literature, the current findings showed that distal and proximal doctors described their perceptions of their on-call experiences in favourable and unfavourable ways (Imbernon et al., 1993; Smithers, 1995). Furthermore, some assessments were only relevant to a particular category or sub-category of doctors. For example, the dangers of being on-call were a common theme among DMOs, who responded to calls during unsocial hours and within high-crime risk areas, but not among distal hospital doctors and proximal on-call doctors. In a past study, veterinarians in the UK working alone during the on-call period also reported safety concerns associated with traveling to and treating their patients (Irwin et al., 2019). Moreover, in this study, the safety risk seemed to be greater for distal women overall when compared with men. The findings also highlighted the perceived gendered nature of being on-call as a DMO, and therefore its classification as men's work. No research on the evaluation of the on-call experience among DMOs was found in the literature. Nevertheless, the on-call experiences of GPs in past studies (e.g., Cuddy et al., 2001; Rout, 1996) can be used as a point of comparison in the analysis of the experiences of DMOs within the T&T context.

Although both categories of doctors generally described their on-call experiences in similar ways, the underlying meanings they ascribed to these descriptions were different. For example, distal doctors attributed their on-call stress to the anxiety related to the unpredictability of the on-call period; "their lack of confidence in the competency of the proximal or junior doctors on-call with them, and in the case of DMOs, the degree of trauma they were exposed to when called out" (Glasgow, 2019, p. 154). On the contrary, proximal doctors defined the meaning of on-call stress as the intensity of the on-call period which required them to be in multiple places concurrently, time restraints, high patient volumes, poor organizational relationships and on-call facilities, and senior doctors' expectations for them to remain available. While past studies have reported on the impact of being on-call on stress (French et al., 2001; Bamberg et al., 2012), they did not necessarily explore the meaning attached to on-call stress due to the use of quantitative methodologies. Other researchers were more speculative in their claims about the underlying factors of on-call stress since those claims were not evidenced in participants' accounts (Heponiemi et al., 2014; Lindfors et al., 2006). The interpretive nature of the current

study, therefore, sheds light on the meanings ascribed to proximal and distal doctors' definitions of on-call stress and how that stress impacted and was impacted by their interactions within their working environments.

Other evaluations were more pronounced in the lives of a particular on-call category relative to the other. For example, the increased clinical exposure that being on proximal call afforded junior doctors featured prominently in their discussions as they explained how it trained them for their current jobs while preparing them for future roles as senior doctors. Previous researchers also found that medical students and doctors on proximal call rated their experiences positively primarily because of the derived educational value (Callaghan et al., 2005; Corriere et al., 2013).

Proximal doctors, particularly those in surgical specialties, also spoke more about feeling fatigued because of their constant physical exposure to work when compared with distal doctors. This was in line with past evidence which showed that reported fatigue among junior doctors and medical students on proximal call was related to the frequency and length of their on-call duties (Balch et al., 2010; Corriere et al., 2013; Heponiemi et al., 2014; Tucker et al., 2010). However, those studies lacked a theoretical perspective, unlike the current study which was framed within the context of the E-R model.

The model assumes that prolonged exposure to physical work demands such as the situation that exists when doctors provide proximal call, restricts recovery because the individual's psychobiological systems remain activated. In addition, proximal doctors' on-call shifts usually preceded or immediately followed their regular shifts, which meant that their energy resources were already often depleted at the start of the on-call period and therefore they had to invest "compensatory effort" to meet their on-call work demands, resulting in an even greater need for recovery post-call (Geurts & Sonnentag, 2006, p. 483). The E-R model thus, explains how proximal on-call doctors might have arrived at their perceptions of their on-call experiences as tiring and in so doing provides a framework within which to understand these perceptions.

While feelings of fatigue were less emphasized in the accounts of the distal doctors, results showed that consistent with previous evidence, this group was specifically tired when mentally confronted with work demands during inactive on-call periods, which made it difficult to psychologically detach from work (Bamberg et al., 2012; Imbernon et al., 1993; Smithers, 1995). As was discussed in the introduction of this paper, the mental preoccupation associated with waiting to be called out places demands on the same resources used for work similar to prolonged physical exposure to work demands (Sonnentag, 2001; Sonnentag & Bayer, 2005).

Therefore, consistent with the E-R model, not only does physical exposure to work demands restrict recovery, but mental exposure due to a lack of psychological detachment (Sonnentag, 2001; Sonnentag & Bayer, 2005). These results were consistent with past studies conducted with distal on-call participants who reported feelings of fatigue and a need for recovery due to

their negative preoccupation with being called out to work during the inactive on-call period. (Smithers, 1995).

Furthermore, the lack of psychological detachment because of negative rumination about work extended beyond the on-call period for both categories of doctors. Evidence in the literature has only emphasized the lack of detachment among distal workers during the inactive on-call period. However, current evidence revealed that the lack of detachment among distal doctors was experienced even when off-call and on vacation. Meanwhile, proximal on-call doctors found it difficult to detach from work post-call due to the constant presence of work contributed in part by the expectation that they remained available to their seniors. The difficulties associated with detaching beyond the on-call period support the argument that effort recovery should be conceptualized as a dynamic process or, in other words, a process about which we are uncertain as to when it starts and stops (Zijlstra et al., 2014) - a limitation of the E-R model. The implications are that an accumulation of negative load effects due to prolonged exposure to work demands can lead to longer-term difficulties for the health and well-being of on-call doctors.

SOs' Evaluations of On-Call

SOs in the current study generally perceived that their partners' on-call working arrangements no longer posed an issue for them, despite the distractions they caused and the concerns they had regarding their partners' safety. This is because they had grown accustomed to it over time. However, only women SOs reported feeling lonely at some point when their partners were on-call. Having grown children was perceived to be a double-edged sword because while it mitigated mothers' experiences when their partners were on-call because of the reduction in their caregiving responsibilities, it also meant that they experienced loneliness when the children left the house. More considerable gendered differences were recognized elsewhere in terms of what being on-call meant for the SOs' family and social lives (Glasgow, 2019).

Conclusion and Limitations

While overall the ambivalent perceptions of the on-call experience as recounted by doctors and SOs were consistent with previous research, the current study emphasized the nuances between proximal and distal on-call systems and in-group distinctions among distal on-call doctors' experiences. Moreover, past studies have been largely silent about a theoretical model within which to frame evaluations of the on-call experience. Meijman and Mulder's (1998) E-R theory was used in this study to understand how both distal and proximal on-call doctors arrived at their evaluations of their experiences. A core component of effort recovery is psychological detachment. Discussions in the on-call literature regarding psychological detachment, however, have occurred only in the context of distal on-call systems and have mainly emphasized the lack of detachment experienced during the on-call period. The current findings show that a lack of psychological detachment applies to both the distal and proximal on-call experiences. Additionally, challenges mentally withdrawing from work occur beyond the on-

call period for both proximal and distal doctors, suggesting longer-term impacts on health and well-being. Finally, the experiences of those who live with on-call doctors, that is, their SOs, provided a more holistic view of the on-call experience. However, the findings were not without limitations.

The aggregated realities of the distal doctors presented here might have been mostly reflective of the realities of the DMOs and not necessarily the experiences of the distal hospital doctors since the distal on-call sample was mainly composed of the former. Therefore, it is unclear if the recruitment of a greater number of distal hospital doctors might have magnified their lived on-call experiences since the DMOs' experiences were described as less stressful.

Additionally, the study contributed to knowledge about the experience of being on-call by sharing the perspectives of those who live with the on-call doctors. However, future researchers should seek to use dyads or match the SOs to the doctors in their studies since more recent research is needed in this area. Issues regarding access to the SOs of doctors should be negotiated before the inclusion of the doctors in the study perhaps by obtaining contact details for their partners as a requirement for them [the doctors] to participate in the research. Nevertheless, "the study offered rich insights into the multi-faceted nature of the on-call experience that was often hidden behind the statistical approaches of past research" (Glasgow, 2019, p. 180).

Recommendations

The requirement to be on-call, especially in one's early medical career, is an enduring component of the profession, and therefore, appropriate strategies should be developed to improve what on-call doctors and SOs characterize as the positive aspects of the on-call experience and to minimize the negative. While individual doctors can assume some degree of responsibility for their health and well-being, organizational interventions which consider the needs within, and across on-call situations or categories, are warranted.

For instance, on-call rosters could be developed in such a manner as to facilitate lengthier recovery periods between on-call shifts or between on-call and regular shifts to alleviate the fatigue experienced among proximal on-call doctors. This is in keeping with the process by which prolonged exposure to work demands impacts recovery from work as per the E-R theory. Supervisors of medical staff would need to be trained in effectively rostering/scheduling their staff, considering the potential long-term effects of the accumulation of negative load reactions from insufficient recovery on employee health and well-being. This recommendation can address claims about the current, untenable on-call rostering of senior doctors locally (Dowlat & Islam, 2023). Furthermore, distal on-call policies could involve the recruitment of more registrars to reduce the likelihood that consultants (senior doctors) on-call will be called out. Additionally, the police could be used on a more consistent basis or other members of the protective services to escort at least female DMOs responding to night calls to and from the

locations of the emergencies they are called to attend to. DMOs should be encouraged to engage with reputable counseling services given the occupational psychological hazards to which they are exposed in their line of work. Furthermore, these services should be made more accessible. Proximal and distal doctors should also be trained to use individual strategies such as relaxation and meditation techniques to address the prolonged lack of psychological detachment, experienced outside the on-call period. Based on the assumptions of the E-R theory, psychological rest from work-related thoughts is required to reverse the negative effects of prolonged work exposure and return the functioning systems to baseline levels. In short, organizational strategies should support individual approaches. While some of these recommendations may have been already raised with and by relevant stakeholders, it is hoped that the evidence presented here will be a catalyst for implementation going forward.

References

Alhojailan, M. I. (2012). Thematic analysis: a critical review of its process and evaluation. *West East Journal of Social Sciences, 1*(1), 39-47. https://www.westeastinstitute.com/journals/wp-content/uploads/2013/02/4-Mohammed-Ibrahim-Alhojailan-Full-Paper-Thematic-Analysis-A-Critical-Review-Of-Its-Process-And-Evaluation.pdf

Alvermann, D.E., & Mallozzi, C.A. (2010). Interpretive research. In A. McGill-Franzen & R. L. Allington (Eds.), *Handbook of reading disability research* (pp. 488-498). Routledge. https://www.researchgate.net/publication/271587826_Interpretive_Research

Balch, C. M., Shanafelt, T. D., Dyrbye, L., Sloan, J. A., Russell, T. R., Bechamps, G. J., & Freischlag, J. A. (2010). Surgeon distress as calibrated by hours worked and nights on call. *Journal of the American College of Surgeons*, *211*(5), 609-619. https://doi.org/10.1016/j.jamcollsurg.2010.06.393

Bamberg, E., Dettmers, J., Funck, H., Krahe, B., & Vahle-Hinz, T. (2012). Effects of on-call work on well-being: Results of a daily survey. *Applied Psychology: Health and Well-Being*, *4*(3), 299-320. https://doi.org/10.1111/j.1758-0854.2012.01075.x

Barbour, R. (2013). Introducing qualitative research: a student's guide. (2nd ed.) Sage. https://books.google.tt/books?hl=en&lr=&id=U6uHAwAAQBAJ&oi=fnd&pg=PP1&dq=Barbour,+R.+(2013).+Introducing+qualitative+research:+a+student%27s+guide.+&ots=5TzHYtq_wK&sig=Gw-mVMfgvr_ZBSK-3scWQaX_Xpw&redir_esc=y#v=onepage&q=Barbour%2C%20R.%20(2013).%20Introducing%20qualitative%20research%3A%20a%20student's%20guide.&f=false

Bazeley, P. (2013). Defending and extending: issues of quality and significance. In J. Seaman (Ed.), Qualitative Data Analysis: Practical Strategies (pp. 401-421). Sage. https://books.google.tt/books?hl=en&lr=&id=33BEAgAAQBAJ&oi=fnd&pg=PP2&ots=4q9ctJLUAI&sig=8EWQjxmhaNXcd6X6wavCRRkLnJU&redir_esc=y#v=onepage&q&f=false

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2014). What can "thematic analysis" offer health and wellbeing researchers? *International Journal of Qualitative Studies On Health and Well-Being*, *9*. https://doi.org/10.3402/qhw.v9.26152

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589-597. https://doi.org/10.1080/2159676X.2019.1628806

Byrne, D. (2022). A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity*, *56*(3), 1391-1412. https://doi.org/10.1007/s11135-021-01182-y

Callaghan, R., Hanna, G., Brown, N., & Vassilas, C. (2005). On call: a valuable training experience for senior house officers? *Psychiatric Bulletin*, *29*(2), 59-61. https://doi.org/10.1192/pb.29.2.59

Clarke, V., & Braun, V. (2014). In A. C. Michalos (Ed.), Encyclopaedia of Quality of Life and Well-Being Research (pp. 6626-6628). Springer. https://doi/10.1007/978-94-007-0753-5_3470

Corriere, M. D., Hanson, J. L., Hemmer, P. A., & Denton, G. D. (2013). Overnight call: a survey of medical student experiences, attitudes, and skills. Teaching and learning in medicine, 25(1), 64-70. https://doi.org/10.1080/10401334.2012.741542

Cuddy, N.J., Keane, A.M., & Murphy, A.W. (2000). Rural general practitioners' experience of the provision of out-of-hours care: a qualitative study. *British Journal of General Practice*, *51*, 286-290. https://bjgp.org/content/bjgp/51/465/286.full.pdf

Derks, D., van Mierlo, H., & Schmitz, E. B. (2014). A diary study on work-related smartphone use, psychological detachment and exhaustion: Examining the role of the perceived segmentation norm. *Journal of Occupational Health Psychology*, *19*(1), 74- 84. https://doi.org/10.1037/a0035076

DiCicco- Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, *40*(4), 314-321. https://doi.org/10.1111/j.1365-2929.2006.02418.x

Doughty, M. (2018, July 17). Doctors are human too. *Trinidad and Tobago Newsday*. Retrieved from https://newsday.co.tt/2018/07/17/doctors-are-human-too/

Dowlat, I. K., & Islam, S. (2023). The challenge associated with the introduction of new surgical services in a rural hospital in Trinidad and Tobago. *International Journal of Research*, *11*(12), 9-18. https://doi.org/10.29121/granthaalayah.v11.i12.2023.5414

Emmett, B. M., Dovey, S. M., & Wheeler, B. J. (2013). After-hours on-call: The effect on paediatricians' spouses and families. *Journal of Paediatricians and Child Health*, *49*(3), 246-250. https://doi.org/10.1111/jpc.12108

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International journal of qualitative methods*, *5*(1), 80-92. https://doi.org/10.1177/160940690600500107

French, D. P., McKinley, R. K., & Hastings, A. (2001). GP stress and patient dissatisfaction with nights on call: An exploratory study - GP stress and patient satisfaction. *Scandinavian Journal of Primary Health Care*, *19*(3), 170-173. https://doi.org/10.1080/028134301316982397

Geurts, S. A., & Sonnentag, S. (2006). Recovery as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment. *Scandinavian Journal of Work, Environment & Health*, *32*(6), 482-492. https://www.jstor.org/stable/40967600

Glasgow, S. (2019). *Being on-call: An exploration of the experiences of doctors and significant others* [Doctoral dissertation, Lancaster University]. Lancaster University Research Directory. https://doi.org/10.17635/lancaster/thesis/808

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. Denzin and Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). http://ankara.lti.cs.cmu.edu/11780/sites/default/files/10- guba_lincoln_94.pdf

https://doi.org/10.1016/j.ajem.2015.01.034

Heponiemi, T., Puttonen, S., & Elovainio, M. (2014). On-call work and physicians' well-being: Testing the potential mediators. *Occupational Medicine*, *4*(64), 352-357. https://doi.org/10.1093/occmed/kqu036

Heponiemi, T., Aalto, A. M., Pekkarinen, L., Siuvatti, E., & Elovainio, M. (2015). Are there high-risk groups among physicians that are more vulnerable to on-call work? *The American Journal of Emergency Medicine*, *33*(5), 614-619.

Imbernon, E., Warret, G., Roitg, C., Chastang, J. F., & Goldberg, M. (1993). Effects on health and social well-being of on-call shifts. An epidemiologic in the French National Electricity and Gas Supply Company. *Journal of Occupational Medicine: Official Publication of the Industrial Medical Association*, *35*(11), 1131-1137. https://europepmc.org/abstract/med/8295038

Irwin, A., Vikman, J., & Ellis, H. (2019). 'No- one knows where you are': veterinary perceptions regarding safety and risk when alone and on- call. *Veterinary Record*, *185*(23), 728-728. https://doi.org/10.1136/vr.105639

Jay, S. M., Aisbett, B., & Ferguson, S. A. (2016). Expectation of a loud alarm is not associated with changes in on-call sleep in the laboratory. *Sleep and Biological Rhythms*, *14*(3), 279-285. https://doi.org/10.1007/s41105-016-0053-y

Jay, S. M., Paterson, J. L., Aisbett, B., & Ferguson, S. A. (2018). No rest for the women: Understanding the impact of on-call work for women in the emergency services. *Chronobiology International*, *35*(6), 827-837. https://doi.org/10.1080/07420528.2018.1466793

Joffe, H. (2012). Thematic analysis. In D. Harper & A. Thompson (Eds.), *Qualitative Research Methods in Mental Health and Psychotherapy*: *A Guide for Students and Practitioners* (pp. 209-223). Wiley-Blackwell.

Karan, S. M., Vincent, G. E., Ferguson, S. A., & Jay, S. M. (2019). The impact of on- call work for partners' sleep, relationship quality and daytime functioning. *Clocks & Sleep*, *1*(1), 185-192. https://doi.org/10.3390/clockssleep1010016

King, N. (2004). Using templates in the thematic analysis of text. In C. Cassell & G. Symon (Eds.). In *Essential Guide to Qualitative Methods in Organizational Research* (p. 256). Sage. https://doi.org/10.4135/9781446280119

Knox, S. & Burkard, A. W. (2009). Qualitative research interviews. *Psychotherapy Research*, *19*(4-5), 566-575. https://doi.org/10.1080/10503300802702105

Koerber, A. & McMichael, L. (2008). Qualitative sampling methods: A primer for technical communicators. *Journal of Business and Technical Communication*, *22*(4), 454-473. https://doi.org/10.1177/1050651908320362

Latham, B. (2007). Sampling: What is it? https://dokumen.tips/documents/sampling-what-is-it.html?page=1

Liamputtong, P. (2009). Qualitative data analysis: conceptual and practical considerations. *Health Promotion Journal of Australia, 20*(2), 133-139. https://doi.org/10.1071/HE09133

Lindfors, P. M., Nurmi, K. E., Meretoja, O. A., Luukkonen, R. A., Vilijanen, A. M., Leino, T. J., & Harma, M. I. (2006). On-call stress among Finnish anaesthetists. *Anaesthesia*, *61*(9), 856-866. https://doi.org/10.1111/j.1365-2044.2006.04749.x

Mason, J. (2002). Organizing and indexing qualitative data. In M. Ainsley (Ed.), Qualitative Researching. (2nd ed., pp. 147-172). Sage.

Marshall, M. N. (1996). Sampling for qualitative research. *Family Practice*, *13*(6), 522- 526. https://doi.org/10.1093/fampra/13.6.522

Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J.D. Drenth, H. Thierry & C. J. de Wolff (Eds.), *Handbook of work and organizational psychology Volume 2*: *Work psychology* (2nd ed., pp. 5-28). Psychology Press.

Nayak, B. S., Sahu, P. K., Ramsaroop, K., Maharaj, S., Mootoo, W., Khan, S., & Extavour, R. M. (2021). Prevalence and factors associated with depression, anxiety and stress among healthcare workers of Trinidad and Tobago during COVID-19 pandemic: A cross-sectional study. *BMJ Open*, *11*(4), e044397. https://doi.org/10.1136/bmjopen-2020-044397

Nicol, A., & Botterill, J. S. (2004). On-call work and health: A review. *Environmental Health: A Global Access Science Source*. *BioMed Central*, *3*(15). https://doi.org/10.1186/1476-069X-3-15

Ormston, R., Spencer, L., Barnard, M., & Snape, D. (2014). The foundations of qualitative research. In J. Ritchie, J. Lewis, C. M. Nicolls and R. Ormston (Eds.), *Qualitative research practice: A Guide for Social Science Students and Researchers* (2nd ed., pp. 1-26). Sage.

Pope, C., Ziebland, S., & Mays, N. (2000). Analysing qualitative data. *British medical journal*, *320*(7227), 114-116. https://doi.org/10.1136/bmj.320.7227.114

Rout, U. (1996). Stress among general practitioners and their spouses: a qualitative study? *British Journal of General Practice*, *46*(404), 157-160. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1239574/pdf/brjgenprac00010- 0033.pdf

Smith, J., & Firth, J. (2011). Qualitative data analysis: The framework approach. *Nurse Researcher*, *18*(2), 52-62. https://doi.org/10.7748/nr2011.01.18.2.52.c8284

Smithers, F. (1995). The pattern and effect of on call work in transplant co-ordinators in the United Kingdom'. *International Journal of Nursing Studies*, *32*(5), 469-483. https://doi.org/10.1016/0020-7489(95)00008-L

Sonnentag, S. (2001). Work, recovery activities, and individual well-being: A diary study. *Journal of Occupational Health Psychology*, *6*(3), 196-210. https://doi.org/10.1037/1076-8998.6.3.196

Sonnentag, S. (2011). Recovery from fatigue: The role of psychological detachment. In P. L. Ackerman (Ed.), *Cognitive fatigue*: *Multidisciplinary perspectives on current research and future applications* (pp. 253-272). American Psychological Association. https://doi.org/10.1037/12343-012

Sonnentag, S., & Bayer, U. V. (2005). Switching off mentally: Predictors and consequences of psychological detachment from work during off-job time. *Journal of Occupational Health Psychology*, *10*(4), 393- 414. https://doi.org/10.1037/1076-8998.10.4.393

Sonnentag, S., Binnewies, C., & Mojza, E. J. (2008). " Did you have a nice evening?" A day-level study on recovery experiences, sleep, and affect. *Journal of Applied Psychology*, *93*(3), 674-684. https://doi.org/10.1037/0021-9010.93.3.674

Sonnentag, S., & Fritz, C. (2015). Recovery from job stress: The stressor- detachment model as an integrative framework. *Journal of Organizational Behavior*, *36*(S1), S72- S103. https://doi.org/10.1002/job.1924

Spencer, L., Ritchie, J., Ormston, R., O'Connor, W., & Barnard, M. (2014). Analysis: Principles and Processes. In Ritchie, J., Lewis, J., Nicholls, C.M. and Ormston, R., (Eds.). *Qualitative research practice: A Guide for Social Science Students and Researchers* (2nd ed., pp. 269-294). https://books.google.tt/books?hl=en&lr=&id=EQSIAwAAQBAJ&oi=fnd&pg=PA1&dq=Spencer,+L.,+Ritchie,+J.,+Ormston,+R.,+O%E2%80%99Connor,+W.,+%26+Barnard,+M.+(2014).+Analysis:+Principles+and+Processes.+In+Ritchie,+J.,+Lewis,+J.,+Nicholls,+C.M.+and+Ormston,+R.,+(Eds.).+Qualitative+research+practice:+A+Guide+for+Social+Science+Students+and+Researchers+(2nd+ed.,+pp.+269-294).&ots=l0RMlpVy4J&sig=L9EAqbSsT2Wggrfk-5h1p-iOWS8&redir_esc=y#v=onepage&q&f=false

Tucker, P., Brown, M., Dahlgren, A., Davies, G., Ebden, P., Folkard, S., & Åkerstedt, T. (2010). The impact of junior doctors' worktime arrangements on their fatigue and well-being. *Scandinavian Journal of Work, Environment & Health*, 458-465. https://doi.org/10.5271/sjweh.2985

van Der Hulst, M., & Geurts, S. (2001). Associations between overtime and psychological health in high and low reward jobs. *Work and Stress*, *15*(3), 227-240. https://doi.org/10.1080/026783701110.1080/02678370110066580

Youssef, F. F. (2016). Medical student stress, burnout and depression in Trinidad and Tobago. *Academic Psychiatry*, *40*(1), 69-75. https://doi.org/10.1007/s40596-015-0468-9

Ziebertz, C. M., van Hooff, M. L., Beckers, D. G., Hooftman, W. E., Kompier, M. A., & Geurts, S. A., (2015). The relationship of on-call work with fatigue, work-home interference, and perceived performance difficulties. *Biomed Research International*. https://onlinelibrary.wiley.com/doi/10.1155/2015/643413

Zijlstra, F. R. H., Cropley, M., & Rydstedt, L. W. (2014). From recovery to regulation: An attempt to reconceptualize 'recovery from work'. *Stress and Health*, *30*(3), 244-252. https://doi.org/10.1002/smi.2604

Zoupanou, Z., Cropley, M., & Rydstedt, L. W. (2013). Recovery after work: The role of work beliefs in the unwinding process. *PLoS One*, *8*(12), e81381. https://doi.org/10.1371/journal.pone.0081381

Local Content Policy Framework: Capturing More Value Added for Trinidad and Tobago and Guyana

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Abstract

Trinidad and Tobago (T&T) and Guyana, have active hydrocarbon industries. While the countries are different, they are considered as they are both Caribbean Community (CARICOM) Member States, and they are presently exporters of crude oil. T&T's hydrocarbon industry is old, spanning more than a century. Guyana is relatively a new entrant to the hydrocarbon industry as commercial reserves of crude oil were only discovered in 2015. However, the countries' capture of their fair share of the hydrocarbon rents will not automatically occur. It is against this concern for both countries to capture the best value of their natural resource rents that this study seeks to review successful local content policies, outline the key requirements for a successful local content policy, and provide local content policy recommendations for the hydrocarbon producers in the CARICOM region. Document analysis is used to review the case studies from several countries to provide valuable lessons for T&T and Guyana. Indeed, the experiences of several countries, such as Nigeria, Norway, Ghana, and Botswana, reflect the potential for value creation through the development of partnerships. Moreover, the experience of Trinidad Offshore Fabricators Ltd. (TOFCO) in T&T demonstrates the effectiveness of partnerships in building local capacity. Therefore, this study argues in favour of the development of joint ventures to facilitate knowledge and skill spillover as well as technology transfer. Furthermore, this study argues in favour of the use of partnerships between the private sector and local academic institutions to help build local capacity.

Keywords: Local Content Policy, Local Content Requirements, Oil Rents, Hydrocarbon Rich CARICOM Countries

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Introduction

Many countries are fortunate to be endowed with commercial reserves of hydrocarbon resources. Many developing countries often lack the physical and financial capital as well as the technical expertise to monetize their hydrocarbon resources on their own. Subsequently, they turn to multinational energy companies to provide the much-needed support. While this allows the hydrocarbon resource-rich countries to earn revenue, the capacity deficiencies often result in much of the potential value added by the hydrocarbon-rich countries escaping the grasp of the national stakeholders. Moreover, the local hydrocarbon industry becomes dominated by multinational energy companies, and the national stakeholders can become mere spectators to their natural resource wealth rather than active players.

A large amount of the hydrocarbon rents is often siphoned off by foreign firms for upstream services such as Fabrication, Engineering Procurement Construction (EPC), Front End Engineering Design (FEED), conceptual designs, and seismic studies. This escape of hydrocarbon rents is a manifestation of capital flight, as the profits from the foreign firms are repatriated abroad. What is more troublesome is the rents effectively go to the home countries of the multinational companies, which in most cases are developed countries, thus providing employment and income-earning opportunities for foreigners rather than the citizens of hydrocarbon-rich countries. The main reason often pitched by multinational corporations to justify this escape of hydrocarbon rents from hydrocarbon-rich countries is that they allegedly lack the requisite skills, technical expertise, manpower, and production capacity of indigenous firms (Aneke, 2002; Ariweriokuma, 2009).

Despite these facets, the hydrocarbon industry does not have to be an enclave that excludes the participation of national players. Nor does it have to be a cashbasin with the bulk of the rents consistently leaking out to foreign stakeholders. The literature has long recognized that the initial participation and value-capturing deficiencies can be corrected through local content requirements (LCRs) and local content policy (LCP).

LCRs refer to the specific requirements established by governments, for the firms operating in the local hydrocarbon industry to use a minimum amount of local inputs. This includes both goods as well as labor. LCRs are implemented to reduce the disadvantages that domestic producers inherently face concerning foreign competitors to supply goods or labor services. LCR can help local stakeholders win contracts, develop capacity, acquire knowledge and technical skills, and strengthen inter-sectoral linkages (OECD, 2016).

LCP refers to the overall policy framework that encourages the use of local inputs in the hydrocarbon industry. LCP is the policy framework that allows the national stakeholders to capture a greater share and participation of the local hydrocarbon rents. A LCP can include LCRs to ensure that certain percentages of local inputs are used by foreign players in the local hydrocarbon industry. LCP is also a subset of a broader category of policy intervention referred

to as productive development policies (PDP), which seek to promote the development of specific sectors of the economy (Tordo et al., 2013).

In the Caribbean Community (CARICOM), Trinidad and Tobago (T&T) and Guyana, have active hydrocarbon industries. T&T's hydrocarbon industry is old, spanning more than a century. The country has experience producing and exporting crude oil, natural gas, and downstream oil and gas products.

Guyana is relatively a new entrant to the hydrocarbon industry, as commercial reserves of crude oil were only discovered in 2015. Guyana commenced the export of unrefined crude oil in 2020. Natural gas deposits have been found associated with crude oil deposits, but by the end of 2021, there was no infrastructure in Guyana to facilitate the export of gas through a pipeline to neighboring countries or as liquefied natural gas (LNG) to importing terminals.

From the second half of 2020 to the first quarter of 2022, oil prices were on an upward trend. Oil prices became so bullish that on Monday 7 March, 2022, both Brent and West Texas Intermediate (WTI), the 2 major benchmarks for oil prices, crossed US$130/ bbl, within the trading day. While the reason for the jump in oil prices in February into March was the Russia-Ukraine war, several other factors were contributing to the bullish prices. Certainly, bullish oil prices provide an excellent opportunity for both T&T and Guyana to capture oil rents. Additionally, there would be opportunity to strengthen forward and backward linkages during this bullish period to build resilience in future bearish periods.

It is against this concern to capture the best value of its natural resource rents that Guyana passed a local content policy law in 2021, to help stimulate the country's industrial development, increase local capability, build a skilled workforce and create a competitive supplier base. Unfortunately, T&T's LCP is old and dates back to 2004. Apart from the LCRs introduced for procurement in the hydrocarbon sector in 2006, nothing was done over the past decade to improve T&T's local participation and capture value added from the hydrocarbon sector.

The objectives of this study are to:

- review successful local content policies;
- outline the key requirements for a successful local content policy; and
- provide local content policy recommendations for the hydrocarbon producers in the CARICOM region.

The remainder of this study is structured as follows. Section 2 presents an overview of the literature on what is local-content in the hydrocarbon sector. Section 3 outlines the methodology for this study. Section 4 considers some case studies of countries with LCPs. Section 5 indicates the key characteristics that should be embodied in a LCP. Section 6 assesses

the World Trade Organization's (WTO's) rules which are an obstacle to local content requirements. Section 7 explores the political economy of the hydrocarbon industry in Guyana and T&T. Section 8 provides recommendations that could be useful for the Governments of T&T and Guyana in the strengthening of their local content policies, to build local productive capacity. Section 9 concludes the study.

Literature Review of Local Content and Industrial Policy

The historical overview of the relationship between the multinational petroleum corporations and developing oil-producing countries could be classified into three different eras, namely the domination, the confrontation era, and the negotiations era (Absusharaf, 1999). The domination era covers the period from the 1850s to the 1960s. During this period, many European countries were the world superpowers that dominated international trade and commerce. Many of these countries were colonizers that controlled the natural resources, governance, and political affairs in their colonies, which were developing countries. The petroleum sector, was just another resource-based sector under European control, and thus the contractual relationships reflected this paradigm. As a result, the concession regime for the petroleum sector granted multinational petroleum companies large acreage for exploration and production, significant control over the development of the hydrocarbon resources, and low royalty taxes to be paid to the host governments. This business model allowed significant hydrocarbon rents to be distributed to multinational corporations, and little rent was left as a residue for the host governments (Absusharaf, 1999).

The confrontation era covers the 1960s to the 1970s. This was a period in which many former European colonies managed to obtain independence, often through conflict. Despite winning political independence, newly independent states continued to experience economic imperialism, which was interpreted as a continuation of colonialism, albeit conducted by private firms such as multinational oil companies (MNOCs). This economic imperialism was seen as a challenge to the economic and self-determination of developing countries. The Group of 77 was established at the United Nations (UN) General Assembly to advocate for the interests of newly independent states, resulting in the development of the New International Economic Order (NIEO), which emphasized the importance of economic and self-determination for political independence (Absusharaf, 1999).

One key area of concern for many developing countries was the dominance of MNOCs in their resource sectors, particularly the oil industry. These countries believed that the traditional concession regime had deprived them of patrimony over the ownership and marketing of their petroleum, leading to a preference for expropriation and nationalization as opposed to regulatory control of MNOCs' behaviour (Absusharaf, 1999).

There were several reasons for this preference for nationalization. Firstly, MNOCs domiciled in the former colonies held the majority of oil investment profits, which deprived developing countries of significant revenues. Secondly, these companies owned politically-sensitive and

strategic natural resource industries, generating large volumes of foreign exchange for MNOCs instead of national governments. The rise of socialist leaders in developing oil-producing countries led to the adoption of expropriation and nationalization measures as a means of reducing dependency on external actors and increasing internal capabilities and resources (Absusharaf, 1999).

National oil companies were established to take over MNOCs' operations, resulting in the almost complete nationalization of politically-sensitive and strategic industries. Examples include Nigeria's National Petroleum Company (NNPC) in 1977 (Igbokwe, 1997), Trinidad and Tobago Oil Company Limited (TRINTOC) in 1974 (GORTT MEEI, 2023), and the Petróleos de Venezuela S.A. (PDVSA) in 1976 (Lander & Margarita, 2003). The negotiation era covers from the 1980s to the present. The oil shocks in the early 1970s and the subsequent debt crisis in the early 1980s had a significant impact on the economies of developing oil-producing countries. These events highlighted the need for these countries to generate more oil revenues to address economic constraints and fund their petroleum development programmes. As a result, they began to encourage foreign participation in oil investment and renegotiate new agreements with MNOCs (Absusharaf, 1999).

The nature of these present dealings has been described as a "bilateral monopoly". This refers to a situation in which both the host country and MNOCs have significant bargaining power in negotiations. On the one hand, MNOCs have control over capital, technology, management, and market skills needed to launch any project successfully. On the other hand, the host country exercises ownership over its petroleum resources, which are the basis of any oil investment project. The concept of bilateral monopoly is important because it highlights the complex and often contentious nature of negotiations between host countries and MNOCs. Host countries seek to maximize their share of oil revenues while MNOCs seek to maximize their return on investment. Both parties have significant bargaining power, which can lead to protracted negotiations and disputes.

This gives rise to the issue of local content. Host countries seek to maximize the benefits of their petroleum resources, which often includes the development of local industries and the creation of jobs for their citizens. However, local players may lack the technical skills and capital necessary to fully participate in the industry. On the other hand, MNOCs have significant technical capacity as they have invested heavily in research and development, as well as in the acquisition of advanced technology and equipment. These companies also have access to significant financial resources, which they can use to fund expensive exploration and production activities. As MNOCs seek to maximize their profits and minimize costs, it often means sourcing goods and services from their own countries. This power imbalance can only be corrected through local content policy.

The literature is replete with studies on how LCP can be used to capture economic rents as well as increase local participation in the hydrocarbon industry (Aneke, 2002; Ariweriokuma, 2009;

Acheampong et al., 2016). Compared to other goods-producing sectors of an economy, the development of inter-sectoral linkages in the hydrocarbon sector is challenging largely due to the unique disposition of the hydrocarbon sector in terms of capital outlay, technological intensity, and high skill requirements to produce output. For host governments, the proclivity towards increasing value addition effectively means creating local employment by replacing domestic labor with foreign labor. For the multinational hydrocarbon companies operating in hydrocarbon-rich countries, the trade-off is defined by the compromises (such as accepting less experienced labor, goods, and service providers) they make to access the hydrocarbon resources.

Since the introduction of the local-content framework by the Government of Norway in the 1970s, there has been an observable paradigm shift from the ad-hoc corporate social responsibility (CSR) model to one where the government seeks to get more of its local stakeholders involved in high-value skilled activities. Grossman (1981) introduced the term "local content" to the academic literature. However, there have been varying definitions by countries on what is local content. For instance, Ghana defines local content as

> the quantum/percentage of locally produced materials, personnel, financing, goods and services rendered to the oil industry and which can be measured in monetary terms (GORG, 2013, p. 27).

While Tanzania Local Content Policy for the Oil and Gas Industry defines local content as

> the added value brought to the country in the activities of the oil and gas industry in the United Republic of Tanzania through the participation and development of local Tanzanians and local businesses through national labour, technology, goods, services, capital, and research capability (URT, 2014, p. iii), and
>
> the added value brought to a host nation (and regional and local areas in that country) through the activities of the oil and gas industry (URT, 2014, p. 7).

Whereas Warner (2007), equates local content to "community content", and defines it as

> the strategic deployment of local participation and local capability development opportunities arising from an oil or gas project, specifically directed to strengthen the sustainability, relevance and political visibility of community investment programmes
>
> (p. 5).

Ackah & Mohammed (2018) express

> Local content refers to jobs or value-added that are created anywhere in the domestic economy as a result of the actions of an oil and gas company. It can also refer more narrowly to jobs that are created in the neighbourhood of the oil production plant. Local content may even refer to the provision, by the oil company, of infrastructure (schools, medical facilities) that is not an input into its own production but intended for the benefit of the local population—either of the nation generally or the neighbourhood of the installations (p. 3).

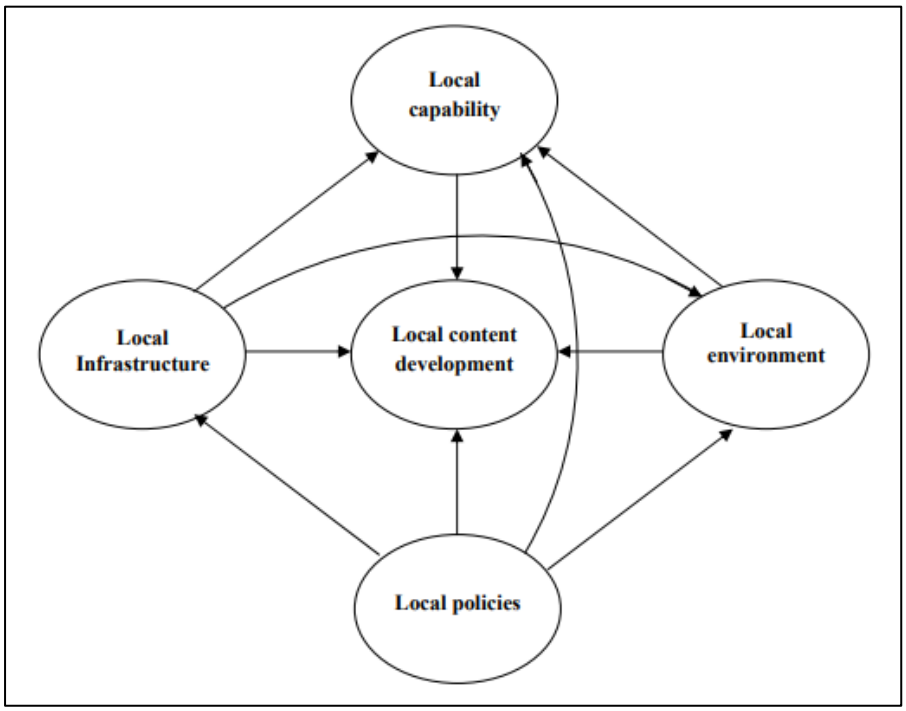
Acheampong et al. (2016) explain that LCPs fall within a broader category of policies referred to as "industrial policies" or "productive development policies" (PDPs). These policies seek to increase the shares of employment, services, manufacturing provisions, and the local capture of value from the hydrocarbon value chain.

Local content has been defined in terms of the value contributed to the national economy through the purchase of national goods and services. Such definition considers the government measures, requirements, and regulations that ensure that a particular portion of a good or product is produced within a specific geographical area but serve to persuade businesses to use domestically produced, rather than imported, parts or other inputs (Arthur & Arthur, 2014). It is in this vein that many developing countries now espouse a local content policy, to help capture more value by linking the hydrocarbon sector to other sectors of the economy. This in turn should enhance the domestic industrial base, create employment, and develop the local productive capacity of entrepreneurs in the economy. This should have a multiplier effect that will create other benefits such as infrastructure development, technology transfer, and promoting innovation (Arthur & Arthur, 2014).

Kazzazi and Nouri (2012) provide a conceptual model of how various factors interact to create value for the host petroleum sector. Figure 1 depicts how local content development can be the central objective (of a government), and how it may be interrelated with 4 corresponding factors, namely local policies, local infrastructure, local environment and local capabilities.

Figure 1

Conceptual Model for Local Content Development in the Hydrocarbon Industry



Source: Kazzazi & Nouri (2012)

Kazzazi & Nouri (2012) also posit that each of the 4 factors is affected by other variables. Table 1 summarizes the relationships.

Table 1

Variables Affecting the 4 Factors/ Determinants of Local Content

Factors	Affecting Variables
Local Policies	Public policies Industrial policies
Local infrastructure	Information technology Local companies' needs Standards Social infrastructure Educational infrastructure Institutional infrastructure Business development infrastructure
Local environment	Macroeconomic environment Investments and business environment
Local capabilities	Local companies' capabilities Education Skills and expertise development Technology and know-how transfer capacity Research and development capabilities

Source: Kazzazi & Nouri (2012)

Kazzazi and Nouri's (2012) conceptual model includes key factors affecting local content development. They acknowledge that local content promotion varies significantly between countries, depending on their state of economic, political, and social development. Moreover, the only thing that is constant across countries is the need for policymakers to stay dedicated to the task of local capacity building.

Economic diversification and the pursuit of industrial policies that develop optimal production linkages are also key to achieving local content. These production linkages include backward linkages, which refer to the inputs used for the production of the staple; forward linkages, which refer to the additional processing of the staple for local use or export; fiscal linkages, which refer to the host government's taxation of all activities associated with the production of the staple; and demand linkages, which refer to the multiplier effect arising from local consumer spending. The development of these linkages also helps a country avoid the resource curse.

Local Content vs Local Participation and Ownership

Despite the potential of LCP, its mere existence on paper does not automatically guarantee increased local participation. Many developing countries have passed laws and policies to increase local content, but in practice, there is no real improvement in local content. This can be seen from the aspects of value capture and ownership.

For instance, at one level, a LCP may facilitate increase in the ratio of the number of nationals to foreigners that are directly employed in the hydrocarbon industry in a country. However, it does not increase the share of the value captured by the locals. In fact, there could be significant differences between the salaries, incomes, and rents captured by locals and ex-pats (Nabatchi, 2012).

Another deficiency may be the gaps in ownership. The LCP may encourage nationals to be employed, but there is insufficient capacity development to allow the locals to develop companies that can capture a larger proportion of the hydrocarbon rents. Therefore, locals' participation may be predominantly restricted to labor, while foreigners' participation includes ownership of business and capital (Webler, 1995). Additionally, too much reliance on LCRs can increase project costs, especially when local producers are significantly less cost-effective than foreign producers. This has implications for the implementation of projects, especially in the oil refining industry where there are tight gross margins. Indeed, a government must delicately balance these interests when crafting a LCP.

Methodology

The methodology used for this study is document analysis. Document analysis is a research method used to review and evaluate a variety of documents, both printed and electronic, to gain a deeper understanding of a particular phenomenon or topic. The primary purpose of document analysis is to elicit meaning, gain understanding, and develop empirical knowledge by examining and interpreting data contained in the documents (Bowen, 2009).

The types of documents that can be used for systematic evaluation as part of a study are diverse and can include advertisements, meeting minutes, manuals, books, diaries, event programmes,

letters, maps, newspapers, press releases, reports, survey data, and other public records. In document analysis, researchers typically review prior literature and incorporate that information into their reports. Documents can serve various purposes in research, providing valuable data and insights that can contribute to a deeper understanding of a phenomenon or topic. Some specific functions of documentary material in research include the following:

1. Providing context and historical insight: Documents can provide background information and historical context that can help researchers understand the roots of specific issues and the conditions that influence the phenomena under investigation.
2. Suggesting questions and situations be observed: Information contained in documents can suggest questions that need to be asked and situations that need to be observed as part of the research.
3. Providing supplementary data: Documents can provide valuable additional data to supplement other research methods. Researchers can browse library catalogs and archives for relevant documents to analyze as part of the research process.
4. Tracking change and development: Documents that are available in multiple drafts can provide a means of tracking changes and developments over time. Even subtle changes in a document can reflect substantive developments in a project or issue.
5. Verifying findings and corroborating evidence: Documents can be analyzed to verify findings or corroborate evidence from other sources. If the documentary evidence contradicts other data sources, further investigation is required. When information from different sources converges, readers of the research report usually have greater confidence in the trustworthiness of the findings (Bowen, 2009).

In summary, documents can provide a range of benefits to researchers, including providing context and historical insight, suggesting questions and situations to be observed, providing supplementary data, tracking change and development, and verifying findings and corroborating evidence (Bowen, 2009).

This study applies document analysis by identifying documents related to local content policy in Guyana and T&T. This includes government policies, reports, legislation, news articles, and other relevant documents. Unfortunately, there is relatively scarce literature on this subject for both countries. Therefore, this study uses as many relevant documents as possible.

To identify the documents, searches were performed on several online databases including Google Scholar, JSTOR, and ProQuest. These databases were selected as they can provide access to academic journals, reports, and other published materials related to local content policy in both countries. Second, searches were performed on the websites of relevant government agencies in Guyana and T&T, such as the Ministry of Energy and Energy Industries (MEEI) in T&T, and the Ministry of Natural Resources in Guyana to access polic documents and reports. Third, searches were performed on online news sources for both

countries for articles related to local content policy. The resulting documents were used to help craft this study.

Country Case Studies of Local Content Policy

Several developing countries have successfully utilized local content policies. Notable success cases include Nigeria, Ghana, and Botswana.

Nigeria's Local Content Policy

Oil was first discovered in Nigeria, an African country, in 1956 (Unam et al., 2012). Since then, hydrocarbons have grown in importance for the country, accounting for 96% of the country's total export revenue and 75% of government revenue (IMF, 2018). The country has grown to become a key player in the international hydrocarbon market, as it is the largest oil producer in Africa, the 10th largest oil exporter in the world, and 5th largest oil exporter of crude oil to the United States (US) (Unam et al., 2012). Despite the windfall rents generated by the hydrocarbon industry, its effectiveness in improving the lives of the people in Nigeria has been limited. Several authors (Aneke, 2002; Ariweriokuma, 2009; and Unam et al., 2012) attribute this deficiency to low local content. Consequently, there was a weak spillover of capital, skills, and productive capacity to local entrepreneurs and indigenous labour.

The relevance of the hydrocarbon industry service sector cannot be overemphasized. The upstream sector services industry can account for up to 90% of the total cost of producing one barrel of oil (Unam et al., 2012). Therefore, significant value can be captured by local stakeholders if there is increased participation in the hydrocarbon value chain. Rossi (2011) asserts that regardless of a country's endowments in hydrocarbon natural resources, and its experience in the production and export of hydrocarbons, without the implementation of the appropriate economic policies, the monetized revenues of hydrocarbon resources will not render prosperity to the majority of the people in the country.

After the return to democracy in 1999, the Federal Government of Nigeria sought to address its country's weak participation and extraction of value in the hydrocarbon industry. Subsequently in 2000, the government introduced its National Local Content Policy. The initial targets were to achieve 45% local content participation by 2007 and 70% by 2010. Unfortunately, the government's targets were not achieved. In 2010, the government passed supplementary legislation that mandated the multinational companies operating in the hydrocarbon industry in Nigeria to grant preference to capable Nigerian companies in the award of hydrocarbon service contracts (Unam et al., 2012).

After 2010, the Content Development Act facilitated the development of local capacity in Nigeria. This was a blend of participation with local entrepreneurs and foreign companies

through joint venture partnerships. Shell, a multinational oil company, continues to be the dominant player, as it produces more than 50% of Nigeria's oil. Local oil companies participate through the marginal field programme, which is essentially a farm-out programme. The Guidelines for Farm-out and Operation of Marginal Fields 2013 complement the Content Development Act as they allow only local companies to be considered for farm-out leasing arrangements. Foreign companies are allowed to indirectly participate through technical partnerships, where the foreigner holds less than 51% equity in the joint venture. This structure allows for the spillover of technical capabilities from foreigners to the locals.

Apart from the granting of preference to Nigerian entrepreneurs, the Content Development Act establishes:

- The Nigerian Content Development and Monitoring Board with the mandate to monitor, coordinate, and implement the Act.
- The Nigerian Content Consultative Forum acts as a platform for sharing information.
- The minimum Nigerian content for all hydrocarbon projects. The local content is measured by the number of man-hours worked for the duration of a project, the tonnage and volume of certain goods, and the percentage of spending for procurement of local goods and services.
- The mandate for some services to only be allocated to Nigerian companies. The services include:
    - the procurement of pipeline systems, risers, and steel pipes;
    - three dimensions and two dimensions of seismic data acquisition;
    - field development plans;
    - marine moving services; and
    - waste disposal/drainage services and industrial cleaning services.
- That mandate for foreign companies to demonstrate that a minimum of 50% of the equipment used in the operations are owned by Nigerian companies. (This provision was introduced to ensure high-end machinery is not repatriated back to the foreign country upon the completion of projects. It also ensures that some Nigerians are allowed to purchase and acquire equipment).
- The mandate is that Nigerians are employed in junior positions. (This allows for the training of Nigerians by experienced ex-pats).
- The Joint Qualification System, allows for a local skills database, which allows local skills to be matched with projects that require them (Acheampong et al., 2016).

Nigeria's Content Development Act allows for the leveling of the playing field between local entrepreneurs and foreign companies.

Ghana's Local Content Policy

In 2007, a consortium of Kosmos Energy Ghana, Tullow Ghana Limited, Anadarko Petroleum Corporation, Sabre Oil and Gas Holdings Limited, the E.O. Group, and the Ghana National Petroleum Corporation (GNPC) discovered commercial reserves of hydrocarbons in the offshore Tano/Cape Three Points Basin, Ghana (Ackah & Mohammed, 2018). First oil was achieved in the last quarter of 2010 (Acheampong et al., 2016).

Recognizing the potential for oil wealth to be divorced from economic capacity development, in 2010 the Government of Ghana piloted the Local Content Policy. The objectives of Ghana's Local Content Policy were as follows:

- to maximize the benefits of oil and gas wealth generation by maximizing the use of local expertise, goods, and services.
- to develop local capability in all aspects of the hydrocarbon value chain through education, training, transfer of technology, and skills spillover;
- to achieve a degree of local influence or control over the local hydrocarbon industry;
- to achieve at least 90% local content and local participation in all aspects of the hydrocarbon value chain within a decade;
- to increase the capabilities and improve the competitiveness of domestic businesses; and
- to create supporting industries for the larger hydrocarbon industry, to help sustain economic development in Ghana.

Ghana's Local Content Policy mandates that:

- Ghanaian entrepreneurs are given priority for the award of oil blocks, oil field licenses, and oil extraction licenses in all upstream projects.
- Regarding goods and services provision, foreign companies are required to use local inputs as much as possible.
- In terms of employment, foreign companies are required to provide employment opportunities to Ghanaians as far as possible. The operator is also required to submit a detailed Annual Recruitment and Training Programme Report to the Petroleum Commission. The report should outline the operator's plans for the recruitment and training of Ghanaians in all operations, within 12 months of the grant of an exploration and production (E&P) license. Additionally, at least 50% of management staff should be Ghanaians at the grant of the E&P license, and 80% after 5 years; at least 30% of technical staff at the beginning and 80% after 5 years; and 100% of non-technical support staff.
- Regarding training, all operators should provide for the training of Ghanaians in all aspects of petroleum operations. This should be done through scholarships, financial

support for education, and practical internships for graduates (Ackah & Mohammed, 2018).

To complement the implementation of the Local Content Policy, in 2013, the government passed the Petroleum Local Content and Local Participation in Petroleum Activities Regulations. The Regulations mandate:

- That every petroleum license granted to a foreign company must have at least 5% equity participation by indigenous Ghanaian companies.
- The foreign companies submit plans to the Petroleum Commission regarding their compliance with local content requirements for the provision of goods and services. For projects, the operators use at least 10% local content of goods and services at the start. This should increase to 50% within 5 years, and range between 60% and 90% after 10 years. Notably, no country has ever achieved 90% local content in the entire hydrocarbon value chain. The highest achieved thus far was 74%, and it was done by Norway.
- The establishment of a Common Qualification System (CQS). The CQS creates a framework for the sole system for the registration and pre-qualification of local contractors. This encourages local companies to be given a fair chance to be considered to supply various goods and services for project activities.
- The introduction of penalties for non-compliance with the regulations. The regulations deem the following as offenses:
    - The refusal to submit a plan or report for the recruitment and training of Ghanaians in all operations, within 12 months of the grant of an E&P license.
    - The falsification of information in any report submitted to the Petroleum Commission, Ministry, or government agency.
    - The non-compliance with the LCR for the employment of Ghanaians.
    - The non-compliance with the LCR for the minimum equity participation of Ghanaians.
    - Fraudulently using a person to act as a front for a Ghanaian company to achieve local content in an attempt to deceive the Petroleum Commission (GORG, 2013).

Norway's Local Content Policy

Norway successfully managed to transition from a country that held no capabilities in the hydrocarbon sector in the late 1960s to a competitive provider of a variety of oil field equipment and services. Norway does not have a LCP or local content regulations, nor is the term "local content" specified in any of its laws. Nevertheless, its strong local content was achieved through the crafting of its laws. The Petroleum Act and the Petroleum Regulations provide the legal framework for the government's control of its country's hydrocarbon industry. The

Petroleum Act vests all petroleum reserves to the state, and as a result, all E&P operators must obtain licenses to conduct E&P activities. This is a normal practice for the petroleum industry.

In the 1970s, the government used its control of its country's hydrocarbon industry to require Norwegian companies to be selected for contracts even when they were not the most competitive in price, quality, and delivery. In other words, the government only awarded E&P licenses to foreign companies on the condition that they showed preference for Norwegian companies for sub-contracting works. This was formalized when the government passed the Royal Decree in 1972 (Sachs & Maennling, 2015).

Several newly formed companies in the 1970s did not have the financial and technical capacity to undertake various projects. Nevertheless, these companies were still given preference for work and were encouraged to form partnerships with foreign firms to procure the capacity to undertake various project activities. This simple approach allowed the local firms to develop technical capacity, grow their financial capital from profits, and gain technology and physical capital from completed projects. In addition to the technology transfer, foreign companies brought their connections with international supply chains (Sachs & Maennling, 2015; Acheampong et al., 2016).

All bidding rounds between 1974 and 1994 provided preferential treatment to Norwegian companies in the awarding of contracts (Sachs & Maennling, 2015). The government also promoted a supplier development programme, which helped develop backward and forward linkages between Norwegian suppliers and the hydrocarbon industry. This encourages spillover and capacity development in horizontal industries. For example, capacity development occurred in the metals processing and shipbuilding and repair industries, both of which complement the upstream hydrocarbon industry. The government also negotiated with oil companies by offering them concessions and incentives to collaborate with Norwegian universities to undertake research and develop local education capacity. As a result of these preferential initiatives, Norway developed strong educational training programmes, a highly skilled and competent labor force, competitive local service contractors and goods providers, and a strong enabling environment to create more entrepreneurs even in new niches (Acheampong et al., 2016).

Certainly, the development of strong backward and forward linkages with the hydrocarbon industry allowed Norway to achieve both vertical and horizontal diversification. The preferential treatment for the local suppliers allowed the country to capture a high proportion of the value added from its hydrocarbon industry. Later in 1994, Norway joined the European Union (EU) and was required to disband these local content preferences. However, by 1994 these preferences were not required since Norwegian companies had already grown to become competitive firms with strong capacity and did not need preferential treatment to win contracts (Sachs & Maennling, 2015).

Botswana Local Content Policy

Botswana, a country in Africa, provides a success story with local content in the diamond industry. This case study is considered as it provides lessons that can be applied by other countries in the development of a local content policy for any mineral extractive sector. Diamonds were initially discovered in Botswana in 1967. De Beers, a foreign diamond production company, was welcomed by the government to coordinate the mining and export operations. Foreign capital was sought since the country had no competencies in diamond mining, and after only gaining independence in 1966, the government lacked the physical capital to develop the sector on its own. In 1969, a joint venture was developed between De Beers and the Government of Botswana to incorporate Debswana (Jerreris, 2009).[1]

At Debswana's inception, the government only had a 15% equity stake in the company. However, as more mines were eventually discovered, the government renegotiated with DeBeers and eventually purchased a 50% equity stake by 1975. In the early 1980s, while the international diamond market was weak, Debswana stockpiled large amounts of unsold diamonds. In 1986 when the market recovered, Debswana negotiated the sale of the stockpile to DeBeers. Some of the stockpiles were paid in cash, while the other portion was paid in shares in De Beers. This allowed the Government of Botswana to earn 5% equity in DeBeers. Later in 2001, De Beers was restructured, and the Government of Botswana purchased a larger shareholding, raising to 15% equity. Through this shareholding, the Government of Botswana was able to appoint two (2) directors to De Beers' board and was able to learn that all the diamonds were sold to De Beers affiliate company for marketing, the Diamond Trading Company (DTC), which is located in London, England (Jefferis, 2009).

During the 1970s and 1980s, Botswana emerged as one of the world's major diamond provinces. By the late 1980s, Botswana had become the world's leading diamond producer. Over the 1970 to 2000 period, diamond rents allowed Botswana to be the fastest-growing country in the world. Despite this, Botswana experienced some Dutch Disease deindustrialization in the agriculture sector. This was evidenced by the decline in agriculture's share of GDP from 40% in 1966 to 2% by 2006 (Jefferis, 2009). Dutch Disease is notably worrisome as it causes the deindustrialization of the non-booming good-producing industries, which are often turned to for support and the generation of export revenue at the end of the boom.

To make the most of the country's diamond reserves and to prepare Botswana for life after diamond mining, the government developed a plan to transform the country into a diamond center with downstream capabilities that will add more value to diamonds. As a result, in 2005, the government adopted the Diamond Beneficiary Policy (Mbayi, 2011).

[1] Debswana was fully capitalized by De Beers, but 15% of the shares were issued free to the Government of Botswana (Kojo, 2010).

First, the Diamond Beneficiary Policy required rough diamond sightholders[2] (traders) to move down the value chain if they wanted to access Botswana's rough diamonds.[3] Second, the Policy required local processing to occur. In other words, the sightholders could only access processed (polished) diamonds rather than unpolished rough diamonds. Therefore, the earliest segment of the diamond pipeline that the sightholders could enter is the polished trading segment. This arrangement effectively allowed 84% of the allocation to sightholders to be processed. This move was not met with opposition as companies were required to pay taxes on rough diamond exports, but not on polished ones (Weiss, 2016). Third, foreign investors were encouraged to enter joint ventures with local companies. Fourth, foreign companies were encouraged to hire local labor. Fifth, foreign companies were encouraged to train local labor. While not in the Beneficiary Policy, in 2015, the government directed all Central Government, Local Authorities, and Parastatal Organizations to procure all their goods and services from locally based manufacturers and services providers. This was done to help stimulate economic activity within Botswana and reduce the leakages from the circular flow of income (Weiss, 2016).

Indeed, the Diamond Beneficiation Policy was critical in facilitating the capturing of a larger share of downstream revenues in Botswana. It also allowed the localization of a small niche of highly skilled, high-value services to support the value chain, manufacturing operations, and downstream marketing to jewelry manufacturers (Koitsiwe & Adachi, 2017).

The Government of Botswana continues to capture a fair share of the diamond rents through income tax, royalties, and as a joint owner of Debswana. This hybrid rent-earning arrangement allows the government to earn approximately 80 cents of every dollar of profits generated by Debswana (Kojo, 2010). While primary commodities are traditionally known to be volatile, the government has been able to receive stable revenues from the relative price stability of diamonds. This relative price stability arises from De Beers' ability to control both the demand and supply of diamonds (Kojo, 2010). In 2008, the government and De Beers entered a joint venture to form the Botswana Diamond Valuing Company (BDVC), whose objective was to coordinate the shift sorting, cutting, polishing, and aggregating of diamonds in Botswana (Koitsiwe & Adachi, 2017).

The government of Botswana also established a diamond hub, and a diamond technology park in Botswana (Weiss, 2016). This was complemented by the DTC opening a subsidiary in Gaborone, the capital of Botswana. The corresponding DTC Botswana was a joint venture between the DTC and the Government of Botswana. This hub created an avenue for the diamond trade and allowed small players to become directly involved in diamond commerce (Mzumara, 2012).

[2] A 'sightholder' is a company on the DTC's list of authorized purchasers of rough diamonds.
[3] The diamond value chain is sometimes referred to as a pipeline due to its length. The segments include diamond exploration, mining, rough sorting and valuing, rough trading, rough manufacturing and polishing, polished trading, jewelry manufacturing, jewelry trading.

Good macroeconomic management was also achieved in Botswana through the implementation of the Pula Fund, a natural resource fund, and the adoption of fiscal rules.

Local Content Policy in Trinidad and Tobago

As mentioned before, T&T's oil industry is more than a century old. The Government of the Republic of Trinidad and Tobago (GORTT) introduced a LCP labeled the "Local Content and Participation Policy and Framework" in 2004. This 14-page long document acknowledged that only 10% of the value of the energy industry is captured domestically. While it endorsed the idea of local content, it proposed no LCRs to improve the local content in T&T.

In 2006, the GORTT introduced LCRs in the production sharing contracts (PSCs) awarded in the upstream industry. Some of the LCRs included:

- the requirement for operators to maximize their utilization of goods and services produced in T&T;
- the requirement for operators to submit their work programmes to the Ministry of Energy and clearly state the level of local content they plan to achieve;
- the requirement for operators to unbundle contracts to match the capabilities of domestic subcontractors;
- the requirement for the operators to advertise contracts locally to ensure domestic suppliers get a chance to participate in tendering; and
- the placement of greater weight on local content for local contractors to allow them to win contracts over foreign competition.

Provisions were also introduced to encourage capacity development. They include:

- operators were required to provide preference to nationals over foreigners in employment;
- operators were required to provide training for nationals so that they may eventually replace expatriates;
- the training for the nationals should be equivalent to the standards of the operator; and
- operators were required to facilitate the transfer of technology to nationals in the areas of fabrication, information technology, maritime services, marketing, operational management, and business support services (Tordo & Anouti, 2013).

Despite the deficiencies in T&T's LCP framework, T&T continues to capture some value from its hydrocarbon industry via:

- the taxes paid by the hydrocarbon industry to the GORTT;
- the employment of nationals in the hydrocarbon industry; and
- ad-hoc corporate social responsibility programmes of multinational energy companies.

Perhaps, one of the greatest successes that T&T managed to achieve in local content is its experience with platform fabrication in La Brea. Historically, offshore platforms were fabricated in the US. The platforms were assembled in Trinidad, but the local content in the projects was also low and utilized approximately 9% of local input. This situation was addressed in 2005 when British Petroleum Trinidad and Tobago (BPTT) facilitated the creation of local content in the offshore platform fabrication industry through the construction of the Cannonball platform at La Brea, Trinidad. A joint venture was formed between the local company Weldfab Ltd., and the foreign company, Chet Morrison Ltd., to develop Trinidad Offshore Fabricators Ltd. (TOFCO) (Charles, 2019).

TOFCO spent six months, in the first instance, training workers to prepare for the Cannonball project. The training was conducted in technical vocational areas, namely welding, and fabrication, electrical installation, plumbing, instrumentation, and occupational safety. Some 230 employees, of which 80% were citizens of T&T, were involved in the Cannonball project. An estimated 40% of local input was used in the project. This local input included services such as marine transportation, the purchase of goods sold by hardware stores, the rental of equipment from domestic contractors, and the subcontracting of support services such as janitorial and security. Following the success of the Cannonball project, TOFCO was procured to construct several additional platforms for offshore T&T. Table 2 provides an overview.

Table 2

Platforms Constructed by TOFCO

Year	Client	Project	Tonnage
2004-05	BPTT	Cannonball Deck and Jacket	1800
2005-06	EOG	Oilbird Deck and Jacket	3000
2006-07	BPTT	Mango Deck and Jacket Cashima Deck and Jacket Amherstia	1900 2000 500
2007-08	BGTT BPTT EOG	Poinsettia Deck Savonnette (Deck and Jacket) Toucan Deck	3000 3000 2000
2009-10	BPTT	Serrette Deck and Jacket	3000

Year	Client	Project	Tonnage
2010	BHP	Angostura Gas Bridge and Flare	700
2013	BPTT/ EOG	Oilbird deck and jacket	1000
2014-2016	BPTT	Juniper (jacket, topsides, and piles)	5670
2018-2021	BPTT	Cassia C	8100

Source: Adapted from Jones (2011); Warner (2017) interviews

While TOFCO initially started conducting greenfield work by building new platforms, it experienced periods where it was unable to get work to construct new platforms locally. This is because a multinational oil company will not procure services to build a platform every year. Subsequently, TOFCO adapted by undertaking brownfield work and performing maintenance functions for platforms. In 2018, TOFCO got work to fabricate the jacket and bridge landing for the Cassia C platform for BPTT. The topsides and bridge link for the Cassia C platform were constructed in Altamira, Mexico.

Limitations in T&T's LCP Framework

Despite the success of the TOFCO in offshore platform fabrication, there are several limitations regarding T&T's LCP framework. They include:

1. The absence of regulatory measures to ensure compliance. The GORTT does not impose any penalties or fines for non-compliance with its 2004 LCP or the 2006 LCRs in the PSCs. Additionally, there is no framework to address situations in which multinational companies inaccurately report on their local content compliance.
2. The weak institutional capacity in the GORTT for the monitoring of the implementation of the LCRs. The Ministry of Energy and Energy Affairs (MEEA) is the lead agency for the coordination of government policy regarding the energy sector. The MEEA relies upon the information supplied by multinational companies to determine the companies' level of local content. However, the MEEA has no framework to verify if the information supplied is inaccurate or deliberately falsified.
3. The absence of any framework to encourage local and foreign collaboration. While joint ventures do occur in the hydrocarbon industry in T&T, especially between the multinational companies for the exploration of offshore blocks, there is no framework to encourage stronger collaboration between locals and foreign firms in T&T's hydrocarbon industry.
4. The absence of any framework to promote entrepreneurship by locals in the hydrocarbon sector. There is scope for the development of strong backward and forward linkages to the hydrocarbon sector. Furthermore, T&T has several universities which produce graduates in technical fields which are useful for the hydrocarbon sector.

Unfortunately, there is an absence of any accelerator or business incubation programme that is geared toward creating entrepreneurship in the hydrocarbon sector in T&T.

5. The existence of several bilateral treaties with foreign countries, would prohibit the discrimination of foreign suppliers. LCP essentially requires national treatment. However, as T&T is a member of the CARICOM Single Market Economy (CSME), a common market, discrimination in labor and services would be inconsistent with the World Trade Organization's rules on national treatment. CARICOM service contractors that are facing discrimination could legitimately request their government to raise a dispute at the WTO. Notably, similar disputes were raised by the US against India on its "Made-in-India" and "Digital India" programmes (Tordo & Anouti, 2013).

Local Content Policy in Guyana

Following the commercial discovery of oil offshore Guyana in the Stabroek block, the Government of Guyana took steps to develop a LCP for its hydrocarbon industry. Draft LCPs were prepared in 2017, 2018, 2019, 2020, and 2021. In 2021 the government passed the Local Content Policy Law (LCPL).

In summary, the goals of the LCPL are:

- to facilitate the participation of Guyanese nationals and businesses in the hydrocarbon sector;
- to develop a mechanism through which Guyana might use participation via equity investment, employment, and the supply of goods and services in sector activities, to build capacity that can support and enhance the petroleum and other sectors (such as agriculture, food processing, mining, manufacturing, forestry, ITC, construction, and other strategic sectors) for industrialization and national development;
- to develop an implementation strategy that is rooted in a pragmatic and collaborative approach to enabling maximum participation of Guyanese, while benefiting investors; and
- to ensure that the policy mechanism is flexible enough to adapt to changing circumstances.

The LCPL acknowledges several limitations faced by Guyana as it aspires to maximize its capture of value from the hydrocarbon sector. They include:

- Guyana is a small country and is presently unable to influence the price of oil on the world market. Therefore, it will be a price taker and vulnerable to volatility in oil prices.
- Guyana (in 2021) lacked the technical and financial capabilities to undertake a lot of the work in the hydrocarbon industry. Additionally, many emerging entrepreneurs do not have access to the specialized equipment required to perform many jobs.
- There are physical risks associated with hydrocarbon extraction and processing activities.

- There are environmental risks associated with the hydrocarbon industry. This includes both the negative externalities and environmental degradation which may occur from accidents, as well as the effects of climate change caused by the combustion of hydrocarbons and the release of anthropogenic greenhouse gasses (GHGs).
- The hydrocarbon industry does not generate many jobs. Therefore, there is a strong likelihood that reliance on the hydrocarbon industry will result in the transitioning of the Guyanese economy to a dual-sector economy. Additionally, employment may be generated from the multiplier effect of government spending.
- There is strong potential for the development of backward and forward linkages. Despite this, no country has ever achieved 100% local content.
- There is a temptation to adopt a localist approach to local content, where the revenues from the hydrocarbons are used to develop the infrastructure and improve the lives of the people in the geographic locations that are in close proximity to the hydrocarbon deposits. Since the hydrocarbon deposits are not uniformly distributed, it can lead to the uneven development of a country. Additionally, since demographic groups are unevenly distributed across a country, the localist approach could lead to demographic discrimination. In other words, one group of people will reap the most benefits, while other demographic groups would be neglected.

The LCPL:

1. Advocates for the employment of Guyanese nationals in the hydrocarbon industry;
2. Endorses the training of Guyanese nationals;
3. Encourages the transfer of knowledge and technology through integration, participation, equity investment, and retention of profits;
4. Highlights targets for the achievement of local content on a phased basis in sector areas over 10 years. The areas targeted include: a) license or petroleum agreements; b) FEED Detailed Engineering and other services; c) Fabrication, Construction, and Storage; d) Materials and Procurement; Research and development; e) Transportation, supply, and disposal services; f) Well drilling services; g) Health, safety, and environmental services; h) Information systems, information technology, and communication services; i) Marine operations and logistics services; j) Financial and insurance activities.

Notably, the aspirations in the LCPL are not LCRs. There is no mandate for the operators to fully comply and achieve the local content targets. Additionally, there are no penalties for non-compliance, nor a system to properly detect the non-compliance.

While the absence of actionable LCRs prevents Guyana's LCPL from violating the WTO's rules on national treatment and non-discrimination, it runs the risk of being a "paper policy". In other words, since there are no LCRs and penalties, there is nothing to force the operators to comply with the objectives of the policy. Another author, Elias-Roberts (2020), also

acknowledged that Guyana's LCP will not automatically result in the increased capture of local content in the country.

Key Requirements for an Effective Local Content Policy Framework

In the review of the experiences of the case studies considered in this study, several lessons can be learned. First, the host country must recognize that it may not have the technical and financial capacity to undertake a lot of the technical work in the hydrocarbon industry at the onset. However, non-technical work can be implemented by local entrepreneurs. Given this situation, the government can try to capture more value from the hydrocarbon value chain by encouraging the operators to delegate most, if not all, of the non-technical work to locals.

While this may be a reasonable request, multinational companies are likely to have the capacity to undertake all the functions in the entire hydrocarbon value chain. Additionally, they may be more cost-efficient in conducting all the functions that local stakeholders require. For this reason, multinational companies may be reluctant to award non-technical contracts to local entrepreneurs. This can be addressed by the government through moral suasion. If this fails, then the next option would be to introduce LCRs that mandate the operators delegate these non-technical functions to the locals. However, a situation arises. How does the government ensure that the aforementioned jobs are delegated to the locals? This can be addressed by requiring the operators to report on the local content that they achieve in their operations. The operators could be encouraged to accurately report the local content achieved in their projects. The government can verify this information by occasionally procuring a consultant team to conduct an assessment to validate the information. If the government finds that the operators are consistently falsifying information, then it can consider introducing penalties for deliberate fraud.

To develop local capacity in technical work, several approaches can be taken. The first is to encourage education and training at the university level. This can be done through the strengthening of the capacity at the university level and introducing new training programmes. To implement this, the government should encourage collaborations between the industry stakeholders and the local universities to develop appropriate academic programmes. This can be complemented if the industry stakeholders also provide funding for these academic programmes.

The second approach is to encourage training with on-the-job experience. Again, partnerships between the industry and the local universities will be key to achieving this. An on-the-job training programme can be integrated as part of the academic programme, whereby successful graduates may obtain practical experience in the industry that matches their academic training. Beyond the on-the-job training, the government can introduce a LCR that mandates only qualified locals to be eligible for junior positions in technical jobs. Junior technical professionals can work alongside experienced ex-pats to gain technical competencies.

The third approach is to encourage capacity development by allowing local entrepreneurs to get work. To address the issue of the deficient capacity of local entrepreneurs, partnerships should be encouraged with more competent foreign companies. The government can encourage this by mandating that technical jobs in specific categories should have a minimum level of local equity participation. In other words, as a condition to win certain technical jobs, local entrepreneurs must have a percentage of equity participation in the project. Certainly, joint ventures will be the key to helping build local capacity.

The fourth approach is to promote capacity development by encouraging the spillover of capital and equipment to local entrepreneurs. This can be addressed through trade policy where the government could restrict the re-export of specialized equipment back to the country of origin after the completion of jobs. Technological spillover can also be facilitated by encouraging local entrepreneurs to purchase specialized equipment.

The WTO and TRIMS

The first article of the General Agreement on Tariffs and Trade (GATT), which governs trade in goods, requires unconditional and universal most-favored-nation (MFN) treatment among all members. The principle of national treatment requires that the products of locals and foreigners should be treated equally (VanGrasstek, 2013). If these two principles are applied, then no country that has entered a common market should be legitimately allowed to legislate that operators in their hydrocarbon industry should provide preferential treatment to indigenous citizens over the citizens from the other common market countries.

Moreover, the WTO's Trade-Related Investment Measures (TRIMs) discourage the use of LCPs and LCRs. The WTO refers to TRIMs as investment measures that can restrict and distort trade. The TRIMs agreement prohibits WTO members from applying any measure that discriminates against or restricts the output of foreign products (WTO, 2015). The LCRs prohibited by TRIMs include: mandating a foreign firm to purchase or use domestic goods; limiting the number of imported goods that a firm may purchase or utilize; restricting foreign exchange necessary to import; and restricting exports (Kayizzi-Mugerwa & Anyanwu, 2015).

As mentioned before, the US raised a dispute at the WTO on India's implementation of the "Make in India" and "Digital India" programmes. Under the Make in India programme, the government provides a capital subsidy of 20% to solar power systems made in India. Similarly, under the Digital India programme, the government subsidizes 25% of the cost of producing electronics in India. After reviewing the matter, the WTO Dispute Settlement Body ruled against India with the judgment mandating that India provide "national treatment", allowing imports to be treated on a par with domestically manufactured products (Kanth et al., 2015).

It is discernible that the US has also utilized LCRs to promote the production of renewable energy (Kanth et al., 2015; Meyer, 2015). In fact, Meyer (2015) found LCRs in 44 programmes in 23 states in the US. The author states:

> Since 2001, California has provided over $2 billion in subsidies for the purchase of solar panels. Minnesota has allocated $150 million for solar energy subsidies from 2014-2023, in addition to $11 million per year for wind and other renewable energy since the mid-1990s. Nor is the trend confined to left-leaning states. Kansas has allocated $150 million in subsidies to encourage wind and solar energy businesses. Mississippi doled out $173 million in subsidies to renewable energy firms in 2010 alone (p. 1939).

An argument can be made that the WTO rules on national treatment and TRIMs are obstacles to the capacity development of hydrocarbon-rich developing countries.

Chang (2003) contends that

> the WTO rules and other multilateral trade agreements should be rewritten in such a way that a more active use of infant industry promotion tools (e.g. tariffs, subsidies) is allowed. Allowing the developing countries to adopt the policies (and institutions) that are more suitable to their stages of development and other conditions they face will enable them to grow faster, as indeed they did during the 1960s and 1970s. This will benefit not only the developing countries but also the developed countries in the long run, as it will increase the trade and investment opportunities available to the developed countries in the developing countries. That the developed countries are not able to see this is the tragedy of our time (p. 29).

Notably, the Doha round of multinational trade negotiations stalled due to disagreements on how to address the problems developing countries face in implementing WTO agreements. Although the Doha round considered agriculture and services trade rather than hydrocarbon trade, it proposed a 2.5% reduction in the value of agricultural subsidies in all developed countries. European countries, and the US, despite being developed countries and major producers of various agricultural commodities, refused to reduce their agricultural subsidies. Subsequently, they demonstrated that they are willing to protect their inefficient producers (Amadeo, 2018). Therefore, prohibiting LCRs through TRIMs effectively "kicks away the ladder" for development for developing countries.

Political Economy of the Hydrocarbon Industry of Guyana and T&T

The political economics of the hydrocarbon industry is a critical issue for both Guyana and T&T. The following subsections will discuss the relevant issues in more detail.

Guyana

The Guyana-Suriname Basin (GSB) has emerged as a major hydrocarbon exploration frontier in recent years. The discovery of commercial, recoverable hydrocarbons in the Zaedyus well offshore French Guiana in 2010 and the Liza 1 well offshore Guyana in 2015 have significantly altered the perception of the basin's resource potential. The GSB is a sedimentary basin that spans the coastal area of French Guiana, Suriname, Guyana, and the eastern part of Venezuela (Antillean Arch), with most of it lying deep offshore (Bryan, 2021).

The United States Geological Survey (USGS) assessed the undiscovered conventional oil and gas resources within 31 geologic provinces along Central and South America and the Caribbean in 2001. The GSB emerged as the third-ranking province in terms of oil resources, with estimated undiscovered reserves of 13.6 billion barrels of oil and 32 trillion cubic feet of gas. However, recent discoveries by US oil major ExxonMobil suggest that the resource potential of the GSB could be much higher than previously estimated, with the current estimate standing at more than 18 billion barrels of oil equivalent (Bryan, 2021).

The geological similarities between the South American and African coastal areas have also played a significant role in attracting energy companies to explore the GSB offshore. The "Atlantic Mirror Theory" suggests that the South American and African continental shelves were once connected, and the geological structures on both sides of the Atlantic Ocean mirror each other. The Zaedyus well's discovery validated this theory, as it was drilled in a similar geological setting to Ghana's Jubilee field, which was discovered in 2007. However, subsequent appraisal wells offshore French Guiana were unsuccessful, indicating that the geology of the GSB is uneven (Bryan, 2021).

Notably, the hydrocarbon endowment of the GSB has revived the dispute between Venezuela and Guyana over the Essequibo region.[4] The dispute dates back to the 19th century and intensified in the 1960s when large-scale mineral deposits, including bauxite, gold, and diamonds, were discovered in the region. The dispute has led to tensions between the two countries, and there have been various incidents, including Venezuelan troops inundating the border areas in 1999 and seizing an oil exploration vessel operating in disputed waters claimed by both Venezuela and Guyana in 2013. The dispute was taken to the International Court of Justice (ICJ) in 2018, and in June 2020, the ICJ held a hearing on the matter, which Venezuela did not participate in, arguing that the ICJ did not have jurisdiction (ICJ, 2020). In September 2020, the United States announced that it would join Guyana on sea patrols in the area (Wilkins, 2020).

The PSC Guyana has with Exxon Mobil has room for improvement. The multinational oil company is allowed a cost recovery of 75% of the aggregate value of the oil. The remaining 25% is shared 50/50 between the GoG and the MNOC. Additionally, there is a 2% royalty on

[4] The GSB resides in the Essequibo region. The dispute is a border dispute regarding the exclusive economic zone (EEZ) of Guyana and Venezuela west of Guyana's Essequibo River.

the sale of the crude. Therefore, the effective tax for the GoG is only 14.5% of the value of crude oil (Bryan 2021; McLean et al., 2021).

Despite this, since oil exportation began in 2020, the GoG has earned huge oil rents. In fact, in 2020, Guyana posted the highest economic growth in the world at 43.5% despite the occurrence of the COVID-19 pandemic. In 2021, it continued to experience strong growth at 18.5% (Alleyne et al., 2022). However, as the Government of Guyana (GoG) increases its spending and borrowing to match its newfound oil wealth, it runs the risk of accumulating huge debt. This highlights the need for cautionary spending and adherence to the Hartwick Rule as noted by Hosein et al. (2018), and Charles (2020).

In the case of Guyana, the discovery of significant oil reserves has the potential to transform the country's economy, but it also presents a range of challenges. One of the most pressing issues is ensuring that the country maximizes the value it can generate from the oil industry. This will require strong governance and local content frameworks.

T&T

Historically, only T&T was a hydrocarbon producer and exporter in the Caribbean Community (CARICOM). Cuba and Suriname were believed to contain some hydrocarbon deposits. Curacao, Aruba, and St. Croix also operated oil refineries.

The first oil well in T&T was drilled in 1857 by the Merriniac Oil Company (Bissessar & Hosein, 2001). Commercial oil production in T&T began in 1908. Exports of crude oil began in 1910. Its first refinery was built in 1912 (Bryan, 2021).

By 1913, two new companies, United British Oilfields (UBOT) and Trinidad Leaseholds (TLL) a subsidiary of Shell, started to drill and initiated the commercialization of oil so that by 1919 about 1.9 million barrels were produced annually (Premdas & Ragoonath, 2020). Employment in the oil industry had grown from 801 persons in 1912 to 8,280 in 1925, to 8,000 in 1939 to 15,000 in 1944. Workers left the sugar industry to seek employment in the oil sector (Bryan, 2021).

Natural gas found associated with oil was either flared or reinjected into wells as a form of tertiary recovery. The commercial use of natural gas in T&T began in the electricity generation from Trinidad and Tobago Electricity Commission (T&TEC) Penal Power Station in 1953. This was eventually followed by the use of natural gas as a feedstock for cement manufacturing by Trinidad Cement Limited (TCL), and fertilizer production by Federation Chemical Limited (Fedchem) (Jobity & Pantor, 1995; Punnett & John-Toney, 2001).

Notably, before gaining independence in 1962, the role of the state in the hydrocarbon industry was minimal. When T&T was a British colony, the state created laws and provided basic protection and security. However, the MNOCs controlled the oil industry locally. After gaining independence, the newly formed government was interested in leveraging the hydrocarbon sector to propel the development of the country. Natural gas was seen as a potential sector to assist in the economic development of the economy.

Several commercial finds of natural gas were also found in the 1960s and the 1970s in the South Eastern Galeota field, the South Eastern and the North Eastern Coast of Trinidad (Pantin, 1988). This made natural gas industrialization more feasible for the government. Subsequently, the government took the lead in industrialization. This resulted in the development of several state-owned enterprises involved in business activity, including the National Energy Corporation of Trinidad and Tobago Limited (NEC), the Trinidad and Tobago Urea Company (TTUC), the Fertilizers of Trinidad and Tobago Limited (Fertrin), the Trinidad Nitrogen Co Ltd (Tringen), and the Iron and Steel Company of Trinidad and Tobago (ISCOTT). Unfortunately, several of these state-owned enterprises were poorly managed and incurred losses (Pantin, 1988).

Although the Government of the Republic of Trinidad and Tobago (GORTT) eventually privatized several of these enterprises, the government was instrumental in proving to the private sector the viability of the downstream natural gas sector.

Eventually, T&T entered into the liquefied natural gas (LNG) business, after Cabo LNG convinced the government about the project viability. A consortium of Amoco, British Gas, Cabot LNG, and the National Gas Company of Trinidad and Tobago (NGC) was used to develop Atlantic LNG, the project developer for the export of LNG from T&T. The first export of LNG from T&T occurred in 1999. Over the 1999 to 2008 period, LNG exports allowed T&T to enter an economic boom (Boopsingh & McGuire, 2014).

The boom came to an end as a result of several factors, including the global financial crisis and economic recession in 2008, the unexpected self-sufficiency of the US from the shale revolution, and the eventual decline in natural gas production in T&T.

Both the oil and natural gas industries experienced a decline in production in the 2010s. The refinery industry suffered a blow after the GORTT shut down its loss-making state-owned refining company in 2018. Natural gas curtailments have negatively affected downstream production and have resulted in the closure of several plants. Additionally, the state-owned company NGC incurred several lawsuits as it was not able to fill its natural gas contract obligations to several companies (OPM RTT, 2017).

While the natural gas industry was partially supported by the operationalization of the Juniper and Angeline fields in 2017 and 2019 respectively, there was weak drilling activity. The last major bid rounds for acreage occurred in 2014. There is no announced deep water drilling

offshore T&T. There was weak interest in the bid rounds in 2022. T&T is facing the reality that it is a mature oil producer, with over 100 years in the business. The geology in the offshore blocks is extremely complex, the deep water exploration is very risky, and the likelihood of success matching the GSB is low. Given this outlook, it would be rational for the GORTT to try to encourage development and economic activity by strengthening the local content policy framework, to extract more value from the existing hydrocarbon economic environment.

Recommendations for Guyana and T&T

From the document analysis of the case studies of successful local content policies in countries considered in this study, several recommendations can be made for Guyana and T&T. The lessons highlight the need for the development of partnerships to help build local capacity and to try to encourage local participation at all stages of the hydrocarbon value chain.

The hydrocarbon value chain is composed of three segments:

- upstream – exploration and production;
- midstream – transportation and processing; and
- downstream – marketing and distribution.

Generally, the foreign multinational companies operating in the hydrocarbon value chain in T&T, and Guyana, are vertically integrated, and can provide all the services that they require. Nevertheless, there is scope to outsource some of these services and functions to local stakeholders. This can be achieved through the implementation of a local content policy, which would allow local stakeholders to acquire a greater share of the value-added from the hydrocarbon value chain. This effectively strengthens the backward and forward linkages between the hydrocarbon sector and the other sectors of the economies. Table 3 provides a summary of the various opportunities.

Table 3

Opportunities in the Hydrocarbon Value Chain

Upstream (Exploration & Production)	Mid-stream (Refining)	Downstream (Sale of Final Product to Market)
Technical	Technical	Technical
Chemical Engineering	Chemical Engineering	
Mechanical Engineering	Mechanical Engineering	
Electrical Engineering	Electrical Engineering	
Instrumentation	Instrumentation	
Operations / Production	Operations / Production	
Piping Engineering	Piping Engineering	
Petroleum Engineering	Petroleum Engineering	

Process Engineering	Process Engineering	
Subsea Engineering		
QA / QC / Inspection		
Structural Engineering		
Field Telecommunications		
Wireline Field Operations		
Diving		
Underwater Welding		
Wells and Xmas Tree Engineering		
Process Engineering		
Project Controls		
Drilling		
Platform Fabrication		
Well Logging		
Geophysics		
Geochemistry		
Marine biology		
Mud Logging		
Hydrographic Surveying		
Aerial Surveying		
Semi-Technical	Semi-Technical	Semi-Technical
Economic Evaluation and Market Research	Economic Evaluation and Market Research	Economic Evaluation and Market Research
Marketing and Promotion	Marketing and Promotion	Marketing and Promotion
Legal	Legal	Legal
Health and Safety	Health and Safety	Health and Safety
Accounting	Accounting	Accounting
Tax Administration	Tax Administration	Tax Administration
Information Technology	Information Technology	Information Technology
Navigation		
Compliance		
Non-Technical		
Materials / Logistics / Stores	Materials / Logistics / Stores	Materials / Logistics / Stores
Tent and Equipment Rentals	Tent and Equipment Rentals	Tent and Equipment Rentals
Administration	Administration	Administration
Food and catering sales	Food and catering sales	Food and catering sales
Janitorial	Janitorial	Janitorial
Public Relations/ Communication	Public Relations/ Communication	Public Relations/ Communication

Purchasing	Purchasing	Purchasing
Security	Security	Security
Driving	Driving	Driving
		Hotel and Guest House Accommodation

Due to T&T's long history in the hydrocarbon industry, several people (workers) possess the technical skills to perform technical jobs. As Guyana is a new entrant to the hydrocarbon industry, many of the technical skills may be lacking at the onset. Nevertheless, local capacity can be built (in both T&T and Guyana) by the operators awarding contracts to local entrepreneurs, and encouraging the local entrepreneurs to form joint ventures with more competent foreign firms.

While this was practiced in Norway and allowed the country to build strong capabilities in various technical fields, the multinational operators are likely to be reluctant to voluntarily award contracts to local entrepreneurs with insufficient technical and financial capabilities. Given that both T&T and Guyana are democracies and are eager to attract foreign direct investment (FDI) to monetize their hydrocarbon resources, an adversarial approach will not be adopted by either government. Instead, a more feasible approach would be for the governments to mandate a minimum level of equity participation in specific technical projects. For example, if an operator is outsourcing work for underwater welding, the government can mandate that at least 5% local equity participation is held by the winning contractor. While 5% equity is relatively small, it ensures that locals will be involved in the project. This will provide an opportunity for local entrepreneurs to gain experience and develop competencies. Additionally, a LCR specified in this manner will not be inconsistent with TRIMs as it does not directly grant preference to local stakeholders over foreign stakeholders.

Semi-technical and non-technical activities can be performed by local stakeholders in T&T and Guyana. Therefore, to promote local content, local entrepreneurs should be the front-runners for this selection. T&T's PSCs already have requirements for operators to maximize their utilization of local goods and services as much as possible. Guyana's LCPL has similar requirements for the use of local goods and services. But these requirements are expressed more like requests of the governments rather than mandates. In other words, there is nothing that ensures the multinational operators try to use the local goods and services as much as possible. Additionally, in instances where desired local goods and services are not available, there is nothing in place to stimulate the production of these goods and services.

To facilitate the actual use of semi-technical and non-technical goods and services by the operators, the governments can either a) create a special purpose company or b) create a unit in a ministry to promote the use of the non-technical goods and services by the hydrocarbon operators. This special purpose company or unit will effectively be strengthening the backward and forward linkages to the hydrocarbon sector as it promotes these non-technical goods and services. Assistance can be provided to the local entrepreneurs producing the semi and non-

technical goods and services to access specialized training, market research, marketing strategies, business-to-business matchmaking and marketing, and networking. This can be complemented with the development of a business incubation programme that targets these semi and non-technical goods and services. Additionally, training and capacity building can also be undertaken with these local entrepreneurs to help them learn to export their services. This approach is also favorable as it will not violate the WTO's TRIMs.

For Guyana, another area that needs attention is educational skills development. The study of Ghana and Norway's local content policy experiences highlights the importance of educational development as a component of local content. Presently, T&T has several universities that offer degree programmes in aviation, nautical science, electrical, mechanical, industrial, process, utilities, energy systems, chemical, civil, and petroleum engineering. The National Energy Skills Center Centre (NESC), and the Youth Training and Employment Partnership Programme (YTEPP) also offer diplomas and short courses in technical vocational subjects. Perhaps, collaborations can be done between the post-secondary educational institutions in T&T and Guyana to help develop Guyana's educational capabilities. They can be provided regarding the curriculum content and methods of teaching. Moreover, collaborations should also be undertaken with the private sector to help craft programmes that suit the needs of the hydrocarbon industry.

The educational capacity building should be completed by the development of an apprenticeship programme. This should be streamlined to ensure that the educational training of the graduates matches their on-the-job training (OJT). For example, a graduate of industrial engineering should be matched to on-the-job training that intensely utilizes their industrial engineering skills rather than being allocated to an OJT programme to sit and do nothing. This can be beneficial to both countries.

Notably, as the hydrocarbon industry is capital-intensive and tends to employ a low percentage of the labor force, a large percentage of the OJT graduates could find themselves without technical employment at the end of the apprenticeship programme. The potential unemployment can be avoided through the development of a business incubation programme for technical graduates. The graduates could be trained to develop energy services businesses, which can support the local hydrocarbon industry. As capacity is developed, entrepreneurs can consider exporting their services. This approach is highly desirable for countries as it will produce graduate technical entrepreneurs, which in turn can help generate more income in their respective countries.

Conclusion

Hydrocarbon resources can generate large rents, which in turn can catapult the development of countries. Unfortunately, if a country does not have a proper policy framework, a lot of the

rents can escape the grasp of the local stakeholders as the multinational operators are likely to have the capacity to undertake all the functions within the hydrocarbon value chain.

Developing effective policies to capture value from the hydrocarbon value chain requires a solid understanding of the economics of local content. Well-crafted local content policies can facilitate the creation of backward linkages, which encourages the sourcing of input from the local economy, as well as forward linkages which develop new products from the hydrocarbon inputs. Local content policies can also develop local capacity through technology transfer, creating local employment opportunities, and increasing local ownership and control.

T&T and Guyana are blessed to be endowed with commercial reserves of hydrocarbons. However, the countries' capture of their fair share of the hydrocarbon rents will not automatically occur. The governments of both T&T and Guyana recognized this and have developed local content policies. While both countries' LCPs inherently share similar goals of maximizing the value captured by their local stakeholders, in the absence of actionable local content requirements and penalties, there is nothing to force the operators to comply with the objectives of the LCP.

This deficiency was partially addressed by T&T with its introduction of LCRs in the PSCs in 2006. However, there is still scope to strengthen the backward and forward linkages to the hydrocarbon sector. Caution must be exercised in introducing local content requirements as they violate the WTO's rules on national treatment and non-discrimination. The experience of several countries, such as Nigeria, Norway, Ghana, and Botswana reflects the potential of partnerships. Indeed, the experience of TOFCO in T&T demonstrates the effectiveness of partnerships in building local capacity.

Therefore, this study argues in favour of the development of joint ventures to facilitate knowledge and skill spillover as well as technology transfer. Furthermore, this study argues in favor of the use of partnerships between the private sector and local academic institutions to help build local capacity. Once the local content policy is implemented properly, the hydrocarbon sector will not be a damnation for countries. Instead, it can be used as a stepping stone to usher in diversification and economic development.

References

Abusharaf, A. (1999). The Legal Relationship Between Multinational Oil Companies and Sudan: Problems and Prospects. *Journal of African Law 43* (1): 18-35.

Ackah, C. G., & Mohammed, A. S. (2018). Local Content Law and Practice: The Case of the Oil and Gas Industry in Ghana. Working Paper 2018/152, United Nations University World Institute for Development Economics Research, Helsinki, Finland.

Acheampong, T., Ashong, M., & Svanikier, V. C. (2016). An Assessment of Local-Content Policies in Oil and Gas Producing Countries. *Journal of World Energy Law and Business, 9*, 282–302.

Alleyne, D., Hendrickson, M., McLean, S., Pantin, M., & Skerrette, N. (2022). Preliminary Overview of the Economies of Latin America and the Caribbean 2021. Santiago, Chile: Economic Commission for Latin America and the Caribbean (ECLAC).

Amadeo, K. (2018). Doha Round of Trade Talks: The Reason why it Failed. *Retrieved from*. https://www.thebalance.com/what-is-the-doha-round-of-trade-talks-3306365.

Aneke, P. (2002). The Role of Major Operators in the Development of Local Content in the Nigerian Oil and Gas Industry. In *A Paper Delivered During a National Seminar on the Dynamics of Equipment Leasing and Contract Financing for Local Contractors in the Oil and Gas Sector*, edited by, 1-25. Port Harcourt, Nigeria.

Ariweriokuma, S. (2009). T*he Political Economy of Oil and Gas in Africa: The Case of Nigeria*. New York, United States: Routledge.

Arthur, P., & Arthur, E. (2014). Local Content and Private Sector Participation in Ghana's Oil Industry: An Economic and Strategic Imperative. *Africa Today, 61* (2), 57-77.

Bissessar, A. M., & Hosein, R. (2001). The Role of the State in the Economic Development of Trinidad and Tobago with Special Reference to the Petrochemical Sector. In *Caribbean Centre for Money and Finance 33rd Annual Monetary Studies Conference* (pp. 19-23). Belize City, Belize.

Boopsingh, T. M, & McGuire. (Eds.). (2014). *From Oil to Gas and Beyond: A Review of the Trinidad and Tobago Model and Analysis of Future Challenges*. New York, United States: University Press of America.

Bowen, Glenn A. (2009). Document Analysis as A Qualitative Research Method. *Qualitative Research Journal 9* (2): 27-40.

Bryan, Anthony T. (2021). The Southern Caribbean Energy Matrix and the Consequences of the Regional Push for Renewable Energy. (Working Paper No.2). Kimberly Green Latin American and Caribbean Center Florida International University. Chang, H.-J. (2003). Kicking Away the Ladder: Infant Industry Promotion in Historical Perspective. *Oxford Development Studies, 31* (1), 21-32.

Charles, D. (2019). A Robust Local Content Policy Framework for Value Creation in the Hydrocarbon Industry. In *Enhancing and Capturing More Value from the Caribbean Community Value Chains.* United Kingdom: Cambridge Scholars Publishing.

Charles, D. (2020). Avoiding the Natural Resource Curse: An Optimal Use of Oil Rents to Reduce Its Potential Negative Effects Upon Economic Growth. *BizEcons Quarterly, 11*, 27-52.

Elias-Roberts, A. (2020). A Review of the Legal Framework of Local Content Provisions in Guyana. *Oil, Gas & Energy Law 18* (2): 1-10.

GORG (Government of the Republic of Ghana). 2013. "Petroleum (Local-content and Local Participation) Regulations." http://www.petrocom.gov.gh/pdfs/13-Local-Content-and-Local-Participation-Regulations-L_I-2204.pdf.

GORTT MEEI (Government of the Republic of Trinidad and Tobago, Ministry of Energy and Energy Industries). (2023). Historical Facts on the Petroleum Industry of Trinidad

and Tobago. Accessed March 23, 2023. https://www.energy.gov.tt/historical-facts-petroleum/.

Grossman, G. M. (1981). The Theory of Domestic Content Protection and Content Preference. *The Quarterly Journal of Economics*, *96* (4), 583-603.

Hosein, R., Singh, T., & Conrad, D. (2018). CSR as a Hartwick Rule Strategy to Mitigate the Impact of the Resource Curse: Lessons for the Educational Sector in Guyana from Trinidad and Tobago and Suriname. Social and Economic Studies, 149-175.

ICJ (International Court of Justice). (2020). Arbitral Award of 3 October 1899: (Guyana v. Venezuela). https://www.icj-cij.org/public/files/case-related/171/171-20201218-JUD-01-00-EN.pdf.

Igbokwe, V. C. (1997). Developing Countries and the Law Applicable to International Arbitration of Oil Investment Disputes–Has the Last Word Been Said? *Journal of International Arbitration*, *14* (1), 99 – 124.

IMF (International Monetary Fund). (2018). IMF Country Report No. 18/63: Nigeria. https://www.imf.org/en/Publications/CR/Issues/2018/03/07/Nigeria-2018-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-45699.

Jones, J. (2011). Success Stories: Examining the Development of Facilities for the Fabrication of Offshore Platforms. edftt.com/wp-content/uploads/2013/11/John-Jones-N.

Jobity, R., & Pantor, R. (1995). The Natural Gas Industry in Trinidad and Tobago, Central Bank of Trinidad and Tobago. http://ngc.co.tt/wpcontent/uploads/pdf/NGC_Webinar_The%20Structure_History_and_Role_of_the_Natural_Gas_Industry_2013-08-22.pdf.

Kanth, R., Mishra, A. R., & Bhaskar, U. (2015). WTO Rules Against India in Solar Panels Dispute with the US. http://www.livemint.com/Politics/11yE8Bz6bgZZ6LhXXlB8eL/WTO-panel-rules-against-India-in-solar-dispute.html.

Kayizzi-Mugerwa, S., & Anyanwu, J. C. (2015). Creating Local Content for Human Development in Africa's New Natural Resource-rich Countries. *Retrieved from*. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Creating_local_content_for_human_development_in_Africa%E2%80%99s_new_natural_resource-rich_countries.pdf.

Kazzazi, A., & Nouri, B. (2012). A Conceptual Model for Local Content Development in the Petroleum Industry. *Management Science Letters*, *2* (6), 2165-2174.

Koitsiwe, K., & Adachi, T. (2017). Linkages Between Mining and Non-Mining Sectors in Botswana. *Mineral Economics*, *30* (2), 95-105.

Kojo, N. C. (2010). Small Countries with Volatile Revenue: Botswana and Bhutan. (Working Paper). World Bank, Washington, United States.

Jefferis, K. (2009). The Role of TNCs in the Extractive Industry of Botswana. *Transnational Corporations*, *18* (1), 61-92.

Lander, L., & Margarita, L-M. 2003. Venezuela's Oil Reform and Chavismo. *NACLA Report on the Americas 36* (1): 21–23.

Mbayi, L. (2011). Linkages in Botswana's Diamond Cutting and Polishing Industry. MMCP

Discussion Paper No 6, the University of Cape Town, Cape Town, South Africa.

McLean, S., Charles, D., and Rajkumar, A. (2021). Navigating Transfer Pricing Risk in the Oil and Gas Sector: Essential Elements of a Policy Framework for Trinidad and Tobago and Guyana. *ECLAC Subregional Headquarters for the Caribbean, Studies and Perspectives*, *101*, 1-71.

Meyer, T. (2015). How Local Discrimination Can Promote Global Public Goods. *Boston University Law Review*, *95*, 1937-2025.

Mzumara, M. (2012). Botswana A Mono-Diamond Economy or Not? *International Journal of Management Sciences and Business Research, 1* (5), 1-26.

Nabatchi, T. (2012). A Manager's Guide to Evaluating Citizen Participation. *Retrieved from*. http://unpan1.un.org/intradoc/groups/public/documents/UN-DPADM/UNPAN048340.pdf.

OECD (Organization for Economic Co-operation and Development). (2016). Trade Policy Note. Accessed August 2, 2018. https://www.oecd.org/tad/policynotes/economic-impact-local-content-requirements.pdf.

OPM RTT (Office of the Prime Minister, of the Republic of Trinidad and Tobago). (2017). Prime Minister Rowley Provides Update on Gas Situation After Visit to Houston. https://www.opm.gov.tt/pms-statement-on-natural-gas-situation-in-tt-and-visit-to-houston/.

Pantin, D. (1988). Whither Pt. Lisas? Lessons for the future. In *Trinidad and Tobago: The Independence Experience, 1962- 1987*, edited by S. Ryan, 27-45. Trinidad: ISER.

Punnett, C. & John-Toney, B. (2001). The Philosophy and Policy Underpinnings of the Local Natural Gas Industry. Gasco News – The Corporate Journal of the National Gas Company of Trinidad and Tobago Limited, 14 (3), 1-4.

Premdas, R., & Ragoonath, B. (2020). Oil and Gas, From Boom to Bust and Back: The Trinidad Experience with the Resource Curse. Working Paper Series, Special Edition WP 2020 No. 1, Department of Government, Sociology, Social Work & Psychology, Faculty of Social Sciences, The University of the West Indies, Cave Hill Campus, Barbados.

Rossi, C. A. (2011). Oil Wealth and the Resource Curse in Venezuela. *International Association for Energy Economics, 32* (3), 11-15.

Sachs, L., & Maennling, N. (2015). Resource Resilience: How to Break the Commodities Cycle. https://scholarship.law.columbia.edu/sustainable_investment_staffpubs/131/.

Tordo, S., & Anouti, Y. (2013). *Local Content in the Oil and Gas Sector: Case Studies*. Washington, United States: World Bank Publications.

Tordo, S., Warner, M., Manzano, O., & Anouti, Y. (2013). *Local Content Policies in the Oil and Gas Sector.* Washington, United States: World Bank Publications.

Unam, J. M., Agorzie, C. J., & Asaolu, T. O. (2012). Local Content Policy and Technological Capacity Building of SMEs in the Nigerian Oil & Gas Industry. In t*he 5th Conference of the Nigerian Association for Energy Economics: Energy Technology and Infrastructure for Sustainable Development*, 12-18 June 2012, edited by Taiwo Olufemi Asaolu, 352-368. Abuja, Nigeria, Obafemi Awolowo University.

URT (United Republic of Tanzania). (2014). Local Content Policy of Tanzania for the Oil and Gas Industry – 2014. https://www.agcc.co.uk/uploaded_files/07.05.2014local-content-policy-of-tanzania-for-oil-gas-industry.pdf.

VanGrasstek, C. (2013). *The History and Future of the World Trade Organisation*. Geneva: World Trade Organisation.

Warner, M. (2007). Community Content: The Interface of Community Investment Programmes with Local Content Practices in the Oil and Gas Development Sector. http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2087.pdf.

Warner, M. (2017). *Local Content in Procurement: Creating Local Jobs and Competitive Domestic Industries in Supply Chains*. London, United Kingdom: Routledge.

Webler, T. (1995). Right Discourse in Citizen Participation: An Evaluative Yardstick. *Technology, Risk, and Society Volume, 10*, 35-86.

Weiss, M. (2016). The Role of Local Content Policies in Manufacturing and Mining in Low- and Middle-Income Countries. (Working Paper 19/2016). United Nations Industrial Development Organization (UNIDO), Vienna, Austria.

Wilkins, B. (2020, September 23). US-Guyana Maritime Patrols Near Venezuela Border Denounced as Latest American Imperialism. Common Dreams. https://www.commondreams.org/news/2020/09/23/us-guyana-maritime-patrols-near-venezuela-border-denounced-latest-american.

WTO (World Trade Organization). (2015). Trade and Investment: Technical Information, Agreement on Trade Related Investment Measures. https://www.wto.org/english/tratop_e/invest_e/invest_info_e.htm.

iSCALE: Unveiling the Digital Addiction Quotient - A Comprehensive 6-Item Measure for Internet Compulsion

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Abstract

The study investigated the psychometric properties of the 14-item Compulsive Internet Use Scale and sought to adapt it to a brief 6-item form (CIUS-6) based on Griffiths' component model of addiction. The study sampled 273 university students with mean age 34.6 (SD = 12.5) of which 68% were female. Assessment of the proposed CIUS-6 confirmed unidimensionality, acceptable reliability and validity at the item and construct levels. Additionally, three latent classes of compulsive internet use, namely 'high risk', 'medium risk' and 'low risk' were identified. A higher risk of compulsive internet use was associated with younger females with low self-control. Further, compulsive internet use was positively correlated with risky online behaviour. The optimal cutpoint of the CIUS-6 was determined to be 12, which gave a prevalence of 19.5% for compulsive internet use. In addition, the criteria of relapse/loss of control and mood modification showed the highest discriminative powers. The study concluded that the CIUS-6 is a psychometrically valid scale and that compulsive internet use is associated with psychological problems and potentially negative outcomes such as risky online behaviour. Further, the 14-item CIUS can be reduced to a format that is based on Griffith's six criteria of addiction, to allow easier comparison to studies examining various forms of social media addiction.

Keywords: Compulsive Internet use Scale; Rasch model; latent profile analysis; psychometric validation; Griffiths components model; risky online behaviour

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Introduction

Compulsive internet use is defined as a pathological preoccupation with the Internet, which can lead to psychological and physical impairment, i.e., it is an impulse control disorder (Dalal & Basu, 2016). Scholars view compulsive internet use as a multifaceted disorder that can take the form of excessive or maladaptive use of social media, online gaming, shopping and pornographic websites. However, they vary in terms of motives and needs affordance (Young et al., 2017). It has been associated with decreased productivity (academic and occupational), relationship problems, financial difficulties, comorbid psychopathologies such as depression, anxiety, and obsessive-compulsive disorder (Billieux et al., 2012; Khazaal et al., 2022). Moreover, studies have shown that compulsive internet use is associated with other forms of addiction, such as substance abuse and gambling (Lin & Tsai, 2016).

The mechanism underlying compulsive internet use is not fully understood, but research suggests that the release of pleasure-inducing brain chemicals such as dopamine and endorphins play a key role (Kuss & Griffiths, 2011). Furthermore, studies have found that individuals with compulsive internet use have alterations in brain structure and function, particularly in regions associated with impulse control, decision-making, and emotional regulation (Kuss & Griffiths, 2011). However, the concept of compulsive internet use is not universally accepted, as some researchers argue that it is not a distinct disorder, but rather a manifestation of underlying psychiatric conditions such as depression, anxiety, and attention deficit/hyperactivity disorder (ADHD) (van Rooij et al., 2011). In addition, a common criticism of the concept has been that the Internet should be considered the medium (or the delivery mechanism) for problematic behaviours, not the object of the addiction per se (Starcevic, 2013). Researchers such as Baggio et al. (2018, 2022) propose that people do not become addicted to the Internet but to one or more types of online activities (e.g., gaming, gambling, cybersex, social networking, or TV series watching).

Two covariates of compulsive internet use which are of interest are self-control and risky online behaviour. Self-control is a key component of addictive behaviour and can influence the development and maintenance of compulsive internet use. Studies have found that individuals with low self-control experience greater difficulty in regulating internet use and maintaining offline activities and relationships (Donkin et al., 2011; Papacharissi, 2010). Researchers have proposed that low self-control increases risk of compulsive internet use by making individuals more vulnerable to the reinforcing effects of the internet as they are intrinsically more focused on the receipt of short-term rewards that the internet provides (Kuss & Griffiths, 2011).

Another growing relationship of interest is between risky online behaviour and compulsive internet use, particularly as risky online behaviour is an antecedent for cybercrime victimization (Gámez-Guadix et al., 2016; Jiang et al., 2018; Toozandehjani et al., 2021). Empirical evidence suggests that compulsive internet use can increase the likelihood of engaging in risky online behaviours by reducing self-control and increasing impulsivity (Kardefelt-Winther, 2014). There is an intrinsic increase in risk since the individual spends

more time online, which leads to greater exposure to harmful content, such as illegal drugs, gambling, child exploitation, online fraud and other forms of cybercrime (Kardefelt-Winther, 2014).

The Compulsive Internet Use Scale

To better understand the nature of this behaviour and its impact on users, researchers have developed various measurement tools to assess the extent of internet use and the manifestation of addiction-like behaviours. One of these scales is the Compulsive Internet Use Scale (CIUS), developed by Meerkerk et al (2003). The CIUS is a measurement tool developed to assess the possibility that a user is experiencing compulsive internet use, which results in problematic, compulsive, and maladaptive online behaviours. The scale assesses the symptoms of compulsive internet use, which Meerkerk et al (2003) identified as the inability to control internet use, preoccupation with being online, agitation when the Internet is inaccessible or limited, perceived changes in mood when online, and conflict with others over the level of internet engagement.

The CIUS has been adapted and psychometrically tested in various cultural contexts and among specific groups with consistently good psychometric properties (Milasauskiene et al., 2021). Nevertheless, there remains a dispute among scholars regarding the factor structure and item inclusion of the CIUS (Milasauskiene et al., 2021). While several scholars have confirmed the CIUS' original 14-item one-factor structure (Lopez-Fernandez et al., 2019) others have proposed a three-factor structure (Alavi et al., 2011; Yong et al., 2017). Further, Lopez-Fernandez et al (2019) and Milasauskiene et al. (2021) have demonstrated the viability of short versions of the scale with 5, 7 and 9 items respectively.

The current study aimed to examine the psychometric properties of the CIUS for the first time in a Caribbean country among a sample of university students. To date, the psychometric properties of the CIUS have not been assessed in the Caribbean cultural context, as research into the compulsive use of the internet has been limited. Further, the study sought to develop a short form of the CIUS, consisting of 6 items, that follows Griffith's (2005) six criteria of addiction, like Bergen's Social Media Addiction Scale (BSMAS; Andreassen et al., 2015). This would enable easier use in a clinical setting and better comparison between compulsive internet use and the related area of problematic social media use.

Methods

Participants

The participants of this study were university students at the University of Trinidad and Tobago who were all over the age of eighteen (18). The Research Ethics Committee granted permission to distribute a self-administered online questionnaire to the students via email. The survey was administered during the first semester of the 2022-2023 academic year. The study captured data from 273 respondents, which comprised of 68% females. Age (M = 34.6, SD = 12.5)

ranged from 18 to 65 years. In addition, 72.3 % were single, 3.1% were co-habiting/common law, 22.3% were married and 2.3% were divorced.

Measures

Demographics

Gender was represented as a dichotomous variable, while age was given as ordinal (18–24, 25–34, 35–44, 45–54, 55–64 & 65 or older). Additionally, marital status was captured as a nominal variable with the four options of single, co-habiting/common-law, married and divorced.

Compulsive internet use

The Compulsive Internet Use Scale (CIUS) (Meerkerk et al., 2009) was used to measure pathological or maladaptive internet use in this study. This scale is made up of fourteen (14) 5-point Likert-type items, which ranged from 'never' = 0 to 'very often' = 4. A higher overall score indicates a stronger case for the user experiencing compulsive internet use, i.e., a greater manifestation of maladaptive behaviours.

Validation Variables

Given that the external criteria of self-control and risky online behaviour have been widely identified as being associated with problematic use of online services (and addiction in general) the study selected these factors for the validation of the LPA classification. The Brief Self-Control Scale (BSCS) (Tangney et al., 2004) was used to measure general trait self-control in this study. A higher score indicates a stronger case for the individual having more self-control. The Cronbach α and McDonald's ω for the BSCS were found to be 0.870 and 0.874 respectively. The construct of risky online behaviour was measured using the Risky Online Behaviour Scale (ROBS) (Smith et al., 2023). The scale consists of four factors (communicating with strangers and risky sexual behaviour, social networking and self-disclosure, handling emails, and accessing unsolicited content). A higher score indicates a stronger case for the individual engaging in higher levels of risky online behaviour. In this study, Cronbach α was 0.758 and McDonald's ω was 0.792 for the ROBS.

Data analyses

Several analyses were performed using Jamovi version 2.3 to provide a description of the respondents and to analyse the reliability and structural validity of the CIUS. As a preliminary step, the Barlett test for sphericity and the Kaiser-Meyer-Olkin (KMO) test were performed to assess the suitability of the data for factor analysis (suitability given as $p < 0.05$) and sampling adequacy respectively (KMO index > 0.6). Psychometric testing was done using both Classical Test Theory (CTT) and the Rasch model to enable assessment of the CIUS at both the construct and item levels. Machine learning techniques including Latent Profile Analysis and classification were also performed to identify the relative importance of the scale items and to create a more precise compulsive internet use risk classification mechanism than the simple use of a cut-off point.

The CIUS' internal consistency was assessed on the four metrics of Cronbach's α, McDonald's ω, composite reliability (CR) and average variance extracted (AVE). It is generally accepted that a Cronbach α of 0.6 - 0.7 indicates an acceptable level of reliability, and 0.8 or greater is a very good level (Ursachi et al., 2015). The CR is considered a less biased estimate of reliability than Cronbach's α, while AVE indicates the average percentage of variance explained by the scale items used to measure the latent construct. A value of 0.6 and above is considered a good value for CR while a score of 0.5 may be considered acceptable for the AVE (Alarcón & Sánchez, 2015; Awang, 2015). Together the CR and AVE are thought to best assess the convergent validity of the measurement tool (Fornell-Larcker, 1981).
To confirm the one-factor model of the CIUS Confirmatory Factor Analysis (CFA) using maximum likelihood estimation (MLE) estimation was implemented. Absolute fit, incremental fit and parsimonious fit were all considered in the evaluation of the suitability of the one-factor model. A p-value of the goodness of fit index (GFI) higher than 0.9, root mean square error of approximation (RMSEA) less than 0.05 (with *p*-value > 0.05) and a standardized root mean square residual (SRMR) less than 0.08 were used for the absolute fit (Barrett, 2007; Byrne, 2013). 0.90 were used for incremental fit (Bentler, 1990). While χ^2/df values less than 2.0 were used as the measure for parsimonious fit (Tabachnick & Fidell, 2007).

In terms of Rasch analyses, a Rasch rating scale model was used to report the item difficulty (how easy it is to agree with an attitudinal item), and to examine item validity, categorical functioning in the response scale, and item and person reliability. Item difficulty was presented on a Wright map that plots the items in an instrument according to their order of difficulty on the right using a linear scale (standardized). On the left, a bar chart shows the distribution of respondents in relation to the latent trait. Item validity was tested by evaluating the size of randomness or distortion in the measurement system (fit) (Boone et al., 2014). The measures of 'fit' used were information weighted fit statistic (infit) mean square (MnSq), and outlier sensitive fit statistic (outfit) MnSq with a recommended range between 0.5 and 1.5 suggesting a good fit (Jafari et al., 2012).

Once the above steps were completed the model and items were assessed for contribution to the model, redundancy, categorical functioning, and fit, then matched with Griffiths' six-criteria to narrow the tool from 14 to 6 items. After, the validation process using CTT and IRT was repeated for the brief CIUS (CIUS-6) measurement tool. At this point, gender differences were assessed using Multi-Group Confirmatory Factor Analysis (M-CFA) and Differential item functioning (DIF). M-CFA and DIF were performed to assess measurement invariance across gender to validate related comparisons in the examination of the CIUS-6 at the construct and item level respectively.

Latent profile analysis (LPA) was conducted on the CIUS-6 data to identify the latent subpopulations based on the varying levels of compulsive/maladaptive behaviour of participants. Models with 2–4 classes were estimated based on the Akaike information criterion (AIC), Bayesian information criterion (BIC), approximate weight of evidence (AWE), (CAIC), sample size adjusted BIC (SABIC) and entropy. The validity of the results of the LPA

identification of the classes was assessed by comparing them to external criteria (self-control and risky online behaviour) and demographics (gender and age).

The determination of an optimal empirical cutpoint was achieved by using sensitivity analysis with a focus on Youden's index, F1 score and a balance between sensitivity and specificity (Thiele & Hirschfeld, 2021). Similar, to the works of Smith and Short (2022) and Bányai et al., (2017) on social media addiction, the 'at-risk' group obtained from latent profile analysis was used as a 'pseudo gold standard' to separate cases from non-cases for the sensitivity analysis.

Results

14-item CIUS Scale

Preliminary Analysis

The mean overall CIUS score for the participants was found to be 19.5 (SD = 9.84). The appropriateness of the data for factor analysis was also assessed using Bartlett's test of sphericity (correlations within data) and Kaiser-Meyer-Olkin (KMO; assess the level of common variance among scale items) test for sampling adequacy. The dataset was found to be suitable for use with data reduction techniques (e.g., Confirmatory Factor Analysis) as the null hypothesis of the variables being orthogonal was rejected: $\chi 2\ (91) = 1240$, $p < .001$. Further, all KMO measures of sample adequacy were greater than 0.5 (Hair et al., 2009; Kaiser, 1974).

Rasch Analysis

For the 14-item CIUS the person reliability was found to be 0.879, suggesting that the scale may be able to classify respondents into 2 to 3 categories in relation to the construct. The mean absolute value of the centered Q_3 statistic (MADaQ3) was 0.13 (the closer this value is to zero, the better the scale aligns with a one-factor model). To confirm one-dimensionality, the Martin-Löf Likelihood-Ratio-Test was performed, which returned a significant value ($\chi 2=57.6$ df=38 p=.021) suggesting that the scale is not unidimensional. Checks of the MnSq Infit and Outfit values show that all items except Item 3 (Infit = -1.706 and Outfit = 1.788) fall within the range of 0.5 - 1.5. This suggests that Item 3 represents a deviation from one-dimensionality in the data, not in the measures, i.e., the unidimensional additive measures present a distorted picture of the data.

An examination of the Wright map (Figure 1) shows one gap in the continuity of difficulty between Item 3 and Item 10 of the scale. Further, it is highlighting that there are four cases where question difficulty overlaps. Table 1 captures the items and the associated questions where levels are at comparable item difficulty.

Figure 1

Wright Map of the Compulsive Internet Use Scale (14-item)

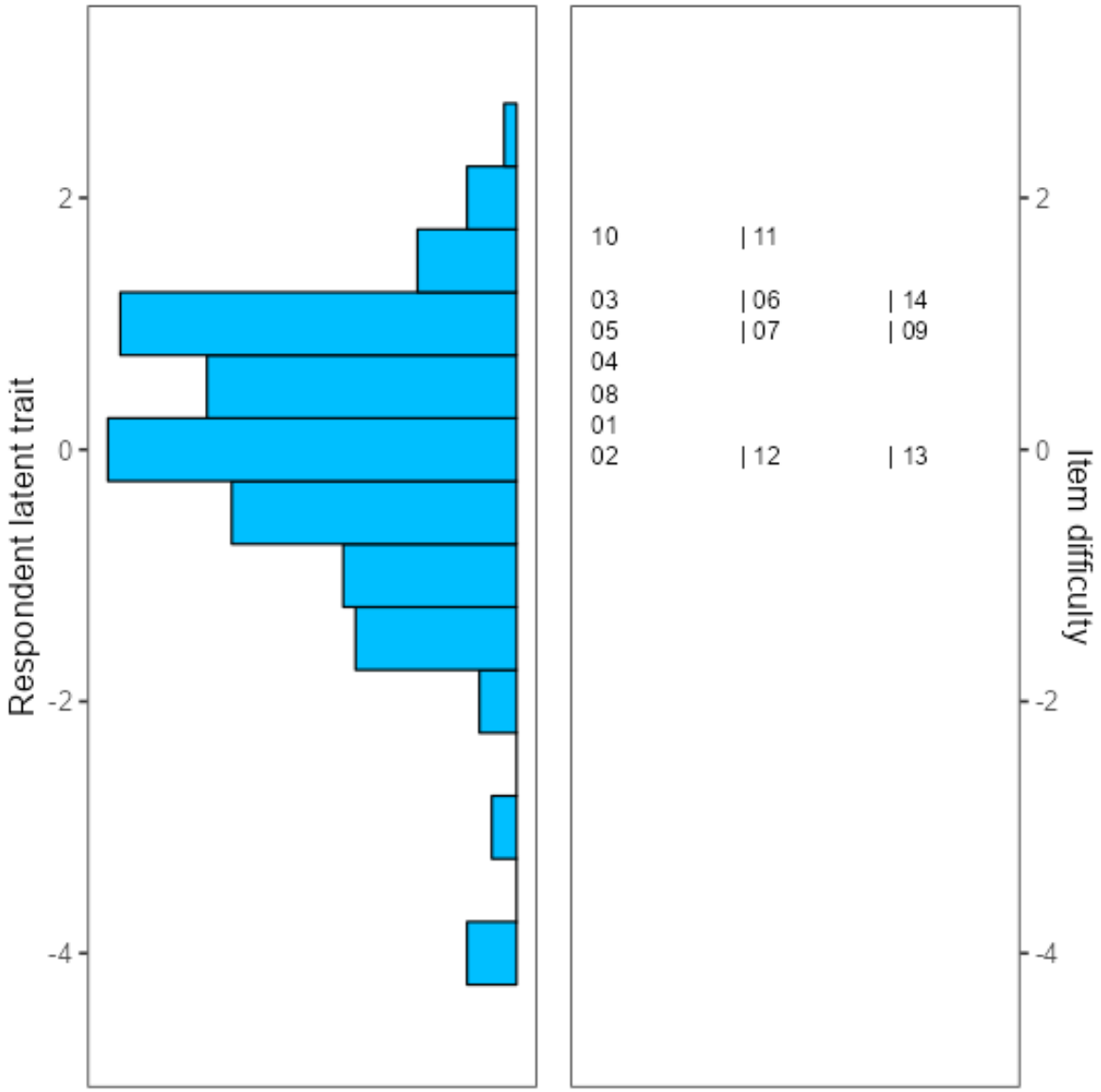


Table 1

Comparison Chart for the Selection of Suitable Items for the CIUS-6

Identifier	Griffiths Criteria	Factor Loading	Residual Correlation	Item with equivalent difficulty	Infit/Outfit Outside of Threshold	Included in All versions of the CIUS
Item 1	Tolerance	0.633	Item 2			X
Item 2	Tolerance	0.849		Item 12, Item 13		
Item 3	Conflict	0.406	Item 3, Item 11	Item 6, Item 14	X	
Item 4	Conflict	0.724	Item 8, Item 9			
Item 5	Relapse/Loss of Control	0.437		Item 7, Item 9		X
Item 6	Salience	0.775	Item 7, Item 12, Item 13	Item 3, item 14		
Item 7	Salience	0.743	Item 13	Item 5, Item 9		
Item 8	Conflict	0.797	Item 9			
Item 9	Relapse/Loss of Control	0.700		Item 5, Item 7		
Item 10	Conflict	0.540		Item 11		
Item 11	Conflict	0.624	Item 12	Item 10		X
Item 12	Mood Modification	0.703		Item 2, Item 13		X
Item 13	Mood Modification	0.845	Item 13	Item 2, Item 12		
Item 14	Withdrawal	0.524		Item 3, Item 6		

Factor Structure and Internal Consistency

In this study, Cronbach α was 0.735 and McDonald's ω was 0.746 for the CIUS-6. The reliability/internal consistency of the PTTUS was found to be Cronbach's α = .0.896; McDonald's ω = 0.901. Further, convergent validity was confirmed with a CR of .901 and an AVE of 0.402. A one-factor model of the CIUS with six dimensions (salience, tolerance, mood modification, relapse, withdrawal and conflict) was tested with CFA. The analysis provided the following results for measures of absolute fit to the data: $\chi^2(77) = 474$ ($p < .001$), RMSEA =.178 ($p < .001$), GFI = 0.993. Metrics for incremental fit were CFI = 0.669 and TLI = 0.609. Standardized factor loadings ranged from 0.406 to 0.849, with Item 3 being the only item with a factor loading less than .5. Results showed the $\chi^2/df = 6.16$, which was above the threshold value of 5.

Six-item Brief CIUS Scale

The selection of items for the 6-item scale sought to balance the reliability of the item in its measurement of the construct, reduce overlap in item difficulty, and align the scale with the widely accepted framework for addiction presented by Griffiths (2005). As such, several factors were considered, which are captured in Table 1.

Table 2 shows the selected items in the 6-item version of the Compulsive Internet Use Scale (CIUS-6) and compares it to other versions of the scale.

Preliminary

CIUS-6 mean score was 8.25 (S.D. = 4.16) with the respondent range being 0 to 19.

Rasch Analysis

The one-dimensionality of the scale was assessed using the Martin-Löf Likelihood-Ratio-Test, which return a value that led to the rejection of the null hypothesis ($\chi^2 = 134$ df = 127 $p = 0.327$) indicating that the item set is unidimensional. Further, the mean absolute value of centred Q_3 statistic (MADaQ3 = 0.0712) suggests a better fit to one-dimensionality than the 14-item version of the CIUS, i.e., the MADaQ3 of the 6-item version is closer to zero. For the 6-item CIUS, the person separation reliability was found to be 0.717, which corresponds to the scale being suitable to classify respondents into at least two levels in relation to the manifestation of the construct (compulsive internet use). The Infit and Outfit values of all six items fall within the acceptable 0.5 - 1.5 suggesting that all items are productive for the measurement of the construct.

Table 2

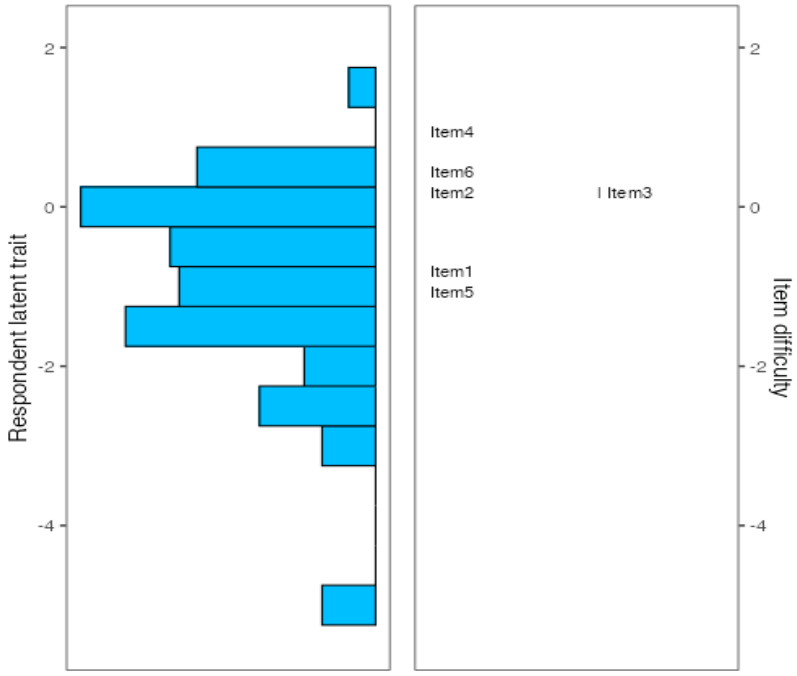
Items with High Discriminative Power and Alignment with Griffiths Criteria of Addiction (CIUS-6 in Comparison with Items of other Short CIUS Versions)

CIUS 14-item	Item Label	CIUS-9	CIUS-8	CIUS-5	CIUS-6
1	Do you find it difficult to stop using the Internet when you are online?	X	X	X	X
2	Do you continue to use the Internet despite your intention to stop?				
3	Do others (e.g., partner, children, and parents) say you should use the Internet less?	X		X	
4	Do you prefer to use the Internet instead of spending time with others (e.g., partner, children, and parents)?	X	X		
5	Are you short of sleep because of the Internet?	X	X	X	X
6	Do you think about the Internet, even when not online?				
7	Do you look forward to your next Internet session?	X	X		X
8	Do you think you should use the Internet less often?				
9	Have you unsuccessfully tried to spend less time on the Internet?	X	X		
10	Do you rush through your (home) work in order to go on the Internet?				
11	Do you neglect your daily obligations (work, school, or family life) because you prefer to go on the Internet?	X	X	X	X
12	Do you go on the Internet when you are feeling down?	X	X	X	X
13	Do you use the Internet to escape from your sorrows or get relief from negative feelings?				
14	Do you feel restless, frustrated, or irritated when you cannot use the Internet?	X	X		X

The relative difficulty of questions and the distribution of the latent trait were visualized using Rasch analysis with a Wright map (see Figure 2). Except for Item 2 and Item 3, each item measures a different level of the latent trait. A considerable gap was identified between Item 1 and Item 2, which suggests that for a more precise measure of the latent trait, an item or items of relevant difficulty can be added at this point. However, the items do cover a suitable range of the various levels of the trait, particularly at the medium to high levels.

Figure 2

Wright Map of the Compulsive Internet Use Scale (6-item)



Factor Structure and Internal Consistency

In this study, Cronbach α was 0.735 and McDonald's ω was 0.746 for the CIUS-6. The reliability/internal consistency of the PTTUS was found to be (Cronbach's α = .0.735; McDonald's ω = 0.746). The CR and AVE for the CIUS-6 were determined to be 0.746 and 0.336 respectively. Although the AVE is less than 0.5, Fornell and Larcker (1981) suggest that once the CR is greater than 0.6, the convergent reliability of the construct is still adequate (Hair et al., 2009). A one-factor model of the CIUS with six dimensions (salience, tolerance, mood modification, relapse, withdrawal and conflict) was tested with CFA. The analysis provided the following results for measures of absolute fit to the data: $\chi^2(9) = 9.08$ ($p = 0.430$), RMSEA =.007 ($p = .706$), GFI = 0.993. Metrics for incremental fit were CFI = 0.998 and TLI = 0.997. Standardized factor loadings ranged from 0.458 to 0.773. The $\chi^2/df = 1.01$, and this was below the threshold value.

Equivalence test (Gender Differences)

To confirm that meaningful and valid comparisons can be made across gender using the CIUS-6, measurement invariance was assessed using Multi-group Confirmatory Factor Analysis (M-CFA). When the configural invariance was examined, the model achieved an acceptable fit with GFI = 0.967 indicating the overall factor structure holds similarly for both sexes. Metric and Scalar invariances were also found to be acceptable with the model fit score remaining at 0.967; i.e., there was no notable decrease in fit when factor loadings or intercept equivalence were constrained. Therefore, a valid comparison of variance, covariance and factor means across genders is possible.

To assess the existence of gender differences at the construct level, the two one-sided t-tests (TOST) of the equivalence method was used. The results of the TOST yielded a p-value of 0.435, which suggests that at the construct level males and females are equivalent in their likelihood of experiencing compulsive internet use. Differential Item Functioning (DIF) was used to assess differences at the individual item level. An examination the results showed that gender differences were found in Item 1 ($p < .001$), Item 2 ($p = .016$), Item 3 ($p < .001$) and Item 5 ($p = .004$)

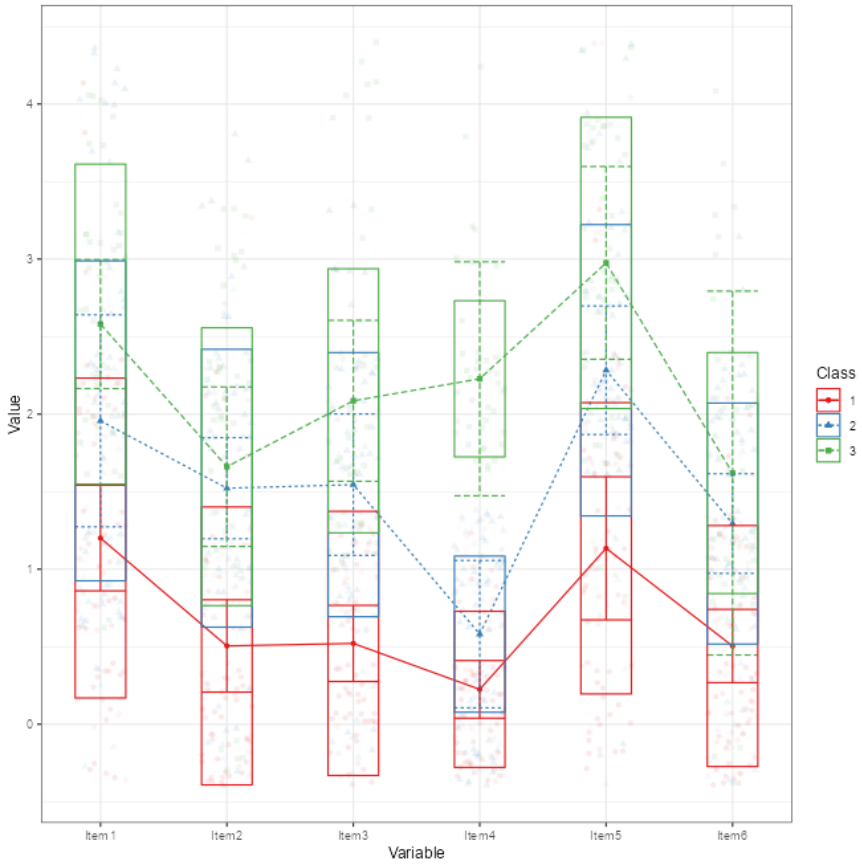
Latent Profile Analysis

LPA was performed on the six items of the CIUS-6, and based on the metrics obtained, the three-class solution was selected as the best-fitting model. While the AIC decreased (slightly) and the BIC increased between models 3 and 4, the 3-class model was also supported by a larger entropy and significant BLRT. The 3-class was also supported by the person reliability of 0.717 obtained from the Rasch analysis, which assesses whether the scale discriminates the sample into enough levels for the needed purpose. The literature suggests that a score more than 0.5 and closer to 0.8 or close will discriminate the sample into 2-3 levels (Bond et al., 2020).

The resulting three classes were grouped as follows: Class 1 (low risk users), Class 2 (medium risk users) and Class 3 (high risk users). The ‘low risk’ class represented 35.4% of users, the ‘medium risk’ class represented the most users at 40.7%, while the ‘high risk’ group consisted of 24.1% of users. The profiles of participants grouped into the three classes are presented in Figure 3. It was observed that within the ‘high-risk’ group, that Item 4 and Item 5 showed elevated levels compared to other dimensions.

Figure 3

Latent Profile for the 3-class Solution of CIUS-6 (N = 273)



Note: Class 3 ('high risk', green), Class 2 ('medium risk, blue), Class 1 ('low risk', red)

The results of the ANOVAs and the accompanying ad hoc pairwise tests (Table 3) suggested that all indicators were influential in the clustering (class assignment) process. This was evidenced by the scores of the criteria in the 'high risk' group being consistently higher than those in the 'medium risk' group and similarly 'medium risk' higher than 'low risk'. Additionally, the results verify that Item 4 had the largest effect size which was followed by Item 5. This suggests that the main signs of a high-risk user are Conflict (preference for online activity over offline communication) and Relapse/Loss Control (loss of sleep to engage in the use of the Internet).

Table 3

Comparison of the Two Latent Classes: Testing Equality for Latent Class Predictors (N= 173)

Addiction Criteria	Class 1 [Low risk] (n = 35.2%)	Class 2 [Medium risk] (n = 40.7%)	Class 3 [High risk] (n = 24.1%)	One-Way ANOVA	Pairwise Comparison of classes	Effect size (ε^2)
Item 1	1.19 (0.95)	1.92 (1.19)	2.59 (0.88)	<.001	3> 2 > 1	.23
Item 2	0.47 (0.78)	1.50 (0.95)	1.67 (0.98)	<.001	3, 2 > 1	.28
Item 3	0.47 (0.57)	1.55 (0.89)	2.08 (1.09)	<.001	3, 2 > 1	.39
Item 4	0.25 (0.43)	0.53 (0.50)	2.26 (0.55)	<.001	3> 2 > 1	.66
Item 5	0.95 (0.85)	2.41 (0.88)	2.95 (0.89)	<.001	3> 2 > 1	.49
Item 6	0.44 (0.59)	1.32 (0.77)	1.62 (0.96)	<.001	3, 2 > 1	.31
Overall	3.77 (1.84)	9.32 (1.95)	13.2 (2.35)	<.001	3> 2 > 1	.81

Note: For each variable the class mean is provided with the standard deviation in brackets

Validation and Characterization

The results of ANOVAs and pairwise comparisons between classes regarding demographics and covariates are presented in Table 4. There was a significant difference in age among classes, with members of the 'high-risk' class (class 3) having a significantly higher probability of being younger than persons in the other classes. The psychological factor of self-control was also found to be significantly different between classes. Persons with low self-control are more likely to be categorized in class 3 than class 2 or 1, i.e., as self-control decreases, the risk of compulsive internet use increases. Similar findings were found for risky online behaviour as it increased as the risk went from low (Class 1) to high (Class 3).

Table 4

Associations among Latent Classes, Demographic Characteristics, Covariates and Cybercrime Victimization

Variable	**Class 1 [low risk] (n = 35.2%)**	**Class 2 [medium risk] (n = 40.7%)**	**Class 3 [high risk] (n = 24.1%)**	**Test**	**Pairwise Comparison of classes**	**Effect size (ε^2)**
Demographics						
Sex (Female %, Male %)	58.1%,41.9%	73.2%,26.8%	74.2%, 25.8%	χ^2 (2) = 3.18, *p* = .204		--
Age	38.6 (12.0)	34.4 (13.9)	29.4 (7.89)	χ^2 (2) = 10.1, *p* = .006	1 > 2 > 3	0.079
Self-control	27.6 (9.31)	32.9 (8.45)	36.8 (5.55)	χ^2 (2) = 34.7, *p* < .001	3 > 2 > 1	0.252
Risky Online Behaviour	4.32 (5.26)	5.2 (4.67)	6.09 (3.69)	χ^2 (2) = 14.2, p < .001	3 > 2 > 1	0.088

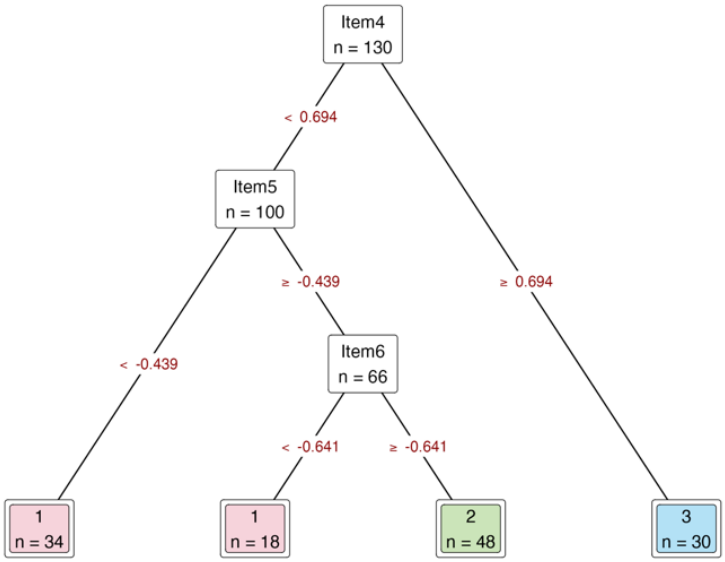
*Greater proportion of females to males in Classes 3 and 2

Prediction of Compulsive Internet Use Using Machine Learning (Decision Tree)

The decision tree classifier had an accuracy of 87.5%. However, accuracy alone is insufficient in the assessment of performance, especially if the data is imbalanced as it may provide misleading results. In such a case, especially if precision and recall are both important, F1 Score and Matthews's correlation coefficient (MCC) are more suitable. For the decision tree algorithms, the F1 score ranged was 0.871 and the MCC was 0.907. Further, the most important item used in classification was Item 4 (Relapse/loss of Control) followed by Item 5 (Mood Modification). The decision tree model also shines in the ease of representation of the process of class selection as is shown in Figure 4.

Figure 4

Decision Tree for the Classification of Internet Users into the LPA Derived Classes of Compulsive Internet Use



Identification of an Empirical Cut-Off Score for the PTTU Using ROC-AUC

From the analysis, a cut-off score of 12 was suggested as the ideal threshold above which persons would be classified as 'high-risk' of compulsive internet use. The Youden index was 0.773, the Area Under Curve (AUC) was 0.953 and the F1-Score was 0.815. With scores for all the combined metrics being greater than 0.7, this cutpoint was taken as a very good model for the classification of cases of compulsive internet use. Further, the specificity was 92.68% and the sensitivity was 84.62% giving an overall accuracy of 90.7%.

Discussion

The present study achieved several objectives which were the psychometric testing of the CIUS 14-item measurement tool, the development and validation of a six-item version of the CIUS, the identification of latent risk profiles of compulsive internet use, the determination of an empirical cut-off point for the CIUS-6, and the development of machine learning classification models. The results show that the 14-item CIUS has a poor global overall model fit and may be better represented as a multifactor scale. In comparison, the CIUS-6 was found to have good global model fit, reliability and validity with the ability to separate users into three latent classes.

Findings of both the CTT and Rasch model approaches suggest that the 14-item CIUS is not unidimensional as indicated by the poor model fit using CFA and the significant Martin-Löf

Likelihood-Ratio-Test similar to previous studies (Lopez-Fernandez et al., 2019; Milasauskiene et al., 2021). Further, the Rasch analysis showed that Item 3 (measuring the criteria of Conflict) did not fit within a unidimensional structure and as such would provide a distorted picture of the data. However, the model had good internal consistency and acceptable convergent validity, which was consistent with previous studies (Downing et al., 2014). The Wright Map showed that several Items had the same level of difficulty and as such if they assessed the same criteria of addiction may be redundant as they would not add to the scale's ability to separate levels of compulsive internet use.

A review of the items of the 14-item CIUS after classifying each item into one of Griffiths' (2009) criteria of addition, checking R^2 values, Infit/Outfit and level of item difficulty was performed to determine the six items of the CIUS-6. Further, a review of the literature suggested that Item 9 had difficulties related to its interpretation due to its negative formulation and as such were removed (Khazaal et al., 2011). The CIUS-6 was found to match well in its selection of the most discriminating items/criteria to previous studies (Khazaal et al., 2022). The items selected were Item 1, Item 5, Item 7, Item 11, Item 12 and Item 14 (see Table 7). The study found that the CIUS-6 had adequate internal consistency and convergence, though lower than the original scale. Unlike the 14-item CIUS the CIUS-6 was found to be unidimensional using both CTT and Rasch analysis. The Rasch analysis showed that all items of the scale were explained and interpreted well by the unidimensional model and that there was only one case of possible overlap in item difficulty. The Wright Map showed a limitation in the scale's ability to measure compulsive internet use across the entire continuum. However, there were clear levels that could potentially separate into three classes as supported by the person reliability score of 0.717.

The LPA identified three levels of internet use based on the manifestation of maladaptive behaviours. The three levels or classes were high risk (24.1%), medium risk (40.7%) and low risk (35.4%) with the high-risk class being the smallest group. While all items significantly contributed to classification into the three classes Item 4 (Relapse/loss of Control) and Item 5 (Mood Modification) were found to have the largest effect suggesting these were the most discriminating. Gender was not found to be a determinant of the class of compulsive use. While compulsive internet use risk was found to decrease with increasing age, which is like multiple forms of online addiction including social media addiction (Smith & Short, 2022). To validate the LPA classes and test criterion validity, the participant's level of self-control and risky online behaviour were measured. According to the literature, lower levels of self-control and higher levels of risky online behaviour are associated with Compulsive internet use (de Alarcón et al., 2019; Griffiths, 2013; Kuss & Griffths, 2011; Ma, 2011; Wu & Tsai, 2012). This was supported by the findings of the study suggesting a mechanism of impulsivity and preference for quick rewards, which may be exacerbated by continuous and translate into risky online behaviours. The optimal cut-off point was determined to be 12 when optimizing the metrics of F1-Score and MCC. Using the identified cut-off score, the prevalence of Compulsive internet use was identified as 19.5%.

Given that the M-CFA confirmed that valid comparisons could be made across genders gender differences were assessed at the item and construct levels. In this sample mainly composed of young Trinidadian participants, no significant relationship was found between CIUS-6 scores and gender. Studies have had mixed results regarding the relationship between compulsive internet use and gender, although generally males were found to be more addicted to the Internet than females (Khazaal et al., 2022). At the item level, significant differences were found primarily for Item 1, Item 2, Item 3 and Item 5. Similarly, when the difference in levels of endorsement was assessed, females were found to endorse Item 2, Item 3, while males endorsed Item 4 more than males.

Given the disproportionality of importance (see Table 10) of each criterion in predicting compulsive internet use, and identification of at-risk persons, I propose that a simple cut-off point may not best identify addictive behaviour. Instead, a decision tree process may be more accurate. This shows that this type of machine learning approach can potentially be a useful tool to consistently classify persons into risk levels. This does not reduce the need for clinical diagnosis as the final step, but provides a relatively quick and robust method with acceptable accuracy for initial screening. The classification algorithm also confirmed that Item 4 (Relapse/Loss of Control) and Item 5 (Mood Modification) are the parameters with the highest discrimination. Therefore, this indicates that they have a high ability to give more information on the latent trait, which allows for greater differentiation of people in relation to the latent trait. The recognition of 'relapse/loss of control' as a core criterion in the identification of maladaptive behaviours has been rather consistent especially among social media addiction studies (Kuss & Griffiths, 2017; Smith & Short, 2022). Mood modification has only been found to be within the top two parameters in relation to discriminating power in limited studies (Smith, 2022). The importance of mood modification suggests that escapism and needs affordance may play an important role in compulsive internet use.

The study should be interpreted in the context of its limitations. The results depended on self-reported cross-sectional data and as such causality could not be established. Further, no psychosocial outcomes were used to test the convergent and divergent validity of the scale. The measures were also presented in the same order for all participants which may have led to ordering effects.

Conclusions

Reliable and validated tools will allow better and more consistent identification of maladaptive behaviours online. However, these tools must consider the importance of brevity in ensuring or increasing the likelihood of high respondent participation. The results of the study suggest that a

6-item version of the CIUS can be used to assess compulsive internet use. The CIUS-6 has the potential to be a useful tool for researchers and clinicians who are interested in studying or treating compulsive internet use. In addition, it allows for a comparison between the phenomenon of compulsive internet use and social media addictions, which can add to current knowledge on their relationship to each other and the possible existence of a similar underlying mechanism of addiction. Further, this research adds to the extant literature and scholarship in the field as it adds to the validity of the concept of compulsive internet use, its existence in the Caribbean and the measurement tool in a different sample and context. It also adds greater depth to the psychometric analysis of the compulsive internet use measurement tool by combining CTT and the Rasch model in the analysis.

References

Alarcón, D., & Sánchez, J. (2015). Assessing convergent and discriminant validity in the ADHD-R IV rating scale: User-written commands for average variance extracted (AVE), composite reliability (CR), and heterotrait-monotrait ratio of correlations (HTMT). Spanish STATA Meeting 2015.

Alavi, S., Maracy, M., Jannatifard, F., & Eslami, M. (2011). The effect of psychiatric symptoms on the compulsive internet use disorder in Isfahan's university students. *Journal of Research in Medical Sciences: The Official Journal of Isfahan University of Medical Sciences*, *16*(6), 793–800.

Andreassen, C. S. (2015). Online social network site addiction: A comprehensive review. *Current Addiction Reports, 2*(2), 175–184. https://doi.org/10.1007/s40429-015-0056-9

Awang, Z. (2015). *SEM made simple: A gentle approach to learning structural equation modeling* MPWS Rich Publication.

Baggio, S., Starcevic, V., Studer, J., Simon, O., Gainsbury, S.M., Gmel, G., Billieux, J. (2018). Technology-mediated addictive behaviours constitute a spectrum of related yet distinct conditions: A network perspective. *Psychology of Addictive Behaviors, 32*(5), 564e572. https://doi.org/10.1037/adb0000379.

Baggio, V. Starcevic, J. Billieux, D.L., King, S.M., Gainsbury, G.D., Eslick, D., Berle, D. (2022). Testing the spectrum hypothesis of problematic online behaviours: A network analysis approach. *Addictive Behaviors*, *135*, 107451. https://doi.org/10.1016/j.addbeh.2022.107451

Bányai, F., Zsila, Á., Király, O., Maraz, A., Elekes, Z., Griffiths, M. D., Andreassen, C. S., & Demetrovics, Z. (2017). Problematic social media use: Results from a large-scale nationally representative adolescent sample. *PLOS ONE, 12*(1), e0169839. https://doi.org/10.1371/journal.pone.0169839

Barrett, K. (2013). Cyber Security in Trinidad and Tobago: A Public Sector Perspective." *Committee on Hemispheric Security*.

Bentler, P. M. C(1990). Comparative Fit Indexes in Structural Models." *Psychological Bulletin*, 107(2), 238-246. https://doi.org/10.1037/0033-2909.107.2.238.

Billieux, J., Van der Linden, M., & Rochat, L. (2008). The role of impulsivity in actual and problematic use of the mobile phone. *Applied Cognitive Psychology*, *22*(9), 1195–1210. https://doi.org/10.1002/acp.1429

Billieux, J., Lagrange, G., Van der Linden, M., Lançon, C., Adida, M., & Jeanningros, R. (2012). Investigation of impulsivity in a sample of treatment-seeking pathological gamblers: A multidimensional perspective. *Psychiatry Research*, *198*(2), 291–296. https://doi.org/10.1016/j.psychres.2012.01.001

Bond, T. G., Yan, Z., & Heene, M. (2020). *Applying the Rasch model: Fundamental measurement in the human sciences* (4th ed.). Routledge. https://doi.org/10.4324/9780429030499

Boone, W. J., Staver, J. R., & Yale, M. S. (2014). Person reliability, item reliability, and more. In W. J. Boone, J. R. Staver, & M. S. Yale (Eds.), *Rasch analysis in the human sciences* (pp. 217–234). Springer Netherlands. https://doi.org/10.1007/978-94-007-6857-4_10

Breiman, L. (1996). *Bias, variance, and arcing classifiers* (Technical Report 460). University of California; /z-wcorg/. http://stat-reports.lib.berkeley.edu/accessPages/460.html

Breiman, L. (2001). Random forests. *Machine Learning*, *45*(1), 5–32. https://doi.org/10.1023/A:1010933404324

Byrne, Barbara M. *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*. 2nd ed. Routledge, 2013. https://doi.org/10.4324/9780203805534.

Chuang, S.-C., Lin, F.-M., & Tsai, C.-C. (2015). An exploration of the relationship between Internet self-efficacy and sources of Internet self-efficacy among Taiwanese university students. *Computers in Human Behaviour*, *48*, 147–155. https://doi.org/10.1016/j.chb.2015.01.044

Cortes, C., & Vapnik, V. (1995). Support-vector networks. *Machine Learning*, *20*(3), 273–297. https://doi.org/10.1007/BF00994018

Dalal, P., & Basu, D. (2016). Twenty years of compulsive internet use … Quo vadis? *Indian Journal of Psychiatry*, *58*(1), https://doi.org/10.4103/0019-5545.174354

de Alarcón, R., de la Iglesia, J., Casado, N., & Montejo, A. (2019). Online porn addiction: What we know and what we don't—A systematic review. *Journal of Clinical Medicine*, *8*(1), 91. https://doi.org/10.3390/jcm8010091

Donkin, L., Christensen, H., Naismith, S. L., Neal, B., Hickie, I. B., & Glozier, N. (2011). A systematic review of the impact of adherence on the effectiveness of e-therapies. *Journal of Medical Internet Research*, *13*(3), e52. https://doi.org/10.2196/jmir.1772

Downing, M. J., Antebi, N., & Schrimshaw, E. W. (2014). Compulsive use of internet-based sexually explicit media: Adaptation and validation of the compulsive internet use scale (CIUS). *Addictive Behaviours*, *39*(6), 1126–1130. https://doi.org/10.1016/j.addbeh.2014.03.007

Dwyer, D. B., Falkai, P., & Koutsouleris, N. (2018). Machine learning approaches for clinical psychology and psychiatry. *Annual Review of Clinical Psychology*, *14*(1), 91–118. https://doi.org/10.1146/annurev-clinpsy-032816-045037

Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39. https://doi.org/10.2307/3151312

Friedman, J., Hastie, T., & Tibshirani, R. (2000). Additive logistic regression: A statistical view of boosting (With discussion and a rejoinder by the authors). *The Annals of Statistics*, *28*(2). https://doi.org/10.1214/aos/1016218223

Fung, S., Kong, C. Y. W., & Huang, Q. (2020). Evaluating the dimensionality and psychometric properties of the brief self-control scale amongst Chinese university students. *Frontiers in Psychology*, *10*, 2903. https://doi.org/10.3389/fpsyg.2019.02903

Gámez-Guadix, M., Borrajo, E., & Almendros, C. (2016). Risky online behaviours among adolescents: Longitudinal relations among problematic internet use, cyberbullying perpetration, and meeting strangers online. *Journal of Behavioural Addictions*, *5*(1), 100–107. https://doi.org/10.1556/2006.5.2016.013

Griffiths, M. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance Use*, *10*(4), 191–197. https://doi.org/10.1080/14659890500114359

Griffiths, M. D. (2009). Internet Abuse and Internet Addiction in the Workplace: Issues and Concerns for Employers. *Journal of Workplace Learning*, 21(8), 658-670.

Hair, J. F., Black, W., Babin, B., Anderson, R., & Tatham, R. (2009). *Multivariate data analysis* (7th ed). Prentice Hall.

Jafari, P., Bagheri, Z., Ayatollahi, S. M. T., & Soltani, Z. (2012). Using Rasch rating scale model to reassess the psychometric properties of the Persian version of the PedsQLTM 4.0 generic core scales in school children. *Health and Quality of Life Outcomes*, *10*(1), 27. https://doi.org/10.1186/1477-7525-10-27

Jiang, Q., Huang, X., & Tao, R. (2018). Examining factors influencing compulsive internet use and adolescent risk behaviours among excessive internet users. *Health Communication*, *33*(12), 1434–1444. https://doi.org/10.1080/10410236.2017.1358241

Kaiser, H. (1974). An Index of Factorial Simplicity. *Psychometrika*, 39(1), 31-36. https://doi.org/10.1007/BF02291575.

Kardefelt-Winther, D. (2014). A conceptual and methodological critique of compulsive internet use research: Towards a model of compensatory internet use. *Computers in Human Behaviour*, *31*, 351–354. https://doi.org/10.1016/j.chb.2013.10.059

Khazaal, Y., Favrod, J., Azoulay, S., Finot, S. C., Bernabotto, M., Raffard, S., Libbrecht, J., Dieben, K., Levoyer, D., & Pomini, V. (2011). "Michael's Game," a card game for the treatment of psychotic symptoms. *Patient Education and Counseling*, *83*(2), 210–216. https://doi.org/10.1016/j.pec.2010.05.017

Khazaal, Y., El Abiddine, F. Z., Penzenstadler, L., Berbiche, D., Bteich, G., Valizadeh-Haghi, S., Rochat, L., Achab, S., Khan, R., & Chatton, A. (2022). Evaluation of the psychometric

properties of the Arab compulsive internet use scale (CIUS) by item response theory modeling (IRT). *International Journal of Environmental Research and Public Health, 19*(19), 12099. https://doi.org/10.3390/ijerph191912099

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction—A review of the psychological literature. *International Journal of Environmental Research and Public Health, 8*(9), 3528–3552. https://doi.org/10.3390/ijerph8093528

Kuss, D., & Griffiths, M. (2017). Social networking sites and addiction: Ten lessons learned. International Journal of Environmental Research and Public Health, 14(3), 311. https://doi.org/10.3390/ijerph14030311

Lecun, Y., Bottou, L., Bengio, Y., & Haffner, P. (1998). Gradient-based learning applied to document recognition. *Proceedings of the IEEE, 86*(11), 2278–2324. https://doi.org/10.1109/5.726791

Lin, C.-Y., & Tsai, M.-C. (2016). Effects of family context on adolescents' psychological problems: Moderated by pubertal timing and mediated by self-esteem and interpersonal relationships. *Applied Research in Quality of Life, 11*(3), 907–923. https://doi.org/10.1007/s11482-015-9410-2

Lopez-Fernandez, O., Williams, A. J., Griffiths, M. D., & Kuss, D. J. (2019). Female gaming, gaming addiction, and the role of women within gaming culture: A narrative literature review. *Frontiers in Psychiatry, 10,* 454. https://doi.org/10.3389/fpsyt.2019.00454

Ma, H. K. (2011). Compulsive internet use and antisocial internet behaviour of adolescents. *The Scientific World JOURNAL, 11*, 2187–2196. https://doi.org/10.1100/2011/308631

Manapat, P. D., Edwards, M. C., MacKinnon, D. P., Poldrack, R. A., & Marsch, L. A. (2021). A psychometric analysis of the brief self-control scale. *Assessment, 28*(2), 395–412. https://doi.org/10.1177/1073191119890021

Meerkerk, G.-J., Van Den Eijnden, R. J. J. M., Vermulst, A. A., & Garretsen, H. F. L. (2009). The compulsive internet use scale (CIUS): Some psychometric properties. *CyberPsychology & Behaviour, 12*(1), 1–6. https://doi.org/10.1089/cpb.2008.0181

Milasauskiene, E., Burkauskas, J., Podlipskyte, A., Király, O., Demetrovics, Z., Ambrasas, L., & Steibliene, V. (2021). Compulsive internet use scale: Psychometric properties and associations with sleeping patterns, mental health, and well-being in Lithuanian medical students during the coronavirus disease 2019 pandemic. *Frontiers in Psychology, 12*, 685137. https://doi.org/10.3389/fpsyg.2021.685137

Papacharissi, Z. (2010). *A private sphere: Democracy in a digital age*. Polity.

Smith, T. (2022). Facebook addiction user risk profiles among college students: Identification of subclasses of addictive behaviours characterized by demographics and covariates using latent profile analysis. *Telematics and Informatics Reports, 8*, 100027. https://doi.org/10.1016/j.teler.2022.100027

Smith, T., Leukfeldt, E. R., & van de Weijer, S. (2022, November). Risky online behaviours scale validation and identification of behavioural sub-groups: An assessment using

classical test theory and the Rasch model [Conference Presentation]. Annual Human Factor in Cybercrime Conference, Clearwater, Florida.

Smith, T., & Short, A. (2022). Needs affordance as a key factor in likelihood of problematic social media use: Validation, latent profile analysis and comparison of TikTok and Facebook problematic use measures. *Addictive Behaviours*, *129*, 107259. https://doi.org/10.1016/j.addbeh.2022.107259

Starcevic, V., 2013. Is internet addiction a useful concept? *Australian & New Zealand Journal of Psychiatry*, *47* (1), 16e19. https://doi.org/10.1177/0004867412461693.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon/Pearson Education.

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, *72*(2), 271–324. https://doi.org/10.1111/j.0022-3506.2004.00263.x

Thiele, C., & Hirschfeld, G. (2021). cutpointr: Improved estimation and validation of optimal cutpoints in R. *Journal of Statistical Software*, *98*(11), 1–27. https://doi.org/10.18637/jss.v098.i11

Toozandehjani, A., Mahmoodi, Z., Rahimzadeh, M., Jashni Motlagh, A., Akbari Kamrani, M., & Esmaelzadeh Saeieh, S. (2021). The predictor role of compulsive internet use in high- risk behaviours and general health status among Alborz students: A structural equation model. *Heliyon*, *7*(5), e06987. https://doi.org/10.1016/j.heliyon.2021.e06987

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance*, *20*, 679–686. https://doi.org/10.1016/S2212-5671(15)00123-9

Van Rooij, A. J., Schoenmakers, T. M., Vermulst, A. A., Van Den Eijnden, R. J. J. M., & Van De Mheen, D. (2011). Online video game addiction: Identification of addicted adolescent gamers: Online video game addiction. *Addiction*, *106*(1), 205–212. https://doi.org/10.1111/j.1360-0443.2010.03104.x

Van Rooij, A., & Prause, N. (2014). A critical review of "compulsive internet use" criteria with suggestions for the future. *Journal of Behavioural Addictions*, *3*(4), 203–213. https://doi.org/10.1556/JBA.3.2014.4.1

Wu, Y.-T., & Tsai, C.-C. (2006). University students' internet attitudes and internet self-efficacy: A study at three universities in Taiwan. *CyberPsychology & Behaviour*, *9*(4), 441–450. https://doi.org/10.1089/cpb.2006.9.441

Yong, R. K. F., Inoue, A., & Kawakami, N. (2017). The validity and psychometric properties of the Japanese version of the compulsive internet use scale (CIUS). *BMC Psychiatry*, *17*(1), 201. https://doi.org/10.1186/s12888-017-1364-5

Young, N. L., Kuss, D. J., Griffiths, M. D., & Howard, C. J. (2017). Passive Facebook use, Facebook addiction, and associations with escapism: An experimental vignette study. *Computers in Human Behaviour*, *71*, 24–31.