Volume 8, Number 1

Print ISSN: 2574-0415
Online ISSN: 2574-0423

GLOBAL JOURNAL OF ENTREPRENEURSHIP

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ENTREPRENEURIAL ECOSYSTEMS: RURAL, SUBURBAN, URBAN AND HIGHER EDUCATION VARIATIONS

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ABSTRACT

There is a growing argument that entrepreneurship found in rural locations significantly differs from entrepreneurship found in urban or suburban locations. We wondered if we could find differences between the entrepreneurship education program and degree offerings delivered by rural universities compared to the programs and degrees offered by non-rural universities. This paper reports on a descriptive study of one university system and the degree of similarity across the number and range of entrepreneurship courses and degree programs offered by institutions in the system as it relates to their location. Initial support for guiding questions was found, which included the higher average intensity of entrepreneurship courses and programs in rural areas than those found in urban or suburban areas.

INTRODUCTION

The world has had two major disruptive events within the last couple of decades: the financial crises of 2008 (Williams, 2008) and the COVID-19 pandemic that began in 2019 (Karabag, 2020). There were also natural disasters that affected large areas such as the fires in California in 2019 and 2020 (Rauch & Hulsink, 2023). While such disruptive crises can enable entrepreneurs to start businesses, it may also cause the shutdown of others (Rauch & Hulsink, 2023). The response of entrepreneurs and the entrepreneurial ecosystem matters (Williams & Shepherd, 2016).

Small businesses across all industries drive 44% of the United States economic activity (Kobe & Svchwinn, 2018). One of the suppliers of small business owners, via initiating entrepreneurs, is the beginning of the entrepreneurial ecosystem, entrepreneurship education. Interest in entrepreneurship and the number of entrepreneurship education programs at universities has grown over the last 10 to 20 years (Ratten & Jones, 2021; Welter et al., 2019) and this trend should continue into the future (Ratten & Jones, 2021). However, given these recent upsets, we wonder if the entrepreneurship training provided by education/government partnerships fits the local area economic development/redevelopment needs.

LITERATURE REVIEW

In this literature review, we will examine the state of entrepreneurship education in general and state-sponsored education in particular. Our goal is to determine if the recent past had educational programs that were contextualized to their locations. In particular, we will examine several cases of state university entrepreneurship programs and their locations via a

categorization of rural through to urban locations and determine the degree of similarity between programs in these locations. This follows the general precepts of an event-based investigation (Hoffman & Lord, 2013); (Rauch & Hulsink, 2023).

ENTREPRENEURSHIP EDUCATION

Ratten and Jones (2021) discuss that, while it faced some resistance when it was first proposed as a university discipline, "…it is now generally understood that entrepreneurship can be taught" (p.1). However, while the number of entrepreneurship education programs is on the rise, there is still disagreement as to how we define entrepreneurship education and what should be delivered in entrepreneurship education programs. There is no ubiquitous program model, teaching method, or set of courses that entrepreneurship researchers and educators widely agree upon including in every entrepreneurship education program. Recently, the stream of research related to entrepreneurial mindset, its importance for entrepreneurs, and the potential to use that approach as the focus of entrepreneurship education has become more prevalent (Kuratko et al., 2021; Neck et al., 2014).

Following contingency theory (Betts, 2003), scholars have recognized that the local or immediate context in which entrepreneurial activities take place matters (Anderson, 2000; Welter, 2011). Research in higher education has shown that students often face setting-specific variables that may differ from those of students at institutions in seemingly similar settings (Jones et al., 2022). Research has also shown that context issues related to the proto-novice entrepreneur may influence the education needs, such as the experience of first-generation students (Jones et al., 2022) along with the existence of recent external environmental events (Rauch & Hulsink, 2023).

Most agree that entrepreneurship education needs to teach students how to apply their entrepreneurial skills across a variety of environments and contexts (Neck et al., 2014). A Google search and review of existing entrepreneurship education programs shows that there are programs with a specific focus such as health care or technology, that may reflect the geographic, economic, or expertise available at the university. Furthermore, some scholars have found the resources available in a context do impact the success of those programs (Mkala & Wanjau, 2018; Mickiewicz et al., 2017). Less is understood about the degree to which the context of entrepreneurship education should reflect contextual characteristics related to the university where it is being taught, such as the local economy or the location of the principal campus of a university.

DEVELOPMENT OF GUIDING RESEARCH QUESTIONS

Contingency theory examines the 'fit' between an organization and its environment with the assumption that organizational characteristics will be contingent on environmental conditions (Betts, 2003). We base our questions on contingency theory, and particularly the location of the university offering entrepreneurship programs as part of its portfolio of degrees. In this research, our guiding questions focus on whether a higher education institution's geographic location (rural, suburban, or urban) affects its entrepreneurial degree and course offerings.

Rural Through to Urban Contexts

The focus of this paper is to take that idea of context being important for entrepreneurship and higher education and extend those theories to an examination of how the geographic location of the university – rural, suburban, or urban – might impact entrepreneurship education at that university. Scholars have determined that different local conditions drive economies based on the degree of urbanization (Ciolek et al., 2022). Having a college degree makes a difference in times of economic hardship (Vuolo et al., 2016). We know that rural areas historically have a lower percentage of adults with at least a bachelor's degree compared to urban areas (Provasnik, et al., 2007). The lower level of educational attainment in rural counties correlates to higher rural poverty and unemployment rates (Economic Research Service Staff, 2017). These facets of education and location support the earlier call by scholars to include context when doing entrepreneurship research (Anderson, 2000; Welter et al., 2019).

Guiding Questions for Rural Through Urban Locations.

According to the Economic Research Service (2021), in 2019, the share of adults with at least a bachelor's degree was 21.0% in rural areas, significantly lower than the 34.7% attainment rate in urban areas. This may be related to the number of universities available for the limited populations found in rural areas versus urban and suburban areas.

Guiding Question 1: Are there fewer universities in rural areas than in urban or suburban areas?

As mentioned earlier, the resources available also make a difference with rural institutions tending to have fewer resources available (Roscigno et al., 2006). As stated above, fewer resources for educational programs negatively impacted the success of an individual's entrepreneurial endeavors post-education. While all organizations faced with large budget cuts due to poor economic conditions will cut back on services offered, we anticipate that rural institutions will have lower budgets that may be very sensitive to economic shocks and result in the cutting of programs (Albright, 2019). Thus, rural institutions may have small numbers of programs available over time. This leads us to our next guiding research question.

Guiding Question 2: Do rural institutions have a lower number of entrepreneurship programs than suburban or urban institutions?

Something that arose during the COVID pandemic was the advent of almost all institutions of higher education using computer-mediated instruction (Park et al., 2023). Recent scholars found that the size of the institution positively impact a successful deployment of a distance education program (Park et al., 2023). Although we acknowledge that many distance education programs using computers existed before the pandemic, programs offering distance online programs in 2001 seems to be also consistent with their findings (U.S. News, 2001). Furthermore institutions who have a "growth" mandate (Hubbard, 1997) or a mandate to reach individuals in very low population areas (Stacey, 1994) have been engaged in distance learning

or online learning programs for over 25 years. This leads us to our next guiding research question.

> *Guiding Question 3: Will urban, suburban, and rural institutions have distance programs included in their portfolio of programs? At what percentage of total programs?*

METHODOLOGY

We crafted these guiding questions to enable us to be specific about the context and timing needed for an event-based methodology. Because this methodology is relatively new in the entrepreneurship discipline (Rauch & Hulsink, 2023), we consider our bounded set of 16 case studies to be a preliminary study.

The Case Studies

Events have very specific boundaries that include time and place. In entrepreneurship literature, contextual factors including place are important influences on entrepreneurial mindset and behavior (Kuratko et al., 2021; Welter et al., 2019). In addition, while entrepreneurial activity is not evenly distributed geographically (Bennett, 2020; Kuratko et al., 2021), it is linked to institutions and characteristics of place (Kuratko et al., 2021). From the earlier discussion, educational programs, in general, reflect their history at a location (a time element) as much as they are the result of local spatial influences (place). Thus, using case studies that have specific time (all in the "present" with historical roots) and place (the three (urban, suburban, and rural) spatial conditions detailed above) to explore an "event" makes sense.

Context Choice: Institutional Typologies

Systems of universities typically are those associated with a particular country (Australia, UK); however, for the United States, such systems of universities are delegated to the state level (for example, California has two such systems, the California State University system and the University of California system). We will begin our study with a short description of the state of entrepreneurship education in the United States and then move to examining university systems in particular. To address this issue, in this study, we will restrict ourselves to one state sponsored university system with multiple relatively independent sites. Furthermore, we will restrict ourselves to states with multiple rural and non-rural locations. We chose a state in the top 10% of the population in the United States with a university system. We will examine the system as a whole to determine how many entrepreneurship offerings are provided and provide some demographics. Next, we shall categorize the university contexts into rural, suburban, and urban. We will then summarize the results of the descriptive study with recommendations for future reserach.

U. S. Institutions of Higher Education and Entrepreneurship

It is perhaps not surprising that in the United States, the larger universities with strong public recognition produce the largest number of entrepreneurs and companies. Stanford

University, a private university located in the Silicon Valley area, has the largest number of entrepreneurs, companies created, and money raised to open said companies (Dodgson & Gann, 2020). However, Stanford's set of entrepreneurship courses (Stanford has about 150 programs in entrepreneurship) is not expected to be useful in all situations as local and regional context should inform entrepreneurship education (Dodgson & Gann, 2020).

In the United States, the number of institutions in state-based university systems vary from a low of three sites in Montana (a state in the western part of the U.S. with a large geographic area and a low population and population density) to a high of 23 sites in the California State University system (California is the US state with the highest population (US Census Bureau Staff, 2017)).

Therefore, our research focused on identifying the set of entrepreneurship programs available on average in one university system and examined whether there were other variables, such as locale, that might explain different configurations of courses given that an entire university system may not be as large or well-funded as the stand-alone Stanford University.

CASE STUDY: UNIVERSITY OF NORTH CAROLINA (UNC) STATE SYSTEM

We were interested in examining a state and its university system that represented neither the highest nor lowest number of sites in a university system (we used the median number of 10 as the minimum number of separate locations to include), was not the fastest or slowest growing state population-wise and had areas of urbanization as well as rural areas.

Justification for Choice of UNC System

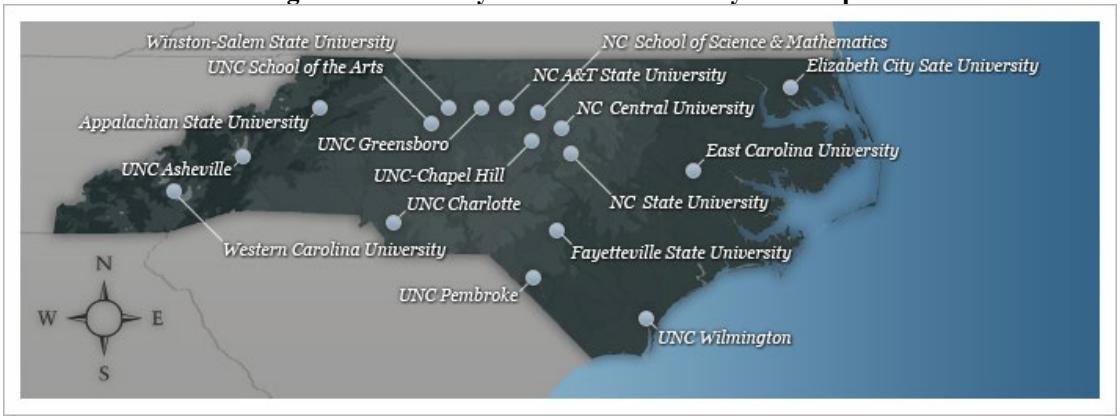
We chose to examine entrepreneurship education within the University of North Carolina system. When considering the percentage of population living in cities and towns versus in unincorporated areas, since 2019, North Carolina has 57% of its population living in urban areas and close to 43% living in rural areas (N.C. OSBM Staff, 2020). Twenty percent of North Carolina's total counties have at least 50% of their population living in urban areas (N.C. OSBM Staff, 2020). Therefore, there is a roughly equal split between urban and rural environments in North Carolina population centers. North Carolina, with an estimated growth rate since 2010 of 11.38%, was just about at the mid-point of the highest growth rate state of Utah (22.04%) (World Population Review Staff, 2022). It was also ninth in population based on estimates from the 2017 U.S. Census Bureau (World Population Review Staff, 2022). North Carolina is in the top 10 states population-wise, has recognized areas of lower population and high population, and has seen a mid-level growth rate since 2010.

Description of the University of North Carolina System

North Carolina has a university system of sixteen independently accredited colleges and universities, which include some Carnegie 1 research institutions (University of North Carolina Chapel Hill and North Carolina State University, among others). North Carolina includes the Appalachian Mountains which are a long recognized rural area (Appalachian Regional Commission Staff, 2021), high-tech areas (the Research Triangle of Raleigh-Durham-Chapel Hill) (Research Triangle Regional Partnership Staff, 2022), and two metropolitan areas (Charlotte-Concord-Gastonia, NC-SC and Raleigh-Cary, NC) with populations of more than a

million people (Statista Research Department, 2022). See Figure 1 for a North Carolina state map with the location of each University of North Carolina institution indicated (System, n.d.).

Figure 1. University Of North Carolina System Map



Source: (System, n.d.). https://online.northcarolina.edu/system/themes/asp/img/map.png

The University of North Carolina System has sixteen separate universities that operate under the UNC Board of Regents (UNC Headquarters Staff, 2022). The system has 244,500 students enrolled as of Fall 2021 (UNC Headquarters Staff, 2022). Table 1 identifies each of the sixteen UNC system universities and their enrollment. If divided equally among all the institutions, there would be an average of 15,280 students at each site, however, the individual universities range in size from an enrollment under 1,000 to almost 30,000 students.

Table 1
NC SYSTEM SCHOOLS, LOCATIONS, NUMBERS ENROLLED & LISTED ENTREPRENEURSHIP PROGRAMS

UNC SYSTEM SCHOOLS IN ALPHABETICAL ORDER	LOCATIONS	CURRENT TOTAL ENROLLMENT AT INSTITUTION	ENT UG CERTIFICATES & MINOR PROGRAMS (* indicated online distance program)	ENT UG DEGREE PROGRAMS (BS BSBA, BBA, BA) (* indicated online distance program)	ENT GRADUATE DEGREE PROGRAMS, CONCENTRATIONS, AND CERTIFICATES (* indicated online distance program)	# OF PROGRAMS	WEBSITE
Appalachian State University	Boone, NC	20,641[1]		1 Major in Mgt with a focus in Ent		1	https://www.appstate.edu/
East Carolina University	Greenville, NC	28,021[2]	1 UG Certificate	1 BS in Ent		2	https://www.ecu.edu/
Elizabeth City State University	Elizabeth City, NC	2,054[3]		1 Major Mgt & Ent		1	https://www.ecsu.edu/
Fayetteville State University	Fayetteville, NC	6,726[4]	1 Minor	1 Major in Ent		2	https://www.uncfsu.edu/
North Carolina A&T State University	Greensboro, NC	12,142[5] *(Last Common Data Report 2019)*		1 Major in Mgt with a focus in Ent		1	https://www.ncat.edu/

[1] (ASU Institutional Research, 2022)

[2] (ECU Institutional Research, 2022)

[3] (Dr. Fred Okanda, Director OIERA, 2022)

[4] (Fayetteville State University Staff, 2022)

[5] (NCAT Institutional Research, 2019)

Table 1
NC SYSTEM SCHOOLS, LOCATIONS, NUMBERS ENROLLED & LISTED ENTREPRENEURSHIP PROGRAMS

UNC SYSTEM SCHOOLS IN ALPHABETICAL ORDER	LOCATIONS	CURRENT TOTAL ENROLLMENT AT INSTITUTION	ENT UG CERTIFICATES & MINOR PROGRAMS (* indicated online distance program)	ENT UG DEGREE PROGRAMS (BS BSBA, BBA, BA) (* indicated online distance program)	ENT GRADUATE DEGREE PROGRAMS, CONCENTRATIONS, AND CERTIFICATES (* indicated online distance program)	# OF PROGRAMS	WEBSITE
		13,322[6] *(Current webpage for Fall 2021)*					
North Carolina Central University	Durham, NC	7,953[7]		1 Major in Ent		1	https://www.nccu.edu/
North Carolina State University	Raleigh, NC	36,831[8]	1 UG Certificate; 4 Minors	1 Major in Ent	1 MBA with focus in Ent & Tech Commercial-ization	7	https://www.ncsu.edu/
UNC Asheville	Asheville, NC	3,233[9]		1 Major in Mgt with a focus in Ent; 1 Interdisciplinary Studies Degree in Arts Mgt. & Ent		2	https://www.unca.edu/
UNC Chapel	Chapel	31,733[10]	3 Certificates		1 MBA in	7	https://

[6] (N. C. A & T Staff, 2022)

[7] (NCCU Institutional Research, 2022)

[8] (NCSU Institutional Strtegy & Analyst Staff, 2022)

[9] (UNCA Strategy & Analytics Staff, 2022)

Table 1
NC SYSTEM SCHOOLS, LOCATIONS, NUMBERS ENROLLED & LISTED ENTREPRENEURSHIP PROGRAMS

UNC SYSTEM SCHOOLS IN ALPHABETICAL ORDER	LOCATIONS	CURRENT TOTAL ENROLLMENT AT INSTITUTION	ENT UG CERTIFICATES & MINOR PROGRAMS (* indicated online distance program)	ENT UG DEGREE PROGRAMS (BS BSBA, BBA, BA) (* indicated online distance program)	ENT GRADUATE DEGREE PROGRAMS, CONCENTRATIONS, AND CERTIFICATES (* indicated online distance program)	# OF PROGRAMS	WEBSITE
Hill	Hill, NC		or enrichment concentrations; 1 minor in Economics with focus in Ent		Ent; 1 MBA with concentration in Ent; 1 Grad certificate*		www.unc.edu/
UNC Charlotte	Charlotte, NC	30,448[11]	1 UG Certificate		1 Grad certificate	2	https://www.charlotte.edu/
UNC Greensboro	Greensboro, NC	19,038[12]	1 UG Certificate, 1 Cross-disciplinary Ent Minor	1 BS in Ent*; 1 Cross-Disciplinary Ent Major Program	1 Grad certificate	5	https://www.uncg.edu/
UNC Pembroke	Pembroke, NC	8,318[13]	1 UG Certificate*	1 Major in Ent		2	https://www.uncp.edu/
UNC School of the Arts	Winston-Salem, NC	1,070[14] *(Last*	1 Minor in Arts Mgt &			1	https://www.un

[10] (UNCCH Insittutional Research & Assessment Staff, 2022)

[11] (UNCCharlotte Institutional Research, 2022)

[12] (UNCG Institutional Research, 2022)

[13] (UNCP Institutional Analyst, 2022)

[14] (NCSA Institutional Resesarch, 2021)

Table 1
NC SYSTEM SCHOOLS, LOCATIONS, NUMBERS ENROLLED & LISTED ENTREPRENEURSHIP PROGRAMS

UNC SYSTEM SCHOOLS IN ALPHABETICAL ORDER	LOCATIONS	CURRENT TOTAL ENROLLMENT AT INSTITUTION	ENT UG CERTIFICATES & MINOR PROGRAMS (* indicated online distance program)	ENT UG DEGREE PROGRAMS (BS BSBA, BBA, BA) (* indicated online distance program)	ENT GRADUATE DEGREE PROGRAMS, CONCENTRATIONS, AND CERTIFICATES (* indicated online distance program)	# OF PROGRAMS	WEBSITE
(high school level)		*Common Data Set 2020-2021)*	Ent				csa.edu/
UNC Wilmington	Wilmington, NC	18,030[15]	1 Minor in Ent & Innovation	1 Major in Management with focus in Ent & Business Development	1 MBA with focus in Ent & Business Development	3	https://uncw.edu/
Western Carolina University	Cullowhee, NC	11,877[16]	1 Minor in Ent*	1 BS in Ent; 1 Major in Innovation Leadership & Ent*	1 Master of Ent program in Innovation Leadership & Ent*; 1 grad Certificate	5	https://www.wcu.edu/
Winston-Salem State University	Winston-Salem, NC	*No CDS Report 2021-22 Available* 5226[17]		Electives in Management & Marketing Only		0	https://www.wssu.edu/

[15] (UNCW Institutional Research, 2022)

[16] (WCU Institutional Research, 2022)

[17] (WSSU Data and Analytics, 2021)

Table 1 also includes information on the number and type of undergraduate and graduate degree programs, concentrations, and/or course offerings. We can see that across this system there are ten Bachelor of Science in Business Administration degrees where six have direct majors in Entrepreneurship[18] and four have a major in Management with a concentration in Entrepreneurship. There is also a BS in Management with a concentration in Entrepreneurship, one BA in Interdisciplinary Studies with a major in Arts Management and Entrepreneurship, one BA in Cross-Disciplinary Entrepreneurship, and two Bachelor of Science Degrees in Entrepreneurship. In addition, there are the following offered as online or distance programs across four institutions: one graduate degree, one graduate certificate, two undergraduate degree, and two undergraduate minors or certificates. There are a total of 43 programs with 6 online degree or certificate programs. So, 14.3% of all programs in Entrepreneurship offered in North Carolina are offered online.

At the graduate level, across the 16 universities in the UNC system, there is one Master of Entrepreneurship degree and three MBAs with a focus on or concentration in Entrepreneurship. There are also two institutions with no entrepreneurship program offerings and only a few courses available and one with only a minor in Arts Management and Entrepreneurship available. This means that as of now, all institutions in the UNC system have at least some courses in Entrepreneurship and 87.5% have one or more programs in Entrepreneurship.

Definition and Classification of Institutional Locations

To enable consistent comparison, we began by looking at the National Center for Education Statistics (NCES) locale classification framework, a commonly used geographic indicator (Geverdt, 2019). The framework identifies four basic types of locales – Rural, Town, Suburban, and City – with three sub classifications for each type (Geverdt, 2019). Classification is determined "based upon a combination of population size and distance from the nearest metropolitan center" (Lavalley, 2018); areas with a population of 50,000 or more are defined as "Urbanized Areas".

We reduced the NCES classifications from four general categories to three utilizing population and closeness to a metropolitan area to classify each university locale for our data analysis purposes. Our recategorization combined the NCES Rural and Town categories into one category that we labeled as "Rural." The NCES Suburban general category definition and Suburban name were retained. The NCES City category definition was retained; however, the category was relabeled to "Urban". The three categories we used in our analysis are defined according to the information in Table 2.

[18] These degrees may be called Entrepreneurship & Innovation or other variations but for convenience here will just be referred to as entrepreneurship.

Table 2 DEFINITION OF RURAL, SUBURBAN, AND URBAN INSTITUTIONS	
CATEGORY	DEFINITION
Rural	Institution is located in areas with a population of less than 50,000 and at least 40 miles away from an Urbanized Area
Suburban	Institution is located in or within an Urbanized Area with a population of 50,000 to 100,000
Urban	Institution located in an Urbanized Area with a population of 100,000 or more

While, these categories do not exactly correspond to the NCES or U.S. Census definitions of rural and urban areas, the definitions are close approximations and are in alignment with how other higher education research explains the differences between rural and urban universities.

Distribution of Rural, Suburban, and Urban Institutional Locations. Part of our earlier discussion was that while entrepreneurial contexts, such as geography, make a difference in entrepreneurial practice and/or education (Kuratko et al., 2021; Welter, 2011; Welter et al., 2019), our research question was whether an institutions' geographical context made a difference in the type and number of entrepreneurship programs offered.

As discussed in our definition of institutional locations in Table 2, we defined rural as institutions located in towns with populations of 50,000 or less which are located more than 30 minutes from a town of more than 50,000 population in an area where the population density is low. If a town is within a small margin of these values, we will allow it to be classified as stated above. However, institutions located in towns above 50,000 will not be classified as rural. Suburban locations will be those of any size that are in or within 40 miles of towns with a population between 50,000 and 100,000. They may be in low or average population density areas. Urban locations will be those with towns of at least 100,000 in population. Information on the distance between cities utilized to determine institution category was calculated using Google Maps (Google Maps Staff, 2022).

Using City-Data (City-Data Staff, 2023) sources on the various towns along with data from the World Population Review (World Population Review Staff, 2022) we pulled information about the towns in which the various 16 institutions of the University of North Carolina System are located. This data was analyzed, and the various institutions were classified as Rural, Suburban, or Urban as shown in Table 3.

Table 3
LOCALE CLASSIFICATION OF UNC SYSTEM INSTITUTIONS

#	UNIVERSITY	UNIVERSITY LOCATION	UNIVERSITY LOCATION POPULATION (City Data Staff, 2023b) (DISTANCE TO LARGER TOWN AND ITS POPULATION)	RURAL	SUBURBAN	URBAN
R1	Appalachian State University	Boone, NC	18,130 (> 40 Miles to Johnson City, TN; 55,469)	X		
U1	East Carolina University	Greenville, NC	89,852 (largest town within 40-mile radius)			X
S1	Elizabeth City State University	Elizabeth City, NC	18,047 (< 40 miles to Chesapeake VA; 199,184)		X	
U2	Fayetteville State University	Fayetteville, NC	203,948			X
U3	North Carolina A&T State University	Greensboro, NC	282,586			X
U4	North Carolina Central University	Durham, NC	251,893			X
U5	North Carolina State University	Raleigh, NC	439,896			X
S2	UNC Asheville	Asheville, NC	87,882 (the largest population center within 40-mile radius)		X	
S3	UNC Chapel Hill	Chapel Hill, NC	59,376 (< 40 miles to Raleigh, NC 439,896)		X	
U6	UNC Charlotte	Charlotte, NC	809,958			X
U7	UNC Greensboro	Greensboro, NC	282,586			X
R2	UNC Pembroke	Pembroke, NC	3,011 (>40 miles to Fayetteville, NC, 211,657)	X		
U8	UNC School of the Arts	Winston-Salem, NC	239,269			X
U9	UNC Wilmington	Wilmington, NC	113,657			X

Table 3
LOCALE CLASSIFICATION OF UNC SYSTEM INSTITUTIONS

#	UNIVERSITY	UNIVERSITY LOCATION	UNIVERSITY LOCATION POPULATION (City Data Staff, 2023b) (DISTANCE TO LARGER TOWN AND ITS POPULATION)	RURAL	SUBURBAN	URBAN
R3	Western Carolina University	Cullowhee, NC	6,228 (> 40 miles to Asheville, NC, 87,882)	X		
U10	Winston-Salem State University	Winston-Salem, NC	239,269			X

Table 3 reveals three rural locations, three suburban locations, and ten urban locations. The most western institution, Western Carolina University (R3) is 462 miles away from the most eastern institution of Elizabeth City State University (S1) (Google Maps Staff, 2022). We will be comparing institutions on multiple variables within each institutional category and then across institutional categories. Initially, we will look at similarity of degrees. We will examine each category in the above order. We will include a discussion of the program characteristics at each institution (See Tables 4, 5 and 6).

The Rural Institutions

Three UNC institutions were categorized as rural institutions. This means that they were in locations of less than 50,000 people and were more than 40 miles from the nearest town of 50,000. The three UNC institutions classified as rural are Appalachian State University (R1), UNC Pembroke (R2) and Western Carolina University (R3).

Table 4
RURAL UNC SYSTEM INSTITUTION SUMMARY DATA (City-Data Staff, 2023)

#	UNIVERSITY	UNIVERSITY LOCATION	UNIVERSITY LOCATION POPULATION	POPULATION DENSITY PER SQUARE MILE	PER CAPITA INDIVIDUAL ANNUAL GROSS INCOME	MEDIAN GROSS RENT PER MONTH	ENT PROGRAMS OFFERED	NUMBER OF ENT COURSE OFFERINGS
R1	Appalachian State University	Boone, NC	18,130	Average 3,368	$14,486	$993	• 1 Major in Mgt with a focus in Ent	13
R2	UNC Pembroke	Pembroke, NC	3,011	Low 1,259	$11,024	$589	• 1 Major in Ent	6
R3	Western Carolina University	Cullowhee, NC	6,228	Low 1,711	$8,545	$774	• 1 BS in Ent • 1 Major in Innovation Leadership & Ent • 1 Master of Ent program in Innovation Leadership & Ent • 1 Grad Certificate	26

Rural Institutions' Location Demographics. R1 is in an area of average density of people/sq mile while R2 and R3 happened to be in areas of low population density (City-Data Staff, 2023). The rural institutions are not located close to each other in North Carolina. R1 and R3 are in the western part of North Carolina but separated by 125 miles (Google Maps Staff, 2022). R2 is in the southern part of the state closer to Freeway 95 which is a major north-south interstate freeway connecting the eastern part of North Carolina and the United States. R3 is located 125 and 284 miles from R1 and R2 respectively (Google Maps Staff, 2022).

Each of these rural locations had estimated per capita income of less than $20,000/year (City-Data Staff, 2023). R1's location has the highest average income at $14,486 and the highest rent at $993/month ($11,916/year); therefore, rent is about 82.3% of an individual's income. R2 is at the middle level of individual income at $11,024/year and the lowest rent at $589/month ($7068/year) which indicates rent equaling 64% of annual gross income. R3 is in a location with the lowest average income per individual at $8,545/year and the middle level of rent at $774/month ($9288/year) which indicates that rent is at 108.7% of an individual's gross income. All three results imply that people rent a home in groups rather than as individuals. From Table 4, R1 is in the largest town at just under 20,000 people; R2 is in the smallest town at just above 3000 people and R3 was in the middle as a town of just over 6000 people.

Rural Institutions' Entrepreneurship Programs

The degree offerings from rural institutions differed by number of degrees offered. In alphabetical order, and based on their web sites, the first rural institution, R1, offered one degree (ASU Staff, 2022). The second rural institution in the south, R2, offered one degree (UNCP Staff, 2022) while the third rural institution, R3, offered five degrees (WCU Staff, 2022). All three institutions offered AACSB-accredited Bachelor of Science in Business Administration degrees with two offering majors in entrepreneurship (R2 & R3). One offered an entrepreneurship concentration in its management major (R1). All three institutions can be considered as being in college towns since the average age of the town's population was in the low twenties and the size of the university exceeded 50% of the size of the town (see Tables 1 and 3).

The classes involved in each institution's entrepreneurship programs were pulled from the publicly available information on their websites (see Table 1). In the rural category, the institutions (R1, R2 and R3) have programs that are offered using 13 classes, 6 classes, and 21 classes, respectively. On average, they teach 52% of the same courses as another rural institution but no classes are universal across all three universities. Institutions R1 and R2 (each only having one entrepreneurship related BSBA degree program) had no classes in common. The university with the 5 degree-programs (R3) had 40% in common with the first university (R1) and 20% in common with the second university (R2). Enrollment figures from Table 1 show that R1 institution at 20,641 students is the largest rural institution. R2 is the smallest rural institution at 8,318 students. R3 is the second largest at 11,877 students. Rural Institutions offered 1.3 entrepreneurship classes on average.

The Suburban Institutions

Three UNC institutions were classified as Suburban institutions because they were in locations with populations below 100,000 but within 40 miles of an Urban Area. The three UNC institutions that were classified as Suburban in alphabetical order are Elizabeth City State University (S1), UNC Asheville (S2), and UNC Chapel Hill (S3).

Table 5
SUBURBAN UNC SYSTEM INSTITUTION SUMMARY DATA (City-Data Staff, 2023)

#	UNIVERSITY	UNIVERSITY LOCATION	UNIVERSITY LOCATION POPULATION	POPULATION DENSITY PER SQUARE MILE	PER CAPITA INDIVIDUAL ANNUAL GROSS INCOME	MEDIAN GROSS RENT PER MONTH	ENT PROGRAMS OFFERED	NUMBER OF ENT COURSE OFFER-INGS
S1	Elizabeth City State University	Elizbeth City, NC	18,047	Low 1,986	$24,292	$984	• 1 Major Mgt & Ent	2
S2	UNC Asheville	Asheville, NC	87,882	Low 2,269	$38,068	$1,150	• 1 Major in Mgt with a focus in Ent • 1 Interdisciplinary Studies Degree in Arts Mgt. & Ent	7
S3	UNC Chapel Hill	Chapel Hill, NC	59,374	Average 3,242	$43,864	$1,358	• 3 Certificates or enrichment concentrations • 1 minor in Economics with focus in Ent • 1 MBA in Ent • 1 MBA with concentration in Ent • 1 Grad certificate	15

Suburban Institutions' Location Demographics. These suburban institutions, while all classified as suburban, are in very different locations. From Table 5, we can see that S1 is located in a town of 18,047, S2 is located in an area with a population of 87,882 and is the largest town within 40 miles, while S3 is in a town with a population of 59,374, but within 40 miles of still larger towns. Thus, all three can be classified as suburban locations. S1 and S2 are in areas of low populations density in people/sq mile, with S3 in an area of average population density (City-Data Staff, 2023). Being separated by a minimum of 193 miles and a maximum of 417 miles (Google Maps Staff, 2022) the suburban institutions are not located in close proximity to each other across North Carolina.

According to Table 1, S1 is in the north-eastern part of North Carolina, S2 is in the central part of the state and is a part of the research triangle, while S3 is in the western part of the state (UNC Staff, 2022). S1 is in a North Carolina town about 30 miles from Chesapeake, VA (population: 199,184) which itself is a suburb of Norfolk, VA. S2 is in Asheville, NC (population: 87,882) which is the largest urban area within 40 miles. S3 is located in a suburb of Durham, NC (population: 251,893) and of Raleigh, NC (population: 439,896).

Each of these locations had average individual incomes that were very different using information from the City-Data website (City-Data Staff, 2023). S1 has an average annual gross income per person of about $24,292/year, S2 has an average annual gross income per person of

$38,068, while S3 had an annual per person income of $43,864 (City-Data Staff, 2023). S1 had the lowest median rent of $984/month ($11,808/year) which indicates rent equaling 48.6% of annual individual gross income. S2 had a median gross rent of $1,150/month (13,800) or about 36% of annual individual gross income, while S3 had the highest median rent at $1,358/month (16,296) or about 37% of an individual's annual income. On each dimension of the location, there were vast differences among the three institutions' contexts.

Suburban Institutions' Entrepreneurship Programs. The degree offerings of suburban institutions differed by number of degrees offered. In using the locations numbering, and based on their web sites, the first suburban institution (S1) offered one entrepreneurship bachelor's degree (ECSU Staff, 2022). S2 offers one management bachelor's degree with an emphasis in entrepreneurship as well as major and minor programs in arts management and entrepreneurship. S2 had seven entrepreneurship courses with four of them being special topics which implies that they are not offered routinely. S3 did not offer a bachelor's degree in entrepreneurship but offered two different MBA programs and a minor in economics with a concentration in entrepreneurship and an "enrichment" concentration in entrepreneurship for any of its undergraduate program (UNC Staff, 2022). S3's "enrichment" concentrations in the undergraduate area enable the offering of 15 different undergraduate classes while the one degree from S1 only offers two elective entrepreneurship courses. This disparity appears to be linked to the number of students at each institution with S1 only having 2,054 students and S3 having over 15 times as many students at 31,733. There is only one class topic in common, global entrepreneurship. Suburban institutions offer 8 entrepreneurship courses on average.

The Urban Institutions

Ten UNC institutions were categorized as urban institutions. This means that they were in locations with a population of at least 100,000 people or a population of at least 50,000 and the largest town for a radius of 40 miles. The ten UNC institutions classified as Urban in alphabetical order are Eastern Carolina University (U1), Fayetteville State University (U2),

Table 6
URBAN UNC SYSTEM INSTITUTION SUMMARY DATA (City-Data Staff, 2023)

#	UNIVERSITY	UNIVERSITY LOCATION	UNIVERSITY LOCATION POPULATION	POPULATION DENSITY PER SQUARE MILE	PER CAPITA INDIVIDUAL ANNUAL GROSS INCOME	MEDIAN GROSS RENT PER MONTH	ENTREPRENEURSHIP PROGRAMS OFFERED	NUMBER OF ENT COURSE OFFERINGS
U1	East Carolina University	Greenville, NC	89,852	Average 3,652	$29,097	$844	• 1 UG Certificate • 1 BS in Ent **2 PROGRAMS**	11
U2	Fayetteville State University	Fayetteville, NC	203,948	Average 3,602	$27,983	$1,065	• 1 Minor; • 1 Major in Ent **2 PROGRAMS**	10
U3	North Carolina A&T State University	Greensboro, NC	289,586	Average 2,834	$32,208	$1,003	• 1 Major in Mgt with a focus in Ent **1 PROGRAM**	6
U4	North Carolina Central University	Durham, NC	251,893	Average 2,948	$42,469	$1,182	• 1 Major in Ent **1 PROGRAM**	6
U5	North Carolina State University	Raleigh, NC	439,896	Average 4,137	$44,001	$1,256	• 1 UG Certificate • 4 Minors • 1 Major in Ent • 1 MBA with focus in Ent & Tech Commercialization **7 PROGRAMS**	11
U6	UNC Charlotte	Charlotte, NC	809,958	Average 3,656	$44,593	$1,301	• 1 UG Certificate • 1 Grad Certificate **2 PROGRAMS**	2

U7	UNC Greensboro	Greensboro, NC	282,586	Average 2,834	$32,208	$1,003	• 1 UG Certificate • 1 Cross-disciplinary Ent Minor • 1 BS in Ent • 1 Cross-Disciplinary Ent Major • 1 Grad Certificate **5 PROGRAMS**	36
U8	UNC School of the Arts	Winston-Salem, NC	239,269	Low 2,278	$34,025	$877	• 1 Minor in Arts Mgt & Ent **1 PROGRAM**	1
U9	UNC Wilming-ton	Wilmington, NC	113,657	Average 3,018	$46,223	$1,142	• 1 Minor in Ent & Innovation • 1 Major in Management focus in Ent & Business Development • 1 MBA with focus in Ent & Business Development **3 PROGRAMS**	12
U 10	Winston-Salem State University	Winston-Salem, NC	239,269	Low 2,278	$34,025	$877	• Electives in Management & Marketing Only **0 PROGRAMS**	3

North Carolina A&T State University (U3), North Carolina Central University (U4), North Carolina State University (U5), UNC-Charlotte (U6), UNC-Greensboro (U7), UNC-School of the Arts (U8), UNC Wilmington (U9), and Winston-Salem State University (U10).

Urban Institutions' Location Demographics. The urban institutions are located in cities of varying sizes, as seen in Table 6. U1 is in a city with a population of 89,852 (it is the largest town in a 40-mile radius therefore qualifies as urban) and U9 is in a city of 113,657 population. Six institutions have populations that range between 203,948 and 289,586. U5 is located in a city with a population of 439,897 and U6 is located in the most populous city of Charlotte at 809,958. Eight institutions are located in areas with an average population density with U8 and U10 (both in Winston-Salem) considered to be in a low population density area. The ten urban institutions are located primarily in the central and eastern regions of NC. The far western region of NC, reflecting approximately 20% of NC's geographic area, includes two rural and one suburban institution with no institutions designated as urban. The western-most university, Western Carolina University (R3) is 186 miles and 196 miles distant from the western-most urban universities of UNC Charlotte (U7) and UNC School of the Arts (U8) respectively (Google Maps Staff, 2022). The distance between urban institutions ranges from being located in the same city

(U3 and U7 in Greensboro; U8 and U10 in Winston-Salem) to a distance of approximately 230 miles.

Furthermore, there was a wide range of income and rental costs across institutions as seen in Table 6. Individual annual income ranged from $27,983 to $46,223 while median gross monthly rent ranged from $844 to $1,301. U2 had the lowest individual income of $27,983 with median rent of $844 or 36% of income. U9 had the highest individual income at $46,223 with median rent of $1,142 or 29.6% of income. The highest income was closest to U9 while the highest rent was closest to U6.

Urban Institutions' Entrepreneurship Programs. The number of entrepreneurship programs and courses offered by urban institutions also varied greatly from zero to seven programs and one to thirty-six courses. The population of the city where an institution was located did not appear to impact its number of program or course offerings. U1 in a city with the lowest urban population of 89,852 (the largest town in a 40-mile radius) offered two programs and 11 courses while U6, located in the city with the highest population of 809,958, offered two certificate programs and two courses. U10 offered no programs and three courses in a city with population of 239,269 while U5 offered seven programs and eleven courses in a city of 439,896. U7 in a city with a population of 282,586 had five programs and 36 courses—16 of which were unique to that institution only. There was an average of 9.8 courses for the urban institutions.

Distance Entrepreneurship Programs

Three institutions, one each from the urban, suburban, and rural locale categories, offer the option of a 100% distance program in entrepreneurship (UNC System, 2023). The rural institution (R3) is the only institution offering more than one distance program with both an undergraduate (BSBA) and graduate (ME) degree in Innovation Leadership and Entrepreneurship. The other two institutions offer one program each with U7 offering a distance bachelor's (BS) in Entrepreneurship degree and S3 providing a post baccalaureate certificate (PB) in Entrepreneurship and Strategy. UNC institutions have increasingly been offering online courses or hybrid programs at both the undergraduate and graduate level; therefore, individual online entrepreneurship courses are accessible. However, currently only these four programs offer complete degrees or certificates in a 100% online distance format.

Recall from the discussion on the number of courses offered by each type of Higher Education Institution that Rural areas offered on average 11 courses; Suburban areas offered on average 8 courses and Urban areas offered on average 9 courses. From that we could see that rural areas had significantly more course offerings in entrepreneurship than the urban or suburban areas as it was more than a standard deviation higher in its course offerings. When the programs offered are considered, the rural area institutions offer 2.33 programs on average; the suburban area institutions offer 3.33 programs on average and the urban area institutions offer 2.4 entrepreneurship programs on average. This has no real pattern. When those institutions from areas with high professional and scientific contributions to jobs in their areas are removed (this exception was also one used earlier), then we see that rural offerings of 2.33 on average remain the same, suburban offerings drop to 1.5 programs, and urban offerings drop to 1.8 programs. The Rural program offerings are one standard deviation above the average program offerings and the other two are within one standard deviation of the average. We conclude that whether measuring by courses offered or by programs, the rural area institutions have more

entrepreneurial offerings than average while suburban and urban areas are usually within the average number of entrepreneurial offerings.

DISCUSSION

Fragmented views of a discipline are not just a frustration for the advancement of scholarly work but also are an issue for the development of curricula for the disciplines as well (Daenekindt & Huisman, 2020). In a relatively new and rapidly growing discipline such as entrepreneurship education (Ratten & Jones, 2021), this can be especially problematic (Neck et al., 2014). Given the call for entrepreneurship programs to be contextualized, it is very important that work is done that holds as much of the context steady so that other contingent factors can be more readily discerned. We reported today on such a case study. We held the higher institution system, and the general influence of the state constant and looked at other locational contingency factors.

The emerging entrepreneurship discipline has certainly shown great variation in general when examining what it means to be an entrepreneur (Black, 1998) and what is needed for new ventures to start (Razmdoost et al., 2020). While the past 20 years saw great growth in entrepreneurship programs, during the midst of the Covid-19 pandemic the World Economic Forum posted an online article calling for more university support for student entrepreneurs (Dodgson & Gann, 2020) to help in the post-Covid-19 pandemic economic recovery. Loss of jobs leading to necessity entrepreneurship on its own is insufficient; opportunities need to be pursued and new ventures developed (Acs, 2006).

Our research was framed by three guiding questions. The first called for us to examine the pattern of university offerings by urbanization categories. We wondered if there were fewer university in rural areas versus suburban or urban areas. We found that there were the same number as in suburban areas (3 in each area) and a much smaller number than in urban areas (11 in urban areas). The second guiding question looked at the offering of entrepreneurship programs across these categories. In North Carolina's state sponsored higher education system, there are few entrepreneurship-only degree programs at both the undergraduate and graduate levels in general. Most entrepreneurship education courses are delivered in the form of a concentration under another degree program such as business and in particular business management. Universities offering entrepreneurship certificate or degree programs may at the same time only offer one or two entrepreneurship discipline courses. However, contrary to our questions' implication, the rural areas had higher numbers of entrepreneurship courses and on average programs per institution. We also found that 14.3% of the programs offered in North Carolina are offered online but that is from only one-fourth of the institutions in North Carolina. Two of those four institutions are based in rural locations. We found that state sponsored institutions did contextualize their offerings to the economic needs of their locations. Rural institutions had a significantly higher than average number of entrepreneurship courses and degree programs including both residential and online programs.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This case study was limited as it compared a small sample of schools located within one public university system. Jones et. al. (2022), highlighted that identifying a university as rural, suburban, or urban based on its geographic location may lead to assumptions that all members of

a geographic category will have similar characteristics. We were very conservative in our definitions for rural, suburban, and urban universities taking a macro-level approach utilizing only these three categories instead of the twelve possible categories available in the NCES classification system.

This study has opened several potential avenues for further exploration of the impact of context on entrepreneurship education both based on location and on other variables. For example, will larger institutions offer a greater number of entrepreneurship programs or courses than smaller institutions? Will whether a program is delivered face-to-face or online mitigate the contextual factor of university location? Are rural universities with online programs serving urban as well as rural students and what is the impact of that on program and course contextual factors? Finally, will institutions in regions known for "science or technology" have a greater number of entrepreneurship programs or courses?

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THE AMBIDEXTROUS MICRO-ENTERPRISE: THE TRADEOFF BETWEEN EXPLORATION AND EXPLOITATION – EVIDENCE FROM TRINIDADIAN MICRO ENTERPRISES

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ABSTRACT

Micro-enterprises are often faced with a multitude of internal resource constraints. This research delves into the dynamic capability of an entrepreneur's ability to exploit the firm's current resource base and explore new opportunities, commonly referred to as Ambidexterity. The analysis considers the effect of exploration and exploitation on both performance dimensions of profit and growth. While larger firms may enjoy benefits from the maximization of both exploration and exploitation capabilities, we found that for micro enterprises, through a focus on maximization of one dimension, profits and growth performance is strongest when the second dimension is within a relatively average range relative to other firms in the sample. As such, we suggest that for small firms, there is a tradeoff that must be made between the two dimensions in order to yield maximum benefits from their interaction.

Keywords: *Ambidexterity, Exploration, Exploitation, Dynamic Capabilities, Micro-Enterprises, Entrepreneurship Performance*

INTRODUCTION

Micro, small and medium organizations (SMEs) are the backbone of economic activity throughout the Caribbean. Though official statistics are elusive, estimates of the GDP contribution of these firms to the region stands at 40 percent and accounts for more than 70 percent of total employment (Waithe, 2018). Even in oil and gas rich Caribbean nations such as Trinidad and Tobago, the Ministry of Labor and Small and Micro Enterprise Development statistics indicate that 91 percent of businesses locally are SMEs, with 75 percent consisting of micro-enterprises (Newsday, 2014).

Despite their prevalence, micro-enterprises are often faced with a multitude of internal resource constraints. With minimal environmental power, limited marketing, financial or human resource economies of scale, it is vital for micro-organizations to embed their most valuable resource in their core business strategy to ensure long term survival (Kelliher and Reinl, 2009). If organizations that control embedded resources are favoured to survive, then the entrepreneur’s

own characteristics can become a source of advantage (Zuraik and Kelly 2019). This research delves into the dynamic capabilities of the entrepreneur's ability to exploit the firm's current resource base and explore new opportunities, commonly referred to as the dynamic capability, Ambidexterity.

LITERATURE REVIEW

Dynamic Capabilities

Dynamic capabilities support the notion that the responsiveness and flexibility of a firm are crucial to the development of a sustainable competitive advantage. 'Dynamic', refers to the capacity to align new competences with the needs of evolving markets, while 'capabilities' emphasizes effective strategic management in matching the organizations existing relative advantages to the desires of the changing marketplace (Teece, Pisano and Shuen, 1997). Given the rapid rate of technological change, globalization and the intensification of global market rivalry, no firm can hope to sustain an advantage with entirely static resources and capabilities. Accordingly, dynamic capabilities are a multi-faceted construct, in that it emphasizes the firm's ability to sense opportunities and threats, and then to make timely market orientated decisions that change the nature and scope of the firm's resource base (Edwards, 2001)

Exploration and Exploitation Dynamic Capabilities

Two distinct dynamic capabilities that have emerged as intriguing areas of interest in the literature are exploratory and exploitative capabilities. March (1991) defines the exploration of a firm as "*experimentation with new alternatives having returns that are uncertain, distant and often negative*", while defining exploitation as "*the refinement and extension of existing competencies, technologies and paradigms exhibiting returns that are positive, proximate, and predictable*" (p. 85). These capabilities are seen as core to a firm's success through their ability to generate value en route to a competitive advantage, with some proposing that they are positively correlated, with both having the capacity to boost performance (She, Su and Cui, 2020).

The dynamic implications of these definitions are the continuous need for experimentation (exploratory) in the first instance and constant refinement (exploitative) in the second. The difference between the two is also clear; exploratory capabilities may emerge from the desire to discover something new, or as put forward by Levinthal and March (1993), "*the pursuit of knowledge, of things that might come to be known*", while exploitative capabilities are related to things that already exist or "*the use and development of things already known*" (p. 105).

Although different, exploitation and exploration capabilities are also closely related. Exploitation can eventually lead to the exhaustion of an advantage, which then causes firms to engage in exploration as they attempt to reveal new advantages which will be later exploited (Lee and Ryu, 2002). As discussed by March (1991) "*since long-run intelligence depends on*

sustaining a reasonable level of exploration, these tendencies to increase exploitation and reduce exploration make adaptive processes potentially self-destructive" (p. 73). This suggests that exploitation in the absence of exploration may be short lived as eventually the exploitation can become ineffective. Conversely, firms excessively engaging "*in exploration to the exclusion of exploitation are likely to find that they suffer the costs of experimentation, without gaining many benefits*" (March, 1991, p. 71).

Further, exploitation can create the available financial resources to engage in exploration. It has been argued that engaging in exploration facilitates the development of technological assets and capabilities, which can then serve the exploitation process (Garcia, Calantone, and Levine, 2003). Yalcinkaya, Calantone and Griffith (2007) concur stating that "*exploitation forms the foundation on which exploration can exist*", (p. 71-72) and find empirical support for their claim of the significance of the relationship. Without the low-risk stream of income from the existing customer, costly exploration may not be possible.

Ambidexterity

Although Duncan (1976) is credited with being the first to use the term organizational ambidexterity, March's (1991) article is considered to be the stimulus for much of the interest in the field (Raisch and Birkinshaw, 2008). In his article, March (1991) proposes that exploration and exploitation represent two differing activities that firms devote their resources and attention towards. He links exploration to "*search, variation, experimentation, and discovery*" (p. 102), while suggesting that exploitation involves "*refinement, efficiency, selection, and implementation*" (p. 102), with the implication that each activity may require a unique strategy. Some research into firm ambidexterity investigates the tradeoff that may exist in aligning the firm to explore new competences or exploit existing ones (Ancona, Goodman, Lawrence and Tushman, 2001; Levinthal and March, 1993), with some authors suggesting that organizational practices that simultaneously attempt to achieve productive levels of exploration and exploitation were impossible (Wenke, Zapkau and Schwens, 2021, McGill, Slocum and Lei, 1992; Miller and Friesen, 1986).

However, while exploration and exploitation represent differing activities, successful firms may need to be aligned to productively do both. A firm has a one-sided focus on exploration may find it comes at the expense of the productive exploitation of their efforts. Conversely, by only focusing on exploitation, a firm may be unable to respond to changes in demand or fail to recognize product and process improvements that undercut its ability to effectively carry out exploitation activities. In their meta-analysis of organizational ambidexterity and performance, Junni, Sarala, Taras and Tarba (2013) find a significance between exploration activity and growth, but not profitability. Conversely, the authors report a significance between exploitation and profitability, but not growth. Given the performance tradeoffs that may exist with an over reliance on either exploration or exploitation by a firm, it may be advantageous to a firm to attempt to be adept at both exploration and exploitation, or in other words, ambidextrous.

In order to be an ambidextrous organization firms must be "*capable of operating simultaneously to both explore and exploit*" (He and Wong, 2004, p. 483), suggesting that through the pursuit of both exploration and exploitation, the shortcomings of a focus on only one aspect can be avoided. With regards to past research on this very possibility, Junni, Sarala, Taras and Tarba (2013) report that while significance between ambidexterity and growth has been found in past studies, the relationship between ambidexterity and profitability failed to show any significance, though the size of the firm was not considered in their analysis.

Beyond the general agreement that ambidexterity represents some form of relationship between exploration and exploitation, there is some confusion as to whether firm ambidexterity increases as a result of the combined magnitude of both exploration and exploration (a multiplication of the two measures) or if greater ambidexterity is achieved through the balance of exploration and exploitation, where closer exploration and exploitation levels would indicate a more ambidextrous firm.

With specific reference to micro enterprises, the ambidexterity relationship between exploration and exploitation may be heavily contingent on the slack resources available at the organizational level. Micro-enterprises, faced with severe resource constraints and little to no slack resources are unlikely to benefit from an extreme focus on both exploration and exploitation (highest combined magnitude) as this will result in an overburdening of their limited resources. Similarly, with a balanced approach of exploration and exploitation (equal levels of each) the micro firm may be unlikely to reap the maximum benefits of either in a crowded marketplace with a need for differentiation.

HYPOTHESIS

Helfat (1997) explains that dynamic capabilities are the competencies or capabilities that allow the firm to create new products, services or processes to meet changing market circumstances. Zahra, Sapienza and Davidsson (2006) add that firms that continuously create, define, discover and exploit entrepreneurial opportunities are able to leverage their dynamic capabilities, "*in the manner envisioned and deemed appropriate by its principal decision-maker(s)"* (p. 918). We will investigate the dynamic capabilities of exploration and exploitation, while proposing that organizational ambidexterity, or the ability to "*reconcile internal tensions and conflicting demands in their task environments*" (Raisch and Birkinshaw, 2008, p. 375) is significant in the explanation of performance (profits and growth) beyond the main effects of exploration and exploitation.

March (1991) proposes that exploitation and exploration represent two different activities, which can be viewed as two ends of a continuum. Exploitation and exploration both compete for organizational resources and as such, there may be trade-offs involved in a firm's ability to explore or exploit. In summarizing March's logic, Gupta, Smith and Shalley (2006) note that "*notwithstanding the adaptation benefits of both exploration and exploitation, the interplay between the two occurs in the form of a zero-sum game where exploration and exploitation compete for scarce resources, attention, and organizational routines*" (p. 695). The findings of Su, Cui, Samiee and Zou (2022) seem to support this notion, particularly in smaller

businesses, finding that while exploration improved the performance of international SMEs, ambidexterity served to weaken their performance.

Given March's logic that the two are incompatible, it would be reasonable to assume that there may be benefit in the maximization of either exploration or exploitation. Indeed, some have proposed that the balance of exploration and exploitation is not a prerequisite for business growth (Jacobs and Cambre, 2020). However, sacrificing one for the other is not enough to explain a sustained competitive advantage. While a firm that attempts to maximize exploitation may experience some performance gains in the short run, doing so at the expense of exploration may result in an inability respond to changes in the environment (Ahuja and Lampert, 2001). On the other hand, a firm that does much exploration, but little exploitation may find themselves in a cycle of search and change that goes unrewarded (Volberda and Lewin, 2003). Critics of this approach argue that exploration and exploitation need to be re-combined to create value (Eisenhardt and Martin 2000), while the mere co-existence of the two capabilities in differing departments though important, is not enough to consider a firm ambidextrous (Gilbert, 2006).

Some research has acknowledged the importance of balancing the two seemingly contrasting activities, terming organizations that can do both as ambidextrous organizations. Ambidextrous organizations are "*able to implement both incremental (i.e., exploitative) and revolutionary (i.e., exploratory) changes*" (Tushman and O'Reilly, 1996, p.8), are "*capable of operating simultaneously to explore and exploit*" (Smith and Tushman, 2005, p. 524) and are "*capable of exploiting existing competencies as well as exploring new opportunities with equal dexterity*" (Lubatkin, Simsek, Ling and Veiga, 2006, p.2). Gupta, Smith and Shalley (2006) note that exploration and exploitation may occur in a complementary, rather than competing manner. Cao, Gedajlovic and Zhang (2009) argue that the two processes can be supportive of each other and assist in leveraging each other's effects noting that firms can "*become more capable of initiating various reconfigurations of existing knowledge and resources already under its control, capabilities associated with novel discoveries in products and markets*" (p. 784) and also suggest that that high levels of exploitative capabilities can better enable a firm to "*recognize and assimilate new external knowledge and resources*" (p. 784).

Zahra and George (2002) suggest that prominent exploitation capabilities are positively related to the development of new products and technologies, while exploration can also have positive effects on exploitation. Cao, Gedajlovic and Zhang (2009) cite the example of Apple Computer's iPod line as revitalizing the entire brand, showing how successful exploration can complement exploitation noting that "*successful exploration can also improve the economics of existing exploitative endeavors*" (p. 784).

Thus, it is hypothesized:

H1: Higher levels of exploitation capabilities are positively and significantly related to firm profitability

H2: Higher levels of exploration capabilities are positively and significantly related to firm growth

H3: Higher levels of ambidexterity (the interaction of exploitation and exploration capabilities) are positively and significantly related to firm profitability and growth

THE TRINIDADIAN MICRO FIRM CONTEXT

Being heavily reliant on the income from the sale of its oil and gas reserves, the 1980s was a time of hardship for Trinidad, born out of depressed commodity prices. Since this time, the government has incorporated micro-enterprise development as a strategy to alleviate poverty and boost employment (Karides, 2005). The Global Entrepreneurship Monitor National Report for Trinidad and Tobago, outlines that the government's entrepreneurial development framework consists of the provision of credit and other sources of finance, coordination of development agencies, training and human resource development, marketing opportunities and other support services for potential entrepreneurs (Murdock, Mc Donald, Joseph, Dardaine-Edwards, and Carrillo, 2010).

Considering that in 2012, the energy (primarily oil and gas) revenue accounted for $18.1 of the $47 Billion dollar GDP of the country (38.5%), SMEs with their 28% contribution to GDP represent the second largest contributor to GDP in the country. Of these SMEs, the largest contributor is the consumer-oriented sector consisting mainly of retail business at over 50% (Bailey, Pacheco, Carrillo, and David, 2012). Thus, while the integral importance of SMEs has been established, the GEM Trinidad and Tobago report (2012) also suggests that 70% of surveyed national experts agreed that the policies of the Trinidad and Tobago government generally do not favor new and growing firms. The vast majority of respondents also agreed that new and growing firms are faced with high levels of bureaucracy and regulatory requirements (88%) and heavy tax burdens (50%).

This paper will allow for the investigation of performance differences between firms by type of operation, location and their ability to engage in successful exploration, exploitation or both. Practical contributions from these findings could be the discovery of systematic success or failure or micro-organizations that either engage in a specific type of business, do so in a specific area. Further, the relative impact of exploration and exploitation on performance, or the existence of these capabilities within micro-organizations can be uncovered, informing local policy makers as to the status of these capabilities within the sample, and a better understanding of the wider population.

DATA AND METHODS

Research Sample

This study focuses on micro enterprises in Trinidad, being defined as those enterprises with 5 or fewer employees which is in line with Hendrickson (2009), who notes that in Trinidad, firm size is often classified based on the number of employees. During the four-month survey data collection period a total of 791 micro businesses, primarily selected based on geographical clustering, were approached to request their participation in the research. Of these businesses, 304 completed the survey completely, resulting a response rate of 38.4%.

Data for this research was collected through face-to-face meetings and in the overwhelming majority of the businesses that were visited and asked to participate, the

researcher showed up to the place of business unannounced. As a result, of the 791 businesses that were visited, the entrepreneur of the micro business was not on site in 355 of those businesses (44.9%). Some micro entrepreneurs (n=132) who were available at the time of the researcher's visit declined to participate. This means that of the businesses with the entrepreneur present, in 304 of 436 cases, representing 69.7%, a completed survey was obtained, while in 30.3% cases it was not. Many of the entrepreneurs who declined did so without giving a reason, however of those who did offer an explanation for refusal to participate reasons included: too busy at time of visit, too tired, too personal, not applicable to type of business and did not speak English well enough. Of the reasons given for unwillingness to participate, the entrepreneur being too busy was the primary reason.

Table 1
Response Rates

Total Businesses Visited	791
Completed Surveys	304 (38.4%)
Non-respondents	487 (61.6%)
Non-respondents – Entrepreneur not present	355 (44.9%)
Non-respondents – Other (too busy, too tired, too personal, not relevant, language barrier)	132 (16.7%)

Measures of Exploitation, Exploration and Ambidexterity

Measures of exploitation, exploration and ambidexterity have varied throughout the literature. Yalcinkaya, Calantone and Griffith (2007) used 4 items (2 each for exploration and exploitation), while Jansen, Bosch and Volberda's (2006) measure included 7 items each for exploration and exploitation. In the interest of parsimony and consistency, we primarily draw from by Mom, Van Den Bosch and Volberda, (2007) and Abebe and Angriawan, (2014) three item measures each for exploration and exploitation and operationalize the items at the firm level. All items are measured on a seven-point scale from 1= to a small extent to 7= to a very large extent.

Once data was collected on a firm's exploration and exploitation activity, it was important to consider the operationalization of the ambidexterity construct. Cao, Gedajlovic and Zhang (2009) suggest a lack of consensus on the underlying construct has led to numerous measures attempting to operationalize ambidexterity, through their review of the literature the authors suggest that ambidexterity is actually comprised of two related, but distinct measures that they term "balance dimension of ambidexterity" (BD) and "combined dimension of ambidexterity" (CD). In the first instance, the balance dimension of ambidexterity is a measure of the difference between exploration and exploitation, with relatively smaller differences meaning higher levels of ambidexterity. On the other hand, the combined dimension is a measure

of the combined magnitude of exploration and exploitation (multiplication). An example of the differing conceptualizations is shown below in Table 2.

Table 2
Illustration of Different Conceptualizations of Organizational Ambidexterity

Firm	Exploration	Exploitation	Balanced Dimension (BD)	Combined Dimension (CD)
Firm A	7	3	Low	High
Firm B	3	3	High	Low

As shown above, as a result of the differing dimensions, the interpretation may be ambiguous. If ambidexterity were thought of as the balance between exploration and exploitation, Firm B would appear more ambidextrous, while if conceptualized as the combined magnitude, Firm A is more ambidextrous. Cao, Gedajlovic and Zhang (2009) propose that "*high CD will exert a more positive effect on firm performance when the firm also maintains a high level of BD*" (p. 784), suggesting a synergistic effect on performance.

For instance, a firm that responds to the exploration survey items with scores of 7, 5 and 6, has an exploration score of 6 ((7+5+6)/3). If the same firm's exploitation item responses are 5, 2 and 2, its exploitation is 3 ((5+2+2)/3). To calculate the CD of ambidexterity for this firm, the exploration and exploitation measures would be multiplied (6*3) equaling 18. To calculate the BD we find the absolute difference between exploration and exploitation (|6-3|) equaling 3. To help with the interpretation of the BD, absolute BD is subtracted from the maximum BD, in this case 7, meaning that the higher the number the higher the BD ambidexterity measure. For instance, if the BD for a firm is 0 (equal exploration and exploitation), subtracting this from 7, would yield a BD score of 7/7, or the highest BD possible. Finally, to calculate ambidexterity based on both dimensions, CD is multiplied by the BD, which in the above example would yield an ambidexterity of 72 (4*18), which we term total ambidexterity.

However, in our analysis, in an attempt to capture the effects of resource shortages in micro-organizations we kept the CD measure as described above, but reformulated the balance dimension (BD) such that the new balance dimension = 1 + |exploration – exploitation|. We reasoned that given the demands faced by entrepreneurs in micro-organizations, the maximization of both exploration and exploitation activities are unsustainable and thus, micro-organizations are better off though a dedicated attempt to maximize either exploration or exploitation at any given time.

As an example, consider two firms with exploration and exploitation scores of 4 and 7 for company A, and 6 and 7 for company B. Company A would have a calculated CD score of 28 (4*7), while firm B would have a CD score of 42 (6*7). Under the legacy BD dimension, company A would score 4 (7-(|4-7|) and company B would score 6 (7-(|6-7|), resulting in an ambidexterity measure of 112 for company A (28*4) and 252 (42*6) for firm B. However, as reasoned above, micro-organization who face immense recourse constraints are unlikely to

sustainably manage high levels of both exploration an exploitation. As such, the proposed ambidexterity measure considers this unsustainability such that under the new calculation of BD, company A would score 4 (1+(|4-7|), while company B would score 2 (1+(|6-7|). The resulting ambidexterity score would be 112 (28*4) for company A, while company B would now score 84 (42*2). The legacy formula and new ambidexterity formula are shown below:

*Legacy Ambidexterity = Exploitation * Exploration (Combined Dimension) * (7 - |exploitation – exploitation|) (Balanced Dimension)*

*New Ambidexterity = Exploitation * Exploration (Combined Dimension) * (1 + |exploitation – exploitation|) (Balanced Dimension)*

To better understand the impact of the change Table 3 shows various sample exploration and exploitation scores and the resulting legacy and new total ambidexterity scores. From the table below, the difference in the two calculations is apparent. With regards to the legacy ambidexterity calculation, the higher the exploration and exploitation score (and closer together) the higher the ambidexterity. The new ambidexterity score also rewards higher exploration and exploitation scores, however, only does so to a point. In essence, the new ambidexterity tends towards rewarding a disparity between exploration and exploitation. This new calculation suggests that to maximize the ambidexterity, it may be in the interest of micro entrepreneurs to maximize one dimension (either exploration or exploitation) while just being average at the other dimension (neither attempting to maximize, nor ignoring). Further testing between the legacy and new calculations are shown in Appendix 1 demonstrating an improvement in model fit with the new ambidexterity calculation when compared to the legacy calculation.

Table 3
Legacy versus New Ambidexterity Calculation Scores for SMEs

Exploration Score	Exploitation Score	Legacy Balance Dimension (BD)	New Balance Dimension (BD*)	Combined Dimension (CD)	Legacy Ambi-dexterity (A)	New Ambi-dexterity (A*)
1	1	7	1	1	7	1
2	2	7	1	4	28	4
3	3	7	1	9	63	9
4	4	7	1	16	112	16
5	5	7	1	25	175	25
6	6	7	1	36	252	36
7	7	7	1	47	343	49
1	7	1	7	7	7	49
2	7	2	6	14	28	84
3	7	3	5	21	63	105
4	7	4	4	28	112	112
5	7	5	3	35	175	105
6	7	6	2	42	252	84

CONTROL VARIABLES – SIZE, AGE, LOCATION, INDUSTRY, ACCESS TO FINANCIAL RESOURCES, GROWTH INTENTIONS

The use of control variables was introduced as they help to simplify complex social situations. By controlling certain variables, we rule out variables that may not be of immediate interest, but that may explain some aspects of the phenomenon under investigation (Singleton and Straits, 2010).

To control for the effects of size, we used the number of employees as a proxy for the size of the firm. Respondents were asked the number of full-time employees including working owners and also part-time workers. To control for industry, we asked respondents if their primary line of business was in manufacturing, service or retailing. A third control variable employed was the age of the firm, measured by asking respondents, the commencement year of the business and subtracting from the current year. The fourth control variable is that of firm location. Firms from various cities and towns throughout Trinidad are categorized as belonging to the West, Central, East and South region. These regions correspond to the four primary centers of business activity and population density and encompass the entire country.

Another control used was a firm's access to finance. Given the possible linkages that may exist between a firm's access to financial resources and its performance and to ensure that the relationships discovered between the variables on interest exclude the possible confounding

effect of differing access to finance. A final control variable used was the growth intentions of the firm. In some instances of micro entrepreneurship, the entrepreneur has little intention to grow the business beyond a level that provides for the sustainability of the business. To account for this possibility respondent were asked their growth intentions for the business.

MEASURES OF PERFORMANCE – PROFIT AND GROWTH

At times, entrepreneurial activity may lead to favorable results on one performance dimension, but an unfavorable result on another. Consider a firm that has reduced its prices significantly in a bid to increase its sales. While the firm may report high levels of growth (driven by the price cutting strategy), it may also be likely that the firm's profitability will suffer as a result of the move to drop prices, as the newer lower price will mean lower or even negative net profit margins. Thus, research that only considers a single performance dimension may be misleading in the implications it draws from its findings. The performance dimensions of profits and growth capture the relative implied positive effects of exploitation and exploration respectively, such that effective exploitation should result in high levels of profits, while effective exploration should result in the growth of the firm. As such, the analysis considers the effect of exploration, exploitation and ambidexterity on both measures of profitability and growth.

RESULTS

Scale Validation

Table 4 below identifies the minimum (exploration = 1, exploitation = 1.33), maximum (exploration = 7, exploitation = 7) means (exploration = 5.2727, exploitation = 5.9091) and standard deviation (exploration = 1.56, exploitation = 1.00) of exploration and exploitation. It should be noted that based on an outlier analysis, 7 of the initial 304 respondents were dropped from the results.

Table 4
Exploration and Exploitation - Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Exploration	297	1.00	7.00	5.2727	1.56277
Exploitation	297	1.33	7.00	5.9091	1.00055

Tests of normality were also conducted and showed that both variables met acceptable criteria (Kline, 2011) with regards to skewedness (exploration = -.829, exploitation = -1.419) and

kurtosis (exploration -.068, exploitation = 3.134). As a test of internal consistency, a Cronbach Alpha calculation was preformed, and the results are shown below in tables 5 and 6.

Table 5
Reliability Statistics

	Cronbach's Alpha	N of Items
Exploration	.796	3
Exploitation	.573	3

Table 6
Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Exploration Capability Q1	11.03	9.529	.679	.682
Exploration Capability Q2	10.40	10.659	.679	.681
Exploitation Capability Q1	11.89	4.873	.381	.472
Exploitation Capability Q2	11.64	5.063	.413	.430
Exploitation Capability Q3	11.93	4.643	.357	.516

As seen from the above tables, the exploration construct shows strong internal consistency with a Cronbach Alpha calculation of .796. For the exploration construct, it can be seen in Table 6 that should any item measure be deleted, the overall Alpha score would fall suggesting that all items align appropriately. Exploitation also shows some level of consistency. The Cronbach Alpha score for exploitation is .573, which admittedly is towards the lower end of what can be considered acceptable (George and Mallery, 2003), with a score of above .7 being conventionally preferred (Nunnally, 1978). However, as seen from Table 6 if any of the items were removed from the scale, the overall Alpha score would fall. To further assess the exploration and exploitation constructs, a factor analysis was performed using the six item measures that made up the two scales (three each). The results from this factor analysis are shown below in Table 7.

Table 7
Exploration and Exploitation Pattern Matrix

	Component	
	1	2
Exploration Capability Q1	**.918**	-.087
Exploration Capability Q2	**.901**	-.048
Exploration Capability Q3	**.608**	.292
Exploitation Capability Q1	.220	**.583**
Exploitation Capability Q2	-.200	**.928**
Exploitation Capability Q3	.114	**.591**

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Based on the results from the factor analysis both exploration and exploitation appear to be separate constructs. The three item measures for exploration load onto one factor (average loading = .809) and the three item measures for exploitation also load onto one factor (average loading = .701), suggesting the items all tap a single, underlying factor.

Hypothesis Testing

Tables 8 and 9 below reveal the results from the multiple regression analysis. In both instances of testing profitability (Table 8) and growth (Table 9) the first model (Model 1) shows the results from the testing control variables in isolation. Model 2 introduces the dimensions of exploitation and exploration, while Model 3 further introduces the calculated new ambidexterity dimension as discussed previously.

Table 8 **Dependent Variable: Profitability**			
	Model 1	**Model 2**	**Model 3**
(Constant)	4.149***	4.244***	4.142***
Number of Years in Operation	-0.007	-0.002	-0.002
Full Time Employees	0.005	-0.062	-0.05
Part Time Employees	0.101**	0.087**	0.088**
Access to Finance	0.171***	0.164***	0.166***
Location	0.077	0.104*	0.115*
Type of Business Activity	-0.069	-0.129	-0.115
Growth Intentions	-0.118***	-0.087**	-0.08**
Exploration		0.06	0.083
Exploitation		0.404***	0.212**
New Ambidexterity			0.013***
F	7.607***	11.002***	11.407***
R squared	0.156	0.257	0.285

*** p<.001, **p<.05, *p<.1

Table 9 Dependent Variable: Growth			
	Model 1	**Model 2**	**Model 3**
(Constant)	4.49***	4.528***	4.458**
Number of Years in Operation	-0.015**	-0.008	-0.008
Full Time Employees	0.107*	0.04	0.048
Part Time Employees	0.104**	0.091**	0.091**
Access to Finance	0.152***	0.141***	0.143***
Location	-0.039	-0.005	0.003
Type of Business Activity	-0.047	-0.098	-0.088
Growth Intentions	-0.146***	-0.108**	-0.103**
Exploration		0.13**	0.147**
Exploitation		0.306***	0.173
New Ambidexterity			0.009**
F	8.819***	10.869***	10.360***
R squared	0.176	0.254	0.266

*** p<.001, **p<.05, *p<.1

The results above provide support for H1, H2 and H3. Model 2 in Table 8, using profitability as the dependent variable, shows that exploitation capability shares a positive and significant relationship with profit performance (H1, p<.001), while exploration does not. When using growth as the dependent variable, Model 2 in Table 9, shows that exploitation shares a significant and positive relationship with growth (H2, p<.001). Adding ambidexterity, with dependent variable profit, (Table 8, Model 3) serves to improve the R squared and F-Statistics, while also having an unstandardized coefficient that is positive and significant, in line with the predictions of H3. Similarly, with growth as the dependent (Table 9), ambidexterity is positively and significantly related to growth performance confirmed the prediction made in H3, while also improving the R squared as compared to Model 1 and 2.

DISCUSSION

We found ambidexterity to be positively and significantly related to the performance dimensions of profit and growth, beyond the effects of exploration and exploitation. In the model with just control variables, the exploration and exploitation dimensions (and profit as the dependent variable) demonstrated an R squared of .257, of which the addition of the ambidexterity calculation improved the model's R squared to .285. The F statistic also improved with the addition of the ambidexterity calculation from 11.002 to 11.407. With growth as the dependent the R squared improved with the addition of ambidexterity from .254 to .266.

While in larger organizations ambidexterity can be achieved through specialist departments that focus on one aspect of the task (exploration or exploitation), in smaller organizations, there tends to be a resource shortage. Often, micro enterprises are born out of necessity and begin operations with extremely limited resources. This lack of resources translates into an inability to effectively execute a maximized dual exploration and exploitation strategy. In fact, even once established and operating, micro-organizations are faced with challenges that result in the need for sacrifice.

Consider the challenge of Trinidadian micro enterprises affording a credit card terminal charge and commission fees associated with the machines. A 'Linx' terminal (as locally branded) can carry fixed rental costs of between TTD $300 – $450 per month, as well as commissions on credit card sales that can run as high as 5% for smaller business. In addition to being able to absorb the fixed rental charges on these Linx machines more easily than their smaller counterparts due to their volumes, larger business, deemed more 'secure' by the local banking sector, are offered commission rates as low as 1.5% on credit card transactions. As such, beyond the resource shortages that exist internally, micro businesses are faced with systemic challenges that force tradeoffs between exploration/growth (getting the new Linx machine) and exploitation/profitability (Rental charges, commission fees).

At present, a fixed exchange rate regime in Trinidad has resulted in a shortage of foreign exchange and thus, the inability of smaller businesses without established banking relationships to legally access foreign exchange at the official exchange rate. While a black market for foreign exchange does exist, micro-organizations often are forced to pay a 20 – 40% premium on black market forex purchases. This scenario reenforces the tradeoff between exploration and exploitation faced by local micro-organizations, with those who may seek growth through the introduction of new products or technologies sourced from abroad being forced to do so at immediate risk to their profitability. Similarly, Trinidad has been facing a surge in crime with businesses being forced to deal with the implications of the provision of effective security controls. At low level of sales employing private security to stem external or internal theft is unaffordable. In order to ensure that all sales and stock are accounted for properly, micro entrepreneurs are forced to sacrifice exploration activity that may require leaving the physical store, in order to remind on site to police the operations.

Based on the results, it seems that micro-organizations that attempt to maximize their exploration and exploitation activities have difficulty transforming both their exploration and exploitation capabilities into above average performance. In other words, these organizations run the risk of 'spreading themselves too thin' if they attempt to maximize both dimensions of ambidexterity. A business that has only one, or a couple employees will find it incredibly difficult to maximize their exploration activities while also maintaining very high levels of exploitation. As a result of this discovery, ambidexterity that tends towards scoring the highest level of ambidexterity when either exploration or exploitation is maximized and there exists a small gap between the two dimensions has been found to be more effective in the explanation of growth and performance of micro enterprises.

Micro firms seem to benefit most from attempting to maximize one dimension of ambidexterity, while attempting to be at least relatively average in the other dimension. For

instance, a firm that has a very high exploration score is likely devoting a lot of its time to the search for new opportunities and acquiring new skills. Our findings indicate that this firm must also devote a moderate amount of time towards refining the businesses' current procedures and improving the efficiency of operations. Failure to at least be relatively average on one dimension creates an overt imbalance that appears to negatively influence the performance of the organization. Continuing the example above, maximizing exploration at the complete expense of exploitation is likely to be unsustainable given the costs of exploration, while maximizing both exploration and exploitation is deemed unsustainable given the resource shortage that micro-organizations face. Thus, some degree of trade off must be made between exploration and exploitation in micro-organizations in order to appropriately benefit from the specific capability.

LIMITATIONS

It is prudent to acknowledge the limitations of the study that was conducted. One such limitation is the selection of the sample population. Ideally, we would have utilized a survey of legally registered business, however, attempts to secure such a listing from governmental agencies were unsuccessful. It is estimated that 80% of the surveyed micro-organizations were formally registered, with the remaining 20% operating without registration. In addition, survey participants were approached during regular business hours. This meant that business owners that were especially busy when asked to complete the survey were often unable to do so, which could have possibly introduced bias into the data given that businesses that may have been especially successful were unable to participate. Finally, measures of profitability and growth were self-reported, which may have led to instances where the relative scales used to access performance may not have been equal.

CONCLUSION

The guiding research question in this paper considered the impact of exploration and exploitation capabilities and their interaction, termed ambidexterity. We found evidence that supported the efficacy of the ambidexterity concept beyond that of the main effects of exploration and exploitation capability. Initially, we reasoned that increasing amounts of exploration and exploitation led to a greater ambidexterity score and in turn greater performance, however, the data revealed a more nuanced relationship. That is, while it does appear that very high levels of either exploration or exploitation are positively and significantly related to growth and profit performance respectively, the ambidexterity relationship is more strongly related to performance when the one of the dimensions is not maximized, but rather, average.

Following from this finding, we suggest that there is a tradeoff that must be made between exploration and exploitation in order to yield maximum benefits from their interaction. The scarcity of resources faced by micro-organizations suggests that attempting to maximize both exploration and exploitation leads to a scenario in which neither in actuality can be absolutely advantageous. Future research on the nuances of the calculation of ambidexterity can serve as an exciting area of study. While our findings suggested that micro-organizations that

often face severe resource constraints can benefit from a slight imbalance in their scores of exploration and exploitation, more can be done to understand the expected outcomes. For instance, while significance in relation to growth and profitability was discovered with a maximization of either exploration or exploitation and a moderate level of the other, questions remain as to whether there is any significance as to which of the two dimensions should be maximized. Further, research that investigates the impact, if any, of a slight imbalance in levels of exploration and exploitation in larger firms would serve as an insightful comparison to the findings of this study.

By choosing to focus on either exploration or exploitation micro enterprises appear to more effectively maximize the performance returns that may result from the specialization. This is not to say micro-organizations should ignore the secondary dimension. We found that while focusing on maximization of one dimension, profit and growth performance is strongest when the second dimension is within a relatively average range relative to other firms in the sample. For instance, firms that choose to focus on exploration and the search for new ideas cannot ignore the elements of exploitation; the search for new ideas cannot finance itself. Past exploration must be monetized and exploited so that the funds are available to continue exploration. Similarly, the firm that only focuses on exploitation will eventually encounter a scenario where competitive forces have eroded any advantage that may have existed. In the absence of new ideas generated from exploration activity, productive exploitation will cease.

Therefore, it is likely that the tradeoff between maximization of exploration or exploitation is temporal such that at different stages of the business life cycle a focus on one aspect of exploration or exploitation can yield differing impacts unto performance. For instance, new firms may find it worthwhile to commence operations with a focus towards exploration. Once productive benefits are yielded from the exploration process (e.g. new ideas) a switch in focus to exploitation may be beneficial to maximize possible returns.

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Appendix 1
Tests of Legacy versus New Ambidexterity Calculation

Test of Legacy versus New Ambidexterity - Dependent Variable = Profits

	B- unstandardized coefficient	**Model R squared**	**F-Statistic (significance refers to change)**
Legacy Ambidexterity	.003**	.189	8.396**
New Ambidexterity	.020***	.255	12.295***

*** p<.001, **p<.05, *p<.1

Test of Legacy versus New Ambidexterity - Dependent Variable = Growth

	B- unstandardized coefficient	**Model R squared**	**F-Statistic (significance refers to change)**
Legacy Ambidexterity	.004***	.218	10.032***
New Ambidexterity	.015***	.228	10.610***

*** p<.001, **p<.05, *p<.1

Appendix 2
Survey Items

Exploration

1: My business spends a great deal of time searching for new business opportunities:
To a very small extent 1 2 3 4 5 6 7 To a very large extent

2: My business spends a great deal of time considering the options with respect to new way to make profits:
To a very small extent 1 2 3 4 5 6 7 To a very large extent

3: Learning new skills and being adaptable is important to my business:
To a very small extent 1 2 3 4 5 6 7 To a very large extent

Exploitation

1. My business always emphasizes the same products and services because our customers enjoy the current offering:
To a very small extent 1 2 3 4 5 6 7 To a very large extent

2. Operating my business involves the using the knowledge I already have:
To a very small extent 1 2 3 4 5 6 7 To a very large extent
3: Reducing expenses and improving efficiency are important preoccupations to my business:
To a very small extent 1 2 3 4 5 6 7 To a very large extent

Performance

1: Over the past three years, in comparison to my competitors my business profits are:
Well below normal 1 2 3 4 5 6 7 Well above normal

2: Over the past three years, the business' growth in sales has been:
Very weak 1 2 3 4 5 6 7 Very strong

Controls

1. How many years has your business been in continuous operation? _____

2. How many full-time employees does your business have? _____

3. How many part time employees does your business have? _____
4.With 1 representing not true at all and 7 representing very true, how true is the following statement: "If there was a need for business financing, my business would be able to secure any amount it needed":
Not true at all 1 2 3 4 5 6 7 Very true

5. Firm location? _____

6. Primary product/service/industry? _____

7. With 1 representing not true at all and 7 representing very true, how true is the following statement: "I have no plans to significantly expand the size of my business":
Not true at all 1 2 3 4 5 6 7 Very true