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Opportunity Recognition: A Comparative Analysis of Nascent Student Entrepreneurs and Non-Nascent Students

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Opportunity Recognition: A Comparative Analysis of Nascent Student Entrepreneurs and Non-Nascent Students

by

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Abstract

This study investigates differences between undergraduate nascent student entrepreneurs and non-nascent students' opportunity recognition and entrepreneurial self-efficacy. Four hypotheses were presented and after collecting and analyzing 150 student responses two of the four hypotheses were partially or fully supported. Results showed that nascent student entrepreneurs exhibited higher levels of entrepreneurial self-efficacy than non-nascent students, and that nascent student entrepreneurs exhibited higher levels of entrepreneurial alertness than non-nascent students, and the difference was significant. However, non-nascent students had higher levels of opportunity recognition. This study supports previous research and adds an important demographic, undergraduate students, to the existing research.

Dedication

I dedicate this research to my parents and friends who encouraged me to work hard to pursue excellence in academia.

Acknowledgements

The researcher would like to give thanks and praise to God, for revealing the complexities of his creation through research.

The researcher would also extend his heartfelt gratitude:
University of Southern Mississippi Honors College, the IRB Review Board, and the many students who took the time to invest in the project. Most importantly, my appreciation to my Professor Dr. Gibbs, for her almost two years of support. Without her help none of this would have happened. Thank you.

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ESE	Entrepreneurial Self-Efficacy
OppR	Opportunity Recognition

Introduction

Countless articles have been written observing and analyzing the effects that self-efficacy has on entrepreneurs (Boyd & Vozikis, 1994; Gibbs, 2009). Self-efficacy is a well-documented antecedent of entrepreneurial intentions and opportunity recognition (George, et al. 2014). Authors have studied this phenomenon among students, nascent entrepreneurs, and full-fledged entrepreneurs alike (Chen, Greene, & Crick, 1998; Singh & Gibbs, 2014; McGee, Peterson, Mueller & Sequeira, 2009). As more studies are completed entrepreneurial self-efficacy becomes closer to an essential characteristic for entrepreneurial success, but it is still not a panacea. However, it does expand our understanding of how entrepreneurs recognize opportunity and then act on those observations in the beginning stages of new venture creation. (Chen, et al. 1998).

Under the framework of social cognition, I seek to explore entrepreneurial self-efficacy using a descriptive theory. The research conducted centers on two questions: Does entrepreneurial self-efficacy positively relate to opportunity recognition among self-identified nascent student entrepreneurs and non-nascent students? Also do nascent student entrepreneurs exhibit higher levels of entrepreneurial self-efficacy thereby resulting in higher levels of opportunity recognition when compared to non-nascent students? To examine these questions, I will use a control group and a test group. The test group consists of college students who identify as nascent entrepreneurs, while the control group consists of college students not identifying as nascent entrepreneurs. The intent of the study is to determine the extent and form of the relationship between entrepreneurial self-efficacy (ESE) and opportunity recognition. I will be looking at

college students who identify as nascent student entrepreneurs and non-nascent student entrepreneurs, and comparing ESE and opportunity recognition levels among the two groups of students. My hypotheses include:

Hypothesis 1: The data will show a positive correlation between entrepreneurial self-efficacy and opportunity recognition.

Hypothesis 2: Nascent student entrepreneurs will exhibit higher levels of entrepreneurial self-efficacy than non-nascent students, and the difference will be significant.

Hypothesis 3: Nascent student entrepreneurs will exhibit higher levels of entrepreneurial alertness than non-nascent students, and the difference will be significant.

Hypothesis 4: Nascent student entrepreneurs will exhibit higher levels of opportunity recognition than non-nascent students.

Significance of Study

Few studies have focused on ESE in relation to opportunity recognition comparing populations of nascent student entrepreneurs and non-nascent students. Not only will this study add to the entrepreneurial literature, but it also uses a multimodal and multi-rater research design focusing solely on college students, which should help demonstrate external validity of study findings. Research articles (McGee et al., 2009; Boyd & Vozikis 1994) examine the entire new venture creation process, finding somewhat broad conclusions regarding all stages of starting a business. George et al. (2014) states that opportunity recognition remains largely unexplored empirically. By focusing specifically on opportunity recognition as it applies to ESE, this study provides

more detail and sheds light on one important aspect in the complex process of new venture creation with the primary participants being college students. (Chen et al., 1998)

LITERATURE REVIEW:

Entrepreneurship is defined as "the creation of a new enterprise" (Boyd &, Vozikis, 1994). Entrepreneurial research has attempted to identify the social, political, cultural and economic factors that encourage new venture creation (Boyd &, Vozikis, 1994). Additionally, the venture creation process is frequently broken down to individualized phases with starting points being ideation/opportunity conception, opportunity development, and opportunity recognition (Ardichcili, Cardozo, & Ray, 2002). Opportunity recognition is defined as "perceiving a possibility to create a new business, or significantly improving the position of an existing business (Lumpkin, Hills, & Shrader, 2001, p. 5)."

Prior to transitioning between these phases, authors delineate entrepreneurs into four categories nascent, novice, serial, and habitual entrepreneurs (Westhead & Wright, 1998; McGee et al., 2009). Nascent entrepreneurs are individuals who identify as having intentions to start a new business or venture, but who have not yet succeeded in making the transition into new business creation (Carter, Gartner, Reynolds, 1996). Understanding the mindset of such individuals considering starting their own business has been the focus of many studies seeking to explain the why's and how's of the venture creation process and why some are better than others at recognizing opportunities.

Looking at the work of psychologist Alfred Bandura paves the way for understanding of how self-efficacy affects the genesis of an entrepreneur.

Social Cognitive Theory

Bandura's (1977) work with social cognitive theory, particularly concerning self-efficacy, has laid a framework for many insights into entrepreneurship. Bandura defines self-efficacy as an individual's belief in their personal capability to accomplish a job or a specific set of tasks (Bandura, 1977). He found in his research that the higher an individual's self-efficacy regarding a specific task the higher the chance they will pursue the task than someone with low self-efficacy (Bandura, 1997). Task specific efficacy has been argued to predict specific performance better than generalized self-efficacy (Gibbs, 2009). This study is interested in entrepreneurial self-efficacy (ESE) as its task specific efficacy.

Sources of Self-Efficacy.

Bandura's (1977) proposed model categorized the sources of self-efficacy into 4 groups: performance accomplishments, vicarious experiences, verbal persuasion, and physiological states. Performance accomplishments are linked to personal mastery which builds internal expectations of the individual's performance on related tasks (Bandura, 1977). Vicarious experiences are an individual's observation of another's actions that persuade themselves that they can improve on the observed performance. Verbal persuasion can persuade someone that they possess the capabilities to master difficult situations that have overwhelmed them in the past through suggestion and encouragement. Lastly emotional arousal impacts self-efficacy via threatening, stressful, and taxing situations which generally elicit an emotional response. These emotional

responses can affect perceived self-efficacy in coping with such emotional strenuous situations (Bandura, 1977). Each of these categories influence an individual's perceived ability to complete a task. Understanding these categories helps when diving into self-efficacy as it applies to nascent entrepreneurs.

Entrepreneurial Self-Efficacy

Self-efficacy can explain much about how entrepreneurs act based on their perceived abilities related to certain tasks. With Bandura's research in mind Chen et al., (1998) proposed that the stronger an individual's self-efficacy towards entrepreneurship the stronger their intentions were to actually starting a business. Entrepreneurial self-efficacy (ESE) looks at what factors affect/influence an entrepreneur in the process of starting a new venture. Evidence gathered shows that ESE has the potential to be an individual characteristic essential to entrepreneurial success (Chen et. al., 1998). The practical implications of this research shows that while ESE may accurately describe ones' abilities, there are many "entrepreneurs" who don't become entrepreneurs because of their lack of ESE. Entrepreneurial self-efficacy does not explain entrepreneurial intention, but only one variable in the complex process of entrepreneurial decision and action (Chen, et al., 1998; Bandura 1977).

Entrepreneurial Alertness

Entrepreneurial Alertness was first developed by Israel Kirzner (1973, 1979) and defined as an individual's alertness and ability to identify opportunities overlooked by others. The concept includes both creativity and imagination, and uses cognitive

processes like prior knowledge, pattern recognition and social interactions (Ardichvili et al., 2003; Shane, 2003). Authors also say that alertness can impact the type of opportunities pursued (Tang, Kacmar & Busenitz, 2012) and firm innovativeness. Fiske and Taylor (1984) also stated that entrepreneurial alertness can be inferential so that aspiring entrepreneurs who are entrepreneurially alert can discover opportunities with more business potential. This is an essential skill for nascent entrepreneurs to identify business opportunities, and may be an important differentiator between those who are very adept at opportunity recognition, and those who lack the ability to identify viable opportunities.

Opportunity Recognition

Opportunity Recognition (OppR) is by definition what entrepreneurs do to discover opportunities (Shrader, & Hills, 2003). While it has been forefront in theories regarding entrepreneurship, researchers have only now begun to report empirical studies on OppR (George et al. 2014). Bhave's model presents more detail about OppR among entrepreneurs. He categorized them into two types: externally and internally stimulated entrepreneurs (Bhave, 1994). Externally stimulated entrepreneurs begin their venture first, and then they find their opportunity post launch. These entrepreneurs are "pushed" into finding new opportunities. Internally stimulated entrepreneurs however, recognize an opportunity then start their business to fill the gap in the market. These individuals are "pulled" by a need that they see and consequently start a business. Internally stimulated entrepreneurs have a higher rate of success than externally stimulated entrepreneurs (Bhave, 1994).

According to Bandura (1986), cognitive factors, behaviors and environmental factors bi-directionally interact and can influence one another. Thus, cognitive factors such as ESE

can influence and relate to behavioral variables, particularly, opportunity recognition. For instance, cognitive factors can directly affect an individual's behavior and vice versa. Prior authors have found an association between ESE and OppR, (Gibbs, 2009) and it is expected that similar findings will be shown in the sample of nascent student entrepreneurs and non-nascent students. The final hypotheses were surmised based on findings from prior studies (Ucbasaran, Westhead, & Wright, 2009). Thus, it is hypothesized that:

Hypothesis 1: *The data will show a positive correlation between entrepreneurial self-efficacy and opportunity recognition.*

Hypothesis 2: Nascent student entrepreneurs will exhibit higher levels of entrepreneurial self-efficacy than non-nascent students, and the difference will be significant.

Hypothesis 3: Nascent student entrepreneurs will exhibit higher levels of entrepreneurial alertness than non-nascent students, and the difference will be significant.

Hypothesis 4: Nascent student entrepreneurs will exhibit higher levels of opportunity recognition than non-nascent students.

METHODS

Sample and Data Collection

A cross-sectional sample of undergraduate business students in a large university in the south central United States was used to test the hypotheses. Data collection began in January 2017 and continued through April 2017. Over 200 students were surveyed, and students were separated into one of two categories based on their identifying as nascent entrepreneurs or non-nascent. The total sample was 150, consisting of students who identified both as non-nascent entrepreneurs and nascent entrepreneurs.

Study Variables

Variables analyzed in this study included: entrepreneurial self-efficacy (ESE), opportunity recognition, and nascent or non-nascent entrepreneurs.

Control Variables. Similar to prior studies by Gibbs (2009) and McGee et al. (2009), data was collected on demographic variables such as age, race, gender, social class, undergraduate classification, and college major.

Dependent Variables. Data was collected on opportunity recognition in two ways. The first being self-reports on perceptions and the second was through case scenarios.

Entrepreneurial Alertness: Entrepreneurial Alertness originates from Ucbasaran & Westhead (2002). It measures entrepreneurs' confidence in their ability to be "alert" to entrepreneurial opportunities in the environment. The concept is oftentimes called opportunity recognition perceptions. This 7 point Likert scale ranges from 1 to 7, where 1 shows low levels or opportunity recognized, while 7 shows high levels of perceived opportunity.

Number of Opportunities Identified: As the primary tool in the study, a case scenario (see Appendix, Illustration 2) will be used to analyze the answers given by participants and the number of new venture opportunities (opportunity recognition) observed in the case is determined by multiple raters (See Figure 1 in Appendix). The number of opportunities identified from the scenario are rated by four separate professors. The professors' areas of expertise are in entrepreneurship, marketing, and management/human resources. Once rater assesses the number of opportunities identified by students, the mean of ratings is taken. This, in essence, is the end result of an objectively rated average number of good opportunities identified.

This procedure is similar to that performed by Vandor and Franke (2016) in a study on opportunity recognition capabilities. Raters were given a sheet with anonymous responses to the scenario and rated each participant's scenario response. Expert raters collectively averaged 12 years' experience in their respective fields and 7 years' experience with entrepreneurship. Figure 2 shows an example of the rating sheet given to expert raters.

Independent Variables. Entrepreneurial self-efficacy and nascency were used as study variables.

Entrepreneurial Self-Efficacy (ESE) is measured by a scale by McGee et al. (2009) The scale determines entrepreneurial competency perceptions on innovation, risk taking, management, marketing, and financial control. The scale provided uses a 5 point Likert scale ranging from 1 being (very unsure) to 5 (very sure).

Nascent entrepreneurs versus Non-Nascent students. Questions will initially be asked to determine whether students identify themselves as nascent or non-nascent

entrepreneurs. Example questions include “In the past year have you thought about starting a business?” and “Have you made steps towards actively starting the venture or have they stayed as ideas only?” These results will help group the students into two categories one nascent the other non-nascent entrepreneurs for further analysis.

Data Analysis

For data analysis, descriptive statistics, correlation analysis, factor analysis, and analysis of variance (ANOVA) are used to identify trends in the data, determine associations between variables and test hypotheses. Descriptive statistics are used to comprehensively look at the data collected for further evaluation. The data was found to meet normality and linearity requirements.

Table 1 shows the demographic profile of participants and frequencies. A total of 150 participants completed the survey. Of these 32.7% were nascent student entrepreneurs and 67.3% were non-nascent students. There was an even mix of male to female ratio 48.7% to 51.3%. GPA and classification were recorded along with the entrepreneurial training each participant had up to this point.

Results of the Factor Analysis are shown in Table 2. Two factors, ESE and Entrepreneurial Alertness, had a total variance explained of 88.6%. Items with loadings less than .40 were removed from its respective component. These results are similar to Chen, Greene, and Crick (1998) and Gibbs (2009). The total ESE score and Entrepreneurial Alertness were averaged across all items. Mean Scores and Correlation Analysis are shown in Table 3. Table 4 shows reliability coefficients for entrepreneurial alertness and ESE.

Table 1: Study Participants Demographics (*N = 150*)

Category	Number (%)		Category	Number (%)
Males	73 (48.7%)		Nascent	49 (32.7%)
Females	77 (51.3%)		Non-Nascent	101 (67.3%)
Currently Entrepreneur	24 (16%)		Family Member Entrepreneur	7 (38.9%)
Not Entrepreneur	126 (84%)		No Family Member Entrepreneur	11 (61.1%)
ENT Class / Training	52 (34.7%)		Study Abroad	19 (12.7%)
No ENT Class /Training	96 (64%)		Not Studied Abroad	131 (87.3%)
No Response	3 (1.3%)		Majors:	
			Business Discipline	75 (50%)
Family Income:			Entrepreneurship	8 (5.3%)
$0 – $19,999	20 (13.3%)		Non-Business	58 (38.7%)
$20,000 - $39,000	17 (11.3%)			
$40,000 - $59,000	12 (8.0%)		GPA:	
$60,000 - $39,000	12 (8.0%)		1) 0 to 1.49	1 (.7%)
$80,000 - $99,999	20 13.3%)		2) 2.00 – 2.49	5 (3.3%)
$100,000 - $119,999	14 (9.3%)		3) 2.50 – 2.99	20 (13.3%)
$120,000 - $149,999	11 7.3%)		4) 3.00 – 3.49	60 (40.0%)
$150,000 - $179,999	8 (5.3%)		5) 3.50 – 3.79	35 (23.3%)
$180,000 - $199,999	5 (3.3%)		6) 3.80 – 4.00	29 (19.3%)
$200,000 - $249,999	2 (1.3%)			
$250,000 - $299,000	3 (2.0%)		Classification:	
$300,000 - $499,000	2 (1.3%)		Freshman	9 (6.9%)
$500,000 - $999,999	2 (1.3%)		Sophomores	7 (5.3%)
			Junior	34 (26%)
			Senior	78 (59.5%)
			Masters Student	2 (1.5%)
			Doctoral Student	1 (.8%)

Table 2: Factor Loadings

Items	**Factor Loadings**	
	1	2
Entrepreneurial Alertness		
I have a special alertness or sensitivity to opportunities		.861
I would describe myself as opportunistic		.837
I can usually spot a real opportunity better than a professional researcher/analyst		.708
I enjoy just thinking about and/or looking for new business opportunities		.530
Entrepreneurial Self-Efficacy		
Set and meet market share goals	.694	
Set and meet sales goals	.624	
Set and attain profit goals	.827	
Establish position in product market	.805	
New markets and geographic territories	.689	
New methods of productions, marketing and management	.697	
Strategic planning and develop information systems	.785	
Establish and achieve goals and objectives	.429	
Make decisions under uncertainty and risk	.527	
Perform financial analysis	.742	
Develop financial system and internal controls	.668	
Control costs	.825	
Eigenvalue	6.8	2.4
Percent of variance	37.8%	50.9%

Table 3: Descriptive Statistics and Correlation Matrix (*N = 150*)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Entrepreneurial Alertness	4.54	1.03	(.79)												
2. ESE	3.35	.79	.357**	(.91)											
3. No. Opp's Identified	1.03	.44	-.121	.055	-										
4. Nascent Student	.67	.47	-.275**	-.131	.078	-									
5. ENT Course /Training	1.67	.50	-.073	-.195*	.071	.161*	-								
6. EDUC	2.14	1.28	.147	.042	-.138	-.037	.117	-							
7. Major	7.77	4.29	-.172*	-.387**	.102	.340**	.534**		-						
8. Gender	1.51	.50	-.111	-.082	.040	.289**	.098	.137	.097	-					
9. Family Income	4.77	2.97	-.004	.054	-.148	.014	-.071	.031	-.121	.117	-				
10. GPA	5.15	1.07	-.058	-.208*	.038	.189*	.154	.120	.296**	.109	.120	-			
11. Family ENT	1.61	.50	.161	.217	.436	.025	-.065	-.052	-.083	-.532*	-.052	.287	-		
12. Entrepreneurial Exper.	1.84	.37	-.059	-.198*	.057	.239**	.255*	-.059	.216*	.157	.151	.043	.000	-	
13. Study Abroad	1.87	.33	.058	.086	-.118	-.137	-.054	-.046	-.157	-.170*	-.108	-.211*	.000	-.166*	-
14. Grocery Industry Exper.	1.83	.38	.012	-.201*	.079	.036	-.014	-.046	.063	.105	.044	.196*	-.152	.145	-.010

Note. Significance levels: +$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$; Negative numbers show negative correlations; positive numbers show positive correlations. Significant correlations are flagged using the symbols above.

Table 4: Reliability Coefficients

	Cronbach's Alpha
Entrepreneurial Alertness	**.79**
ESE	**.91**

RESULTS

Correlation analysis indicated that ESE did not have a positive association with opportunity identification. Thus, Hypothesis 1 was not supported. With regards to Hypothesis 2, the pattern of data showed that students indicating their intention to become an entrepreneur in the future had higher mean scores on ESE (*M = 3.50, sd = .73*), and entrepreneurial alertness (*M = 4.95, sd = .95*), but lower opportunity identification (*M = .98, sd = .48*) as compared to non-nascent students. In fact, non-nascent students had an ESE (*M = 3.27, sd = .81*), entrepreneurial alertness (*M = 4.35, sd = 1.01*), and opportunity identification (*M = 1.05, sd = .42*). So, the pattern of data provides support for hypothesis 2, however, the ANOVA did not indicate that the difference between nascent and non-nascent students' ESE was significant. Table 5 shows ANOVA results.

Table 5: One-way ANOVA's

Variable		Sum of Squares	Df	Mean Square	F	Sig.
ESE	Between Groups	1.432	1	1.432	2.325	.13
	Within Groups	81.949	133	.616		
	Total	83.382	134			
Entrepreneurial Alertness	Between Groups	10.850	1	10.850	10.958	.001
	Within Groups	132.678	134	.990		
	Total	143.528	135			
Number of Opportunities Identified	Between Groups	.109	1	.109	.562	.455
	Within Groups	18.068	93	.194		
	Total	18.177	94			

Overall, two of the study's four hypotheses were either supported or partially supported, while two hypotheses were not supported. Commentary is provided on the study's findings in the next section.

Illustration 1: Results of Hypotheses Testing

Hypothesis:	Results:	Significance:
H1: *The data will show a positive correlation between entrepreneurial self-efficacy and opportunity identification.*	Not supported	-
H2: *Nascent student entrepreneurs will exhibit higher levels of entrepreneurial self-efficacy than non-nascent students, and the difference will be significant.*	Partially Supported	-
H3: *Nascent student entrepreneurs will exhibit higher levels of entrepreneurial alertness than non-nascent students, and the difference will be significant.*	Supported	p = .001
H4: *Nascent student entrepreneurs will exhibit higher levels of opportunity identification than non-nascent students, and the difference will be significant.*	Not supported	

DISCUSSION

At first these results were baffling. However, subsequent tests provided useful insights (see Table 6). First, mean comparisons on GPA rankings shown in Table 1 demonstrated that nascent students' GPA (*M = 3.86, sd = .1.02*), was significantly lower (*p = .02*) than non-nascent student's GPA (*M = 4.29, sd = 1.07*). Based on these means, nascent students' GPA ranged between 2.50 to 2.99, with non-nascent student GPA ranging from 3.00 to 3.49. Also, significantly more of the participating non-nascent

students (*M = .172, sd = .472, p = .048*) previously received entrepreneurial training or had taken an entrepreneurial course compared to nascent students (*M = 1.55, sd =.542*).

Table 6: Additional One-way ANOVA's

Variable		Sum of Squares	Df	Mean Square	F	Sig.
Overall GPA	Between Groups	6.100	1	6.100	5.482	.021
	Within Groups	164.673	148	1.113		
	Total	170.773	149			
Entrepreneurship Course/Training	Between Groups	.973	1	.973	3.962	.048
	Within Groups	36.360	148	.246		
	Total	37.333	149			

CONCLUSION

Academic ability and entrepreneurial training may explain why non-nascent students, who represented a larger share of study participants, identified more opportunities than nascent student entrepreneurs. Also, in speaking with an Entrepreneurship professor about the results, it was stated there is anecdotal evidence that many 'truly' entrepreneurial students are less interested in academic oriented entrepreneurial activities because they prefer to be doing rather than thinking about identifying opportunities for which they are not interested. While the data did not coincide with previous literary research, or our hypotheses, the population of survey participants is also unique to this study leading to original findings.

The study is limited in validity due to the fact that the sample size of nascent student entrepreneurs was relatively small compared to non-nascent students. Perhaps in the future the sample can be expanded and findings may comply with hypotheses in this study.

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APPENDIX

The opportunity recognition student survey was created on Qualtrics and can be viewed at: https://usmuw.co1.qualtrics.com/jfe/form/SV_d4DXlrsyGC2Qwjb

Illustration 2: Case Scenario

Please read the scenario below and respond accordingly.

An entrepreneur wants to open a new food supermarket in Hattiesburg. It should be clearly distinguished from existing supermarkets and attract many customers. Please give suggestions for an innovative and feasible product, service, or business idea (for a supermarket) that allows the entrepreneur to make a profit.

You may suggest more than one idea. To the greatest extent possible, provide support for why you believe the new business idea is innovative and feasible. Note: Please number each idea.

Illustration 3: Ratings Sheet

Expert Raters

1. Please tell us the number of years of experience you have in Business:
2. In what industries do you have business experience:
3. Please Indicate the number of years you have in Academe:

The document handed to you contains descriptive write-ups for new venture opportunities in the grocery/supermarket industry. For each write up, please use your expertise to assess the extent to which you believe the respondent has identified a profitable venture opportunity.

Use the Likert Scale to rate each respondent and in the last column specify the number of profitable venture opportunities the respondent identified.

Respondent #	Not a Profitable Opportunity (0%)	Slightly Profitable Opportunity (1% - 5%)	Moderately Profitable Opportunity (6% - 10%)	Profitable Opportunity (11% - 20%)	A Very Profitable Opportunity (20% or above)	Specify the Number of Profitable Opportunities Identified by Respondent?
1						
2						
3						
4						
5						
…						

IRB Approval Letter

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NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation. PROTOCOL NUMBER: 17032201 PROJECT TITLE: Opportunity Recognition: A Comparative Analysis of Nascent Student Entrepreneurs and Non-Nascent Students PROJECT TYPE: Honors Thesis Project RESEARCHER(S): Daniel Glover COLLEGE/DIVISION: College of Business DEPARTMENT: Business Management FUNDING AGENCY/SPONSOR: N/A IRB COMMITTEE ACTION: Expedited Review Approval PERIOD OF APPROVAL: 04/04/2017 to 04/03/2018

Lawrence A. Hosman, Ph.D.
Institutional Review Board

ORI | Office of Research Integrity

INSTITUTIONAL REVIEW BOARD

HUMAN SUBJECTS UNANTICIPATED PROBLEM AND ADVERSE EVENT FORM

UNANTICIPATED PROBLEM AND ADVERSE EVENT PROCEDURES

Unanticipated problems as defined by federal regulations are occurrences that meet the following three conditions:

1. The problem is unexpected in light of the approved research protocol.
2. The problem is related to the subjects' participation in research.
3. The problem places the research subject(s) or others at greater risk of harm (physical, psychological, economic, or social) than was previously known or recognized.

Adverse events are defined as unfavorable medical occurrences, whether physical or psychological, that a research subject experiences while participating in research.

When unanticipated problems or adverse events occur, proceed as follows:

- Fill out a separate form for each unanticipated problem or adverse event.
- If the unanticipated problem or adverse event has resulted in or requires a change in protocol, please use a Human Subjects Modification form in addition to the completion of this form.
- Submit a completed copy of this form to irb@usm.edu

Last Edited: February 18th, 2013

SECTION 1: INVESTIGATOR INFORMATION

1. Project Title: Opportunity Recognition: a Comparative analysis of Nascent Student Entrepreneurs and Non-Nascent Students		
2.Principal Investigator: Daniel Glover		3. Campus ID: w907618
4. USM Email:daniel.glover@usm.edu	5. Department:Business Managment	
6. Purpose (check one): ☐ Undergraduate Project ☒ Honors Thesis Project ☐ Graduate Project ☐ Faculty or Staff Project	**Student Research Advisor (if applicable)** 7. Name: Dr. SherRhonda Gibbs 8. USM Email: SherRhonda.gibbs@usm.edu	**Funding Agency/Sponsor (if applicable)** 9. Organization: N/A 10. Grant #:N/A

11. Describe your expertise and qualifications related to this research:
Through preperatory classes such as HON 300 and 301, extensive literature review of the subject matter, and guidance by Dr. Gibbs, associate professor of the Entrepreneurship department, who has served as advisor to other Honors Thesis students, I believe that I am qualified to research this topic.

12. List other USM affiliated investigators; completion of CITI Common and Human Subjects Research Courses must be	Name	Faculty or Staff	Graduate Student	Under-graduate	Project Role
		☐	☐	☐	
		☐	☐	☐	
		☐	☐	☐	

attached. (Students need not list committee members or chairs.)		☐	☐	☐	

13. List all Non-USM affiliated investigators; attach evidence of their research ethics training.	Name	University or Institution	Project Role

14. If other individuals will be involved in data collection, describe their role and their training.

SECTION 2: RESEARCH PROCEDURES

15. Briefly describe the project and its goal(s) in two to three paragraphs.

I will be collecting surveys from USM Business students seeking to find a correlation between self-effacacy and opportunity recognition. We will additionally be looking to determine if difference exists coorelations between any finding with self-effacacy and opportunity recognition and whether the student is categorized as Nascent or non-nascent entrepreneur.

To test our hypotheses on these topics we will issue survey approxamatly 45 questions to USM business students in a classroom setting as the study group for the research. The research goal is to have over 200 valid surveys complete and to add significant depth to known data.

16. Are any of the participants under 18 years of age?

☐ Yes ☒ No

Note: Parental consent is required for participants under the age of 18.

17. Describe participant population, number of participants to be included, and criteria for selection.

18. How will participants be recruited?

☒ Class announcement
☐ Oral Announcement
☐ Email announcement
☐ Posted campus advertisement
☐ Television, Radio or Newspaper ad
☐ Advertising Agency
☐ Other (explain):

19. For adult participants, how will you verify that individuals are over 18?

☒ Questionnaire or interview
☐ No adults will be participating in this research
☐ Other (explain):

20. Indicate consent procedures (check all that apply):

☒ Information letter
☐ Oral presentation & Short Consent Form
☐ Long Consent Form
☐ Assent form (children or participants with disabilities)
☐ Request for waiver of consent

21. Detail procedures for obtaining participants' consent or justify request for waiver.

22. How many interactions will be required with each participant?

☒ 1
☐ 2 - 3
☐ 4 – 9
☐ 10 or more

23. Maximum length of each interaction:

☐ Less than 10 minutes
☒ Less than an hour
☐ Less than three hours
☐ Three hours or more.
☐ No direct interaction with participants

24. Where will interactions take place? (check all that apply):

☒ USM campus
☐ Off campus
☐ Online

25. Indicate means of data collection (check all that apply).

- ☐ Personal Interview
- ☒ Questionnaire
- ☐ Audio or video recording
- ☐ Behavioral Observation
- ☐ Focus Group Inquiry
- ☐ Other (explain below):

26. Do any of the following apply to your study?

Use of human biological samples	☐ Yes	☒ No
Use of physical exercise	☐ Yes	☒ No
Medical examinations or procedures	☐ Yes	☒ No
Use of drugs or biological products	☐ Yes	☒ No

27. Give a step by step explanation of data collection procedures.

The questionaires will be administered, and electronically submitted to a database for analysis.

28. Are your participants anonymous?

☒ Yes ☐ No

Note: 'Anonymous' means that even investigators cannot associate the data with individual participants and vice versa, not merely that identities will not be revealed. Electronic surveys must be conducted via websites that do not link responses to email addresses or other identifiers. Personal interviews are not anonymous.

29. Does your research involve sensitive information?

☐ Yes ☒ No

Note: Sensitive information may include (but is not limited to) information about sexual activity, drug usage, criminal behavior, financial or medical data, and religious views.

30. Does your research involve hidden video or audio recordings or deception?

☐ Yes ☒ No

Note: Deception includes any information or procedure that misleads a participant intentionally.

SECTION 3: RISKS AND BENEFITS

31. Indicate all potentially vulnerable participants involved in the study.

- ☐ Children
- ☐ Mentally ill patients
- ☐ Nursing home patients
- ☐ Pregnant females
- ☐ Prisoners
- ☐ HIV positive individuals
- ☐ Other
- ☒ Not applicable

32. Detail the methods that will be employed to protect vulnerable participants.

33. If your research involves prisoners, explain how it is directly relevant to prisoners or the prison system (check all that apply):

- ☐ the causes and/or effects of incarceration
- ☐ the process of incarceration
- ☐ prisons as institutional structures
- ☐ the conditions of prisons or prisoners
- ☐ procedures for improving the well-being of prisoners
- ☐ other (explain):

Note: All research involving prisoners requires compliance with federal regulations pertaining to biomedical and behavioral research involving prisoners as listed in FR 53655 Subpart C. Research must be directly relevant to prisons or prisoners (e.g. the effects of incarceration, criminal behavior, prison infrastructures, etc.). Completion of the CITI Research with Prisoners Module is also required.

34. How will you maintain confidentiality?

- ☒ Anonymous data
- ☐ Electronic data will be password protected
- ☐ Physical data will be locked in a file drawer
- ☐ Public/non-confidential data
- ☐ Other (explain):

35. Describe final disposition of data.

36. Risks, inconveniences, or discomforts participants are likely to experience (check all that apply):

- ☒ Physical
- ☐ Legal
- ☐ Psychological
- ☐ Social
- ☐ Financial
- ☐ Other
- ☐ Occupational
- ☐ None

37. Detail potential risks, inconveniences and discomforts participants are likely to experience, if any.

The only discomfort that students may feel is having to sit for 5-10 mins filling out said survay. This is some cases might lead to slight bodily discomfort.

38. Describe the methods that will be employed to mitigate any potential risks, inconveniences or discomforts.

Students will have the option not to participate.

39. Describe any potential benefits participants may gain as a result of participation.

Extra credit in some courses distributed, or gift cards offered by a drawing.

40. List all incentives participants will receive for their participation.

Gift Cards and extra credit.

Note: If class credit will be given for participation, describe what other options exist for nonparticipants to receive the same credit.

41. If individuals are unwilling or unable to complete their participation, how will their incentives be distributed?

- ☒ Not Applicable (no incentives will be offered)
- ☐ They will still receive all incentives.
- ☐ They will be informed that they will receive no incentives.
- ☐ They will receive partial incentives (explain):

SECTION 4: CHECKLIST AND AUTHORIZATION

42. The following documents must be attached to this form:

- ☒ CITI Common Course Certificate (mandatory for all USM investigators and student advisors)
- ☒ CITI Human Subjects Course Certificate (mandatory for all USM investigators and student advisors)
- ☐ Both CITI certificates or alternative documentation of research ethics training for all non-USM investigators
- ☐ Research proposal approval from Dissertation or Master's Thesis Committee (if applicable)
- ☐ Study recruitment documents (if applicable)
- ☐ Research Instrument (if applicable)
- ☐ Permission letter from external organization participating in the project (if applicable) on official letterhead
- ☐ Assent form for minors (if applicable)
- ☒ Consent forms (long or short) and any related documents
- ☐ Letter to parents (if applicable)

Instructions for Attaching Documents:

1) Place the cursor where you want the attachment to appear.
2) Select the "Insert" tab at the top of MS Word.
3) Select "Object," located on the far right of the tool bar (PC) or the bottom of the list (MAC)
4) Select the "Create from File" tab and **check the box that states "Display as Icon."** Note: Do not check the box that says "link to file."
5) Browse to the location of your document, and double click on it.
6) Repeat these steps for each document to be attached.

Note for Mac Users: Word for Mac is unable to attach .pdf files, so Mac users will have to first save the Citi certificates or any other .pdf files as .doc or .rtf files before attaching them. There are several ways to accomplish this. You may use Adobe to open the file and then select "File" and "Save as" and change the file type to an .rtf or .doc format. Alternatively, you may also download or create your own .pdf to .doc application or simply save the application and then open the file on a PC to attach as instructed above.

Attach all relevant documents in this section:


Cititraining.pdf


Cititraining2.pdf

43. Instructions for Authorization:

1) Type your name and date in the appropriate box.
2) Students should email the form to their advisors, who should type their name below and then send to Department Chairs for review. Department Chairs should type their name below and send the completed form to irb@usm.edu.

By typing my name below, I acknowledge that I have read, understood, and approve of the information herein.

Daniel Glover	**SherRhonda Gibbs**	
Principal Investigator	**Student Research Advisor (if applicable)**	**Department Chair**
1/20/17	**03/15/17**	
Date	**Date**	**Date**

Participant Consent Form

Dear USM Students,

I am an Entrepreneurship major completing my Honors Thesis under the direction and advisement of Dr. Gibbs. My thesis investigates students and opportunity recognition. We are asking for your assistance in completing an online survey on this topic. Your participation is completely voluntary. You have the right to skip or not answer questions posed. It will take you approximately 15 minutes to complete the survey. Survey responses need to be electronically submitted by Tuesday, May 2, 2017.

This survey helps us learn more about students and entrepreneurship. Submitting your electronic responses will imply your consent. Due to the possibility of students being in one or more courses, we request that you take the survey only once. Your consent is implied by completing the survey.

Thank you very much for your assistance.

Sincerely,

Daniel Glover, Honors Student in Entrepreneurship
Professors Gibbs, Sequeira, & Willis