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The Impact of Lean Startup Theory Upon Local Business Entrepreneurs

Gary Boyd

University of the Incarnate Word, boydgary@gmail.com

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THE IMPACT OF LEAN STARTUP THEORY UPON LOCAL BUSINESS
ENTREPRENEURS

by

GARY W. BOYD

A DISSERTATION

Presented to the Faculty of the University of the Incarnate Word
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF THE INCARNATE WORD

December 2017

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Gary W. Boyd

DEDICATION

I dedicate this work to my beautiful wife of many years, Maurine Bowman Boyd. Maurine, you are my everything and my dearest friend on this planet. You have always been my cheerleader, my chief support, my consistent discussion partner, and my number one encourager. Thank you for the continual companionship, love, kindness, and prayers.

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Thank you to my family. You make my heart sing.

THE IMPACT OF LEAN STARTUP THEORY UPON LOCAL BUSINESS ENTREPRENEURS

Gary W. Boyd

University of the Incarnate Word, 2017

The purpose of this study was to examine the extent to which the entrepreneurs in South Texas are aware of the lean startup methodology and have utilized its principles in their business startup decisions. If so, how have these lean methods impacted their ongoing operational management? Additionally, this study ascertained the degree of satisfaction these entrepreneurs had with their startup processes. Finally, this study determined whether selected entrepreneurs would recommend a lean startup approach to other entrepreneurs. The research focused only upon selected business entities formed since 2000.

This study utilized a survey methodology. The results of this study from its 520 respondents revealed statistical significance when four of several independent variables were analyzed. This study indicated that although the lean startup thinking had been around since 2005, and specifically published since 2011, the south Texas business community had very little knowledge of it. In fact, it hardly seemed to be on the methodology radar and mindset of most queried. While the lean startup approach holds much promised guidance and food for thought to anyone desiring to begin a business, this study showed it was not readily known at the street level in south Texas.

TABLE OF CONTENTS

LIST OF TABLES	xi
LIST OF FIGURES	xv
CHAPTER 1: INTRODUCTION TO LEAN STARTUPS	1
Context of the Study	1
The Problem	5
The Purpose	7
The Questions	7
Theoretical and Conceptual Framework	9
Traditional startup method	9
Lean startup method	9
Definition of Some Key Terms	10
Overview of Research Design	14
Setting	14
Background of the Researcher	15
Significance of the Study	15
Limitations of the Study	16
CHAPTER 2: LITERATURE REVIEW	17
Rationale	17
The Gap	17
Arranging the Literature	18

Table of Contents—Continued

CHAPTER 2: LITERATURE REVIEW	
The Traditional Entrepreneurial Approach.....	18
The Lean Startup Approach.....	23
The Difficulty with Using Only Traditional Startup Input.....	26
Not Everyone Buys into the Lean Startup Methodology Alone.....	28
Ongoing Attempts at Lean Startup Integration.....	31
CHAPTER 3: METHODOLOGY.....	36
Review of Purpose.....	36
The Questions.....	36
Design.....	36
Setting of the Study.....	37
Population of the Study.....	38
Researcher Strategies.....	38
Research Instruments.....	39
Validity and Reliability.....	40
Protection of Human Subjects and Ethical Considerations.....	43
Data Collection and Procedure.....	45
Data Analysis Procedures.....	45
CHAPTER 4: RESULTS.....	46
Review of Purpose.....	46
Review of the Research Questions.....	46

Table of Contents—Continued

CHAPTER 4: RESULTS

Analysis of Data and Plan.....	47
Part A: Mixed-Descriptive Data with Inferential Analysis From the Survey Instrument	48
Gender.....	48
Age.....	51
Education level.....	52
Ethnicity.....	56
Type of industry.....	59
Year of company founding.....	62
Job role.....	63
Familiarity with minimum viable product.....	67
Number of personal company startups.....	68
Importance of Chosen Startup Method to Ongoing Daily Operations.....	70
Satisfaction level with startup method chosen.....	72
Likelihood to recommend chosen startup method.....	74
Part B: Inferential Analysis Only.....	77
Use of <i>t</i> -tests.....	77
Gender and Importance of Startup Methodology in Daily Management.....	82
Qualitative Advice Question.....	84
CHAPTER 5: DISCUSSION, RECOMMENDATIONS, AND CONCLUSIONS.....	87
Purpose and Summary of Research Study.....	87

Table of Contents—Continued

CHAPTER 5: DISCUSSION, RECOMMENDATIONS, AND CONCLUSIONS

The Findings and the Literature.....	88
Discussion and Interpretation	91
Limitations and Recommendations.....	94
Recommendations.....	95
Conclusions.....	98
REFERENCES	99
APPENDIX.....	104
Appendix A.....	105

LIST OF TABLES

Table	Page
1. Bankruptcy Filings by State.....	3
2. Relationships Between Probing Inquiries, Hypothesis, and Instrument Questions.....	41
3. Research Variables and Questions for Analysis.....	42
4. Analysis Plan of a Glance.....	47
5. Gender: Survey Question 1.....	48
6. Gender Response Rate.....	48
7. Gender and Familiarity With the Term Minimum Viable Product—Crosstabulation.....	49
8. Gender and Familiarity With the Term Minimum Viable Product—Chi-Square Tests.....	50
9. Gender and Familiarity With the Term Minimum Viable Product—Symmetric Measures....	50
10. Age: Survey Questions 2.....	51
11. Age: Response Rate.....	51
12. Age and Familiarity With the Term Minimum Viable Product—Crosstabulation.....	52
13. Age and Familiarity With the Term Minimum Viable Product—Chi-Square Tests.....	53
14. Age and Familiarity With the Term Minimum Viable Product—Symmetric Measure.....	53
15. Education Level: Survey Questions 3.....	53
16. Education Level of Respondents.....	54
17. Education Level and Familiarity With the Term Minimum Viable Product— Crosstabulation.....	55
18. Education Level and Familiarity With the Term Minimum Viable Product— Chi-Square Tests.....	56

List of Tables—Continued

19. Education Level and Familiarity With the Term Minimum Viable Product—Symmetric Measures	56
20. Ethnicity: Survey Question 4	57
21. Ethnicity of Respondents	57
22. Chi-Square Tests: Ethnicity: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	58
23. Symmetric Measures: Ethnicity: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product.....	59
24. Type of Industry: Survey Questions 5	60
25. Chi-Square Tests: Industry of Experience: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product.....	61
26. Chi-Square Tests: Industry: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	62
27. Symmetric Measures: Industry: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	62
28. What Year Was Your Company Founded?: Survey Question 6.....	63
29. Company Origination.....	63
30. Job Role: Survey Question 7.....	64
31. Job Role/Responsibility: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	65
32. Chi-Square Tests: Job Role: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	66
33. Symmetric Measures: Job Role: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product.....	66
34. Familiarity with Minimum Viable Product: Survey Question 8.....	67
35. Main Respondent Filtering Question 8	67

List of Tables—Continued

36. Personal Startups: Survey Question 9 (Respondent Pivot Question)	68
37. Number of Companies: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	69
38. Chi-Square Tests: Number of Companies Started: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	70
39. Symmetric Measures: Number of Companies Started: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	70
40. Importance of Startup Method to Ongoing Operations: Survey Question 10	71
41. Important of Lean Startup to Ongoing Management	71
42. Crosstabulation: How Important Was Your Startup Methodoogy to the Way You Conduct Daily Management Operations Now: And How Familiar Are You With the Term Minimum Viable Product?	73
43. Chi-Square Tests: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	74
44. Symmetric Measures: Crosstabulation With the Importance of the Number of Startups to Influence Upon Post-Startup Operations	74
45. How Satisfied: Survey Question 11	74
46. Satisfaction With Startup Method	74
47. Likelihood of Recommendation: Survey Question 12	76
48. Likelihood of Respondents to Recommend Their Startup Method	76
49. Results of <i>t</i> -Test 1a: Group Statistics: How Familiar Are You With the Term Minimum Viable Product	78
50. Results of <i>t</i> -Test 1b: Independent Samples Test: With How Familiar Are You With the Term Minimum Viable Product	78
51. Results of <i>t</i> -Test 2a: Group Statistics: With How Familiar Are You With the Term Minimum Viable Product	79

List of Tables—Continued

52. Results of <i>t</i> -Test 2b: Independent Samples Test: With How Familiar Are You With the Term Minimum Viable Product.....	80
53. Results of <i>t</i> -Test 3a: Are You Satisfied, Dissatisfied, or Neither with the Business Startup Methodology You Used?	81
54. Results of <i>t</i> -Test 3b: Independent Samples Test: Overall, Are You Satisfied, Dissatisfied, or Neither With the Business Startup Methodology You Used?	81
55. Results of <i>t</i> -Test 4a: Group Statistics: How Likely Are You to Recommend Your Startup Methodology to Others?	82
56. Results of <i>t</i> -Test 4b: Independent Samples Test: How Likely Are You to Recommend Your Startup Methodology to Others?.....	83
57. Are You Male or Female? How Important Was Your Startup Methodology to the Way You Conduct Daily Management Operations Now? Crosstabulation	83
58. Chi-Square Tests: Importance: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product	84
59. Symmetric Measures: Importance: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product.....	84
60. Qualitative: Advice—Survey Question 13	85
61. Answers to Question 13	85
62. Question 8 From the Participant Survey (Appendix)	90

LIST OF FIGURES

Figure	Page
1. The traditional product development method.....	26
2. Gender.....	49
3. Age of respondents	52
4. Education level of respondents	54
5. Ethnicity of respondents	58
6. Industry of experience from respondents familiar with the term minimum viable product	60
7. Company origination year from respondents.....	63
8. Individual job role from respondents familiar with the term minimum viable product	66
9. Respondents familiarity with the term minimum viable product	68
10. Number of company starts indicated by respondents	69
11. Importance of startup methodology in current daily management	72
12. Satisfaction with startup methodology indicated by respondents.....	74
13. How likely are respondents to recommend their startup methodology?.....	77

Chapter 1: Introduction to Lean Startups

Context of the Study

On February 17, 2016, U.S. Representative Steve Chabot stood before a packed house at the Kauffman Foundation's 2016 State of Entrepreneurship annual meeting and reiterated his stance for and his fight on behalf of entrepreneurs in America (Kauffman Index, 2016). The congressman from District 1 of Ohio currently served as chair of the House Small Business Committee and was a historically committed champion for business, business startups, and entrepreneurs. In Chabot's address, he indicated "nearly half of the U.S. workers are employed at a small business" (Chabot, 2016). He continued his emphasis on the necessity of these new business ventures by saying that "Seven of ten, yes 70%, of the new jobs created in America, were created by small business entrepreneurs" (2016). After citing a litany of projects upon which his Committee was focused, he concluded by looking to the future. He emphasized, "Ninety-eight percent of U.S. exports are by definition, transacted by small business" (2016). He concluded by saying, "What is good for American entrepreneurs is good for America" (2016). The thrust of the congressman's address was that American entrepreneurship has been, and continued to be, vitally important.

A key factor in America's long-term success has always been a robust economy. At the heart of this energetic economy is a vibrant sector called business startups. At the helm of these startup activities are men and women who have carved out functioning and productive business entities that contribute not only to generating capital and energizing exports, but also employing millions.

Often these entrepreneurs began their businesses against unfavorable odds, yet many have managed to remain open and even become profitable. This applies to both large and

national business efforts, as well as the local mom-and-pop startups. The outlook for future entrepreneurs is good. However, there are some causes for concern as well. Here are three.

First, one of the alarming statistics emerging from studies on new business is that overall the number of new business startups in the United States is on the decline (Kaufmann Index, 2016). The president and CEO of Kaufman Foundation, Wendy Guillies, said in her opening remarks at the 2016 State of Entrepreneurship Address, “The rate of new business creation in the United States today is about 50% lower than it was in the 1980s” (Chabot, 2016).

Second, the sector that includes firms like Airbnb and Uber, which provide tremendous employment energy, is stagnant. This may be in part because these companies seem to have hit a saturation point.

Third, of the thousands of new businesses formed in the United States, many do not survive. At least 20% fail quickly—within the first 2 years (Stangler, 2016). Another 30% will flounder and never see their 5th birthdate. Overall, some 75% will fail to produce as planned (Gage, 2012). According to the Quarterly Report of Business Bankruptcy Filings (Bankruptcy Data, 2017), the national second quarter numbers continue an upswing increase of 9% over Quarter One of 2016. Compared to Quarter Two of 2015, the national numbers are up 25%.

For those who watch the economy closely, the decline in oil and gas prices and the subsequent failing of many petroleum-related companies would seem to be a logical explanation. However, as in the past, small businesses make up the largest percentage of overall Quarter Two 2016 bankruptcies with 59% of the total filings coming from companies with less than \$2.5 million in sales and less than five employees (Bankruptcy Data Releases, 2017). An even clearer picture of the small business failure rates is seen when compared to the 2015 and 2014 figures of 76% and 88% respectively.

When examining bankruptcy filings by state, Texas led the nation in Quarter Two of 2016 and was a close second to California in 2015. Table 1 is reflective of that statistic.

Table 1

Bankruptcy Filings by State

<u>Q2 2016</u>		<u>Q2 2015</u>		<u>Q2 2014</u>	
State	% of total bankruptcies	State	% of total bankruptcies	State	% of total bankruptcies
TX	14.31	CA	12.60	CA	12.79
NY	11.98	TX	10.52	NY	10.39
CA	10.92	FL	8.08	DE	8.30
DE	6.82	NY	7.63	FL	8.15
FL	6.74	DE	6.82	TX	7.65
MO	6.44	VA	5.19	NJ	4.61
KS	3.24	IL	4.20	IL	4.26
PA	3.24	NJ	3.52	GA	3.73
PR	2.79	PA	3.25	PA	3.0
NJ	2.67	GA	2.30	VA	2.82

Source: "Bankruptcy Data Releases," 2017.

This alarming statistic is the principal reason I chose to focus this study on the South, and in particular the south Texas area. While there be many reasons for small business failures, the lack of sound startup principles may prove to be a contributor.

Opposite this gloomy picture, some indicators portend good things to come for entrepreneurship and new business startups. Some believe our nation is about to embark on an entrepreneurial boom, even an entrepreneurial revolution (Guillies, 2016; Stangler, 2016).

Indeed, some key changes on the business landscape are visible. The changes range from the Securities and Exchange Commission (2015) guide on how to crowdfund a new venture, to determining the true value proposition and customer base of one's startup (Blank, 2013a). The following items surface as possibly the most significant recent changes in the startup landscape.

First, and most recent, is the transformation in how crowdfunding is viewed and handled by the U.S. government. Crowdfunding is an ever-evolving method of raising funds for business startups using the Internet. Before October 30, 2015, those transactions had not involved the offer of a share in any financial returns or profits from business activities. However, in public statements issued by the U.S. Securities and Exchange Commission on October 30, 2015, Chair Mary Jo White and Team Leader Keith Higgins, who headed the commission's new recommendations team, outlined critical differences. Crowdfunding and financial sharing were now allowed without triggering the previous full suite of SEC regulations both for the issuers making the offerings and the brokers who intermediate them (Securities and Exchange Commission, 2015). This may prove most significant to entrepreneurs seeking initial funding. However, just how and to what extent this new perspective will affect the long-term success of business startups remains to be seen, and perhaps should be the subject of another future study as it falls outside the purview of this present research.

The second significant adjustment in the business startup environment is already having substantial impact on the community (Blank, 2016). In 2011, Eric Ries published a book entitled *The Lean Startup*, which sent shockwaves across the business world (O'Reilly, 2011). Ries (2011a), drawing upon the teaching of Steve Blank's work in customer development and borrowing from the Japanese lean manufacturing concept, introduced a different approach to both beginning, and then managing, a new business enterprise (Ries, 2011a).

The lean startup movement triggered by that book and Blank's teaching has been heralded as a momentous step forward for assisting entrepreneurs in their new business startup thinking and efforts. While the core components of the lean method fly in the face of traditional startup methods, they have nevertheless been applied throughout the world and heralded to be a much-needed shift in startup thinking. The theory claims to assist in both keeping the startup process lean until an actual business model emerges, as well as adding a natural preventative to market failure. It essentially redefines business failure as a positive and planned part of the startup process, and even places it on a schedule.

While not everyone is a fan of this new methodology, the preponderance of reviews for this new theory has been overwhelmingly positive. In fact, Noam Wasserman, a professor at Harvard Business School, declared, "The Lean Startup is a foundational must-read for founders..." (Ries, 2011a, foreword).

The Problem

The issue at stake, however, is that many new business startups continue to adhere to the old traditional business startup teachings and methodology, as though no advances in thinking have occurred. Following these conventional ways, however, brings an inherent set of problems long associated with past startup methodology. Because traditionally startups operate within an environment of very high risk and uncertainty, there are critical unknowns that help fuel business failures. For instance, the traditional method pushes true customer assessment metrics until the end of the startup cycle and business plan. Actual customer reaction to the new product or service is not adequately measured until the plan is complete, the personnel is in place, the production is turned on, and often full scaling has occurred.

Despite the fact that the lean startup theory debuted in 2005 and claims to provide sound science and management metrics for entrepreneurs, new business startups continue to struggle. Of those that somehow manage to begin, up to 75% of them will fail (Gage, 2012).

These issues have also negatively impacted both the number of new startups in the country, as well as the traditional venture investors in these projects. Some reports show venture investors gain no more than a 3% return after taking huge risks (Guillies, 2016). Typical observations tell us that in addition to the billions lost, the sheer number of business failures also exact a tremendous emotional cost upon the entrepreneurs attempting them.

Important questions then arise concerning why these startups continue to fail; rather than opinion and conjecture, what do the serious studies indicate? After considering many aspects of the entrepreneurial experience and business failure, there remains a gap in the literature regarding a post-2005 application of the lean startup methods in general. Specifically, the concern appears to be one of presumption, namely that it is simply assumed that the lean startup theory is known at the street level. Certainly, there are few, if any, studies available on how the lean startup movement has affected south Texas entrepreneurs.

This quantitative study intended partially to fill that gap. Is this latest business startup thinking readily known and available for those commencing a new business? This study investigated the influence of lean startup methodology upon entrepreneurial mindsets in south Texas and provided substantial insight and contributions to the ongoing business startup discussions.

The chief question under study, therefore, was whether selected local business owners started their enterprises with advice from the corpus of literature available on traditional startups only, or did they follow this relatively new mentoring material available for company initiators

called the lean startup? Further, why follow one or the other approach—either traditional or lean? Additionally, were entrepreneurs even aware of the options?

The Purpose

The purpose of this study was to examine the extent to which the entrepreneurs in south Texas were aware of the lean startup methodology and had utilized its principles in their business startup decisions. If so, how had those lean methods impacted their ongoing entrepreneurial management? Additionally, this study ascertained the degree of satisfaction those entrepreneurs had with their startup processes. Finally, this study determined whether selected entrepreneurs would recommend a lean startup approach to other entrepreneurs. The research focused only upon selected business entities formed since 2000. Guiding this study were the following queries.

The Questions

The questions guiding this quantitative study were as follows:

- To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on familiarity with lean startup terms such as minimum viable product?
- To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on the importance of the chosen startup method and how it affected the ongoing daily operations?

Finding answers to those questions would help determine whether the lean startup process was even on the radar of business initiates. Minimum viable product is a key term integral to the lean startup methodology and is taught with high importance. Further, if the

entrepreneurs are actually applying the lean startup methodology, as espoused by Blank or Ries, then post-startup daily operations are also deeply affected.

Nowhere is this more apparent than when determining how management views “failures.” The traditional management modus operandi typically view failure through a punitive lens. In fact, failure may mean the departure of personnel, the collapse of a division, or possibly even the demise of the company itself. Under the lean startup method, however, management, and especially budgeting and accounting teams, view “failures” in a positive light. Finding out what does not work is part of the lean process. “Fail early, fail often” is one of the colloquial phrases some use. Coupled with the lean principle of “Build-Measure-Learn” adherents are taught all about producing a minimal viable product, getting it into the consumer’s hands, receiving feedback, and then either “pivoting or proceeding.”

What level of satisfaction do these entrepreneurs now have that their startup process was the right one? This answer to this will largely depend upon whether or not the business is in the black, or red. There is evidence, however, that even companies that falter using the lean startup method do so for reasons outside of the lean startup method (Blank, 2013a). Therefore, the adherents of the lean startup theory tend to be very satisfied that it is the best of all startup methodologies regardless of outcomes (Reis, 2011a).

How likely these entrepreneurs are to recommend the lean startup approach to other entrepreneurs is unclear. It follows that if these business founders are satisfied, then a high degree of probability exists that they will recommend this methodology to others. These questions lead us to the appropriate design of this study.

Theoretical and Conceptual Framework

The general area of focus for this study was upon business startups. The literature tends to fall into one of two camps as defined by two different sets of methods, principles, and processes used to begin a business. These two may be characterized by calling them the traditional startup method and the lean startup method.

Traditional startup method. Traditionally, startups operate within an environment of very high risk and uncertainty (Reis, 2011a). For instance, the traditional method pushes customer assessment metrics until the end of the startup cycle and business plan. Under this historical method, true customer reaction to the new product or service is not measured until the plan is complete, personnel are in place, production is turned on, and often full delivery scaling has occurred. The conventional method, according to the father of the movement Steve Blank, epitomizes the “build it and they will come” philosophy.

Lean startup method. Conversely, the lean startup thinking turns the traditional methodology on its head (Blank, 2017). The goal with lean startup is to create a minimum viable product; get it quickly into the hands of consumers; measure their acceptance, rejection, or suggestive improvements; and then pivot or proceed. Here the theory is: Build, measure, learn, and do all as quickly as prudence allows. The thinking is: Why produce and scale before one knows if the product and business model are acceptable and workable?

This study was based on the lean startup theory and methodology, as espoused by Blank (2013a) and Ries (2011a). Those two scholars and businessmen were the progenitors of this theory. The goal and purpose of this study was to determine, by survey and analysis, the extent of street level knowledge and influence that the new lean startup principles had upon relatively recent startups in south Texas.

Additionally, this study was also influenced in a minor way by a theory called effectuation theory of entrepreneurship as set forth by University of Virginia Darden professor Saras Sarasvathy (Sarasvathy, 1997). Her study exhaustively interviewed 30 serial entrepreneurs across 17 states and showed what entrepreneurs actually did in the startup process. This theory, defined in general terms, shows an entrepreneurial reasoning that assumes the future is highly unpredictable, but controllable through human action. This unpredictability is in contrast to the causality theory often taught in business courses, which assumes the future is theoretically predictable based on prior events.

The effectuation theory and the lean startup theory have much more in common with each other than is first observed, as they work out pragmatically. They both influenced this particular study.

Definition of Some Key Terms

Standard and traditional startup methods usually require little explanation or definition as they have been around for decades and have saturated the literature (Blank, 2013a). The jargon used, however, within the lean theory literature is worth closer examination. Additionally, lean startup verbiage becomes germane to understanding this new thinking. The following are a few of the necessary definitions and phrases relevant to this study.

Startup:

- A startup is a human institution designed to deliver a new product or service under conditions of extreme uncertainty (Reis, 2011a).
- A startup is a temporary organization used to search for a repeatable and scalable business model (Blank, 2013a).

Lean startup principles:

- Entrepreneurs are everywhere (Ries, 2011a).
 - This refers to any new startup, whether Silicon Valley or local mom and pop. Ries (2011a, 2017) believes that entrepreneurship is a worldwide, universal phenomenon embedded into the very fabric of the global economy. The image of two individuals eating ramen noodles in their garage while working on the next big tech invention is mainly a fabrication of media.
 - Lean startup is a theory that could apply to anyone who is engaged in innovative and creative entrepreneurship anywhere in the world, anywhere in the economy. This does not have to be a venture-backed company in Silicon Valley.
- Get out of the building, find what customers want (Blank, 2013a).
 - Blank insisted that real answers regarding the client segment, which he called customer development (2013a), were not to be found behind the desk or in the classroom; rather, they emerged only as one interacted with potential customers (Blank, 2013a; 2016).
- Entrepreneurship is management (Ries, 2011a).
 - Too often in the past, there was a distinct separation between beginning a business and sound management criteria. Ries contended that being a successful entrepreneur also involved being a successful manager. The lean startup theory includes both how research is funded, and how failure is characterized by management once the business is in ongoing operation mode (Ries, 2011a).
- Validated learning (Ries, 2011a)
 - A cyclical process in which one learns by trying out an initial idea and then measuring it to validate the effects. Each test of an idea becomes a single iteration

in a larger process of several iterations. An environment where learning from potential customers quickly occurs, and then applies to product improvements, is followed by succeeding tests.

- Customers provide validation by returning feedback to those monitoring and measuring results.
- Build-measure-learn (Blank, 2013a)
 - A core component of lean startup methodology. It is the feedback loop referred to above that allows maximum learning from the customer segment. Some (Reis, 2011a) practically define it as execute, iterate, learn, repeat.
- Minimum viable product (Ries, 2011a)
 - This too is core to the lean process. For instance, step one is figuring out the problem that needs to be solved and then developing a minimum viable product for release. The purpose is to begin the build-measure-learn loop early, and iterate it often. If failure occurs, then it should be early in the process, according to the principles of this theory.
 - The minimum viable product then becomes a minimum set of features needed to learn from early adopters—visionary early adopters, or early evangelists (Blank, 2013a).
 - Pivot if necessary (Ries, 2011a). This is not abandonment, rather a pivot based upon what was learned from potential customers.
- Persevere (proceed) (Ries, 2011a)

- The terms persevere and proceed, in this context, are almost interchangeable with this theory. It is only when customers validate the offering that those producing product know to proceed.
- Iterate rapidly (Ries, 2011a)
 - Where the entire team rolls through the build-measure-learn process rapidly.
- Avoid premature scaling (Blank, 2013b)
 - “If you do not know who the customer is, you do not know what quality is” (Ries, 2012, para. 10).
 - Do not scale your uncertainties.
- Innovation accounting (Ries, 2011a)
 - Defines both accounting and budgeting processes that are built into the lean startup mindset. These metrics consider early failure as part of the process of learning what works.
- Pivot
 - This is an action taken within the build-measure-learn sequence. It reveals the need to revise the product offering and then redirect.
 - This also reveals a timing component. This redirection becomes necessary when experiments reach diminishing returns.
 - It is a change in directions, but a continuance and grounding in facts and metrics previously learned.
 - “A structured course correction designed to test a new fundamental hypothesis about the product, strategy, and engine of growth” (Ries, 2011a, p. 149)
 - Achieving failure

- “Successfully executing a bad plan.” (Ries, 2003, slide 21)
- Tune the engine (Ries, n/d)
 - This involves experimentation to see if improvement is possible.

Overview of Research Design

The design of this study followed the stated purpose, and tracked specifically the questions outlined above. This study type was a quantitative process described by numerous scholars including Babbie (1990), Creswell (2009, 2014), Fink (2002), and Salant and Dillman (1994). Creswell said that type of design reflected post-positivist philosophical assumptions, and

That examining the relationships between and among variables is central to answering questions and hypotheses through surveys and experiments. The reduction to a parsimonious set of variables, tightly controlled through design or statistical analysis, provides measures or observations for testing a theory. (2009, p. 145)

Therefore, to ascertain the extent to which local business entrepreneurs were aware of the lean startup theory, and to measure the degree of impact this new theory had, I created a custom questionnaire. Each of the 13 survey questions were tailored to determine the effects of key demographic independent variables, such as age, gender, education, ethnicity, type of industry, job role, and number of startups, upon the dependent variables of minimum viable product-awareness and ongoing operations.

Setting

All the business owners surveyed within this study have businesses, or ties to their business operations, located in and around south Texas. The predominance of business interests, and the master list of enterprises, were secured by purchase through the *San Antonio Business Journal*.

Background of the Researcher

My background is one of extensive business and management involvement and experience. Further, I had personally started ten businesses over the years and remain involved as a consultant in many more. I had also been employed by major firms where I started numerous program and product initiatives. Most of those had typically followed traditional corporate startup principles. Some existing and long-standing companies were beginning to utilize lean startup principles within the structure of their existing models. I had also been employed by some of those firms to assist in applying new lean thinking to those embedded product and service endeavors.

Significance of the Study

Why was this study relevant? This study provided an opportunity to gain critical insight into the influence of lean startup methodology upon entrepreneurs in south Texas. It was significant because business startups continue to be an essential component of a healthy U.S. economy (House Passes Chabot's Bill, 2016). Consequently, the number of, and the success of, this segment remains on the watch list of economists.

Additionally, any best practice insights uncovered by this study may potentially assist entrepreneurs in their important work. If even a modicum of new business entrepreneurs is assisted, then there is a chance that one of the factors affecting business startup failure rates might possibly be mitigated if applied.

Further, this study revealed a lack of lean startup knowledge within the research group. This leads to numerous business-influencing-silos within which fertile ground may be cultivated for further discussion and future research.

Limitations of the Study

First, this effort was limited by the number of participants. Time did not afford the opportunity to gather greater numbers of business entrepreneurs in Texas, or even in south Texas. Second, limited resources to find and/or purchase additional e-mail lists limited this study. Third, and importantly, this study was limited to an e-mail list that only included subscribers to the *San Antonio Business Journal*. It is obvious that not all south Texas business entrepreneurs were subscribers to this journal. Fourth, this study was also limited by the survey instrument itself. Although the wording and sequence of survey questions were carefully thought out, there nevertheless remained possibilities of bias or lack of clarity.

Finally, this study was limited by the ability of participants to self-report data. The ability of respondents to interpret the questions and post their answers accurately was largely uncontrolled by me. Often participants' preconceived notions and predetermined mindsets might have influenced or skewed their responses. Perception was critical.

Chapter 2: Literature Review

Rationale

Until recently, the available literature supporting each of those opposing approaches was as lopsided as the historical presence for each. The traditional business startup approach fills the business libraries. Indeed, there remains a plethora of business literature for the traditional startup enthusiast. Authors such as Joseph Schumpeter (1976) and Peter Drucker (2008) exemplified traditional startup thinking. Further, conventional startup mentality was advanced by the U.S. Business Administration (2017). Information within those texts remains firmly ensconced within the business mindset of most universities, business schools, and individuals (Blank, 2015). After all, this methodology has been around for decades.

Conversely, and again until recently, the relatively new literature available on the lean startup methodology was sparse. It began only about 2003 (Blank, 2013a) and was clearly defined only in 2011 (Ries, 2011a). However, since the publication of *The Lean Startup* (Reis, 2011a), the literature on the subject grows monthly.

The Gap

Since that 2011 publication date, there were some critical advances in the available lean startup literature. Speaking from an overview perspective, there had been articulation of the following:

- The discovery of the phenomenon and need (Blank, 2013a)
- The discussion of the lean startup issue (Blank, 2013a)
- The declaration of the lean startup Principles (Reis, 2011a)
- The directions for the implementation of a lean startup (Blank, 2013a, 2017; Reis, 2011a, 2017)

Yet few, if any at all, can be read talking about whether or not this new lean startup approach is even known at the street level for entrepreneurs. Are they even aware of it? This is the gap in the literature that this study sought to address.

Arranging the Literature

The literature is also sharply divided between the two camps of thought. Founders and students are taught either to utilize the traditional approach or the lean startup approach for business startup efforts. No hybrid is suggested. This polarization goes far beyond mere wording, but rather describes differing theories involving methods, principles, and processes for beginning a business (Blank, 2013a; Reis, 2011a), and then managing one (Ries, 2011a). The new lean startup advocates remain loquacious and staunch in their support of only the lean startup theory.

Therefore, in this study, I chose to divide the literature review into two streams found along the lines of traditional versus lean startup methodologies. Further bifurcation occurs within the general availability in literature itself, which follows the path of books and articles versus scholarly studies.

Also the general topic of startup was found to be too broad for locating appropriate academic literature and supporting journal articles. Hence, a narrowing to the more academically established term entrepreneurship yielded greater scholastic resources and input.

The Traditional Entrepreneurial Approach

Economist Russell S. Sobel (2015) thought the word entrepreneur likely originated from a 13th-century French verb *entreprendre*, meaning to do something or to undertake. By the 16th century, the noun form entrepreneur was being used to refer to someone who undertook a business venture (2015). The first academic use of the word, at least by an economist, likely came from Richard Cantillon in 1730 when he referred to someone willing to bear the personal

financial risk of a business enterprise as the defining characteristics of an entrepreneur (2015). By the 1800s, Jean-Baptiste Say and John Stuart Mill were also using the term entrepreneur in academic settings (2015). The word, and the role itself, became clearer when, in 1848, Mill, in his *Principles of Political Economy*, referred to a person who assumed both the risk and the management of business as an entrepreneur (2015).

Joseph Schumpeter (1976) and Israel Kirzner (1973), in the 20th-century, gave even greater distinction to the understanding of entrepreneurship. Schumpeter was the first to stress the role of creative destruction, which he emphasized, was a beneficial disruptive force in a nation's economy. Schumpeter, in his book *Capitalism, Socialism, and Democracy* (1976), gave a brilliant defense of capitalism on the grounds that capitalism sparked entrepreneurship.

A review of Kirzner's focus on the entrepreneur in the *Journal of Economic Literature* (Kirzner, 1997) revealed the entrepreneur as one who was in the process of discovery. Unlike Schumpeter, Kirzner saw an entrepreneur as an equilibrating force.

Meanwhile, Peter F. Drucker, hailed by *Business Week* (Bloomberg Business, 2005; New Economist, 2005) as "the man who invented management," was studying, writing about, and impacting how organizations of business must operate. Drucker in his book, *The Five Most Important Questions*, hinted at a startup's lean organizational and operational thinking when he asked, "Who is our customer?" (2008, p. 22), and "What does the customer value?" (2008, p. 36). Drucker's 39 books deeply affected how Americans came to think about companies and corporations. They eventually impacted how governments saw business as critical to a healthy economy. A shift was occurring as startups, by whatever process begun, were asking Drucker questions of "What is our mission?" (2008, p. 10) and "What is our plan?" (2008, p. 62).

Another shift was occurring, at least within the state and local governments of the United States during the 1980s and 1990s. Previously the emphasis was on attracting large manufacturing firms, which now shifted to the promotion of entrepreneurship (Henderson, 2008). One reason might have been the general movement away from the industrial revolution to a more entrepreneurial business model.

Happening in tandem, a series of excellent meetings, studies, and papers on entrepreneurship had sprung up around the globe. In 1988, Murray Low and Ian MacMillan wrote a review of entrepreneurship developments and research in which they also identified challenges for the future. Since the published appearance of that article in *The Journal of Management*, there has been a noticeable increase in the field of entrepreneurship research. Ten years after the publication of that pivotal paper, *The Journal of Management* ran a special issue. Its release showcased the work of 19 scholars from nine countries who participated in workshops held at the Jonkoping International Business School in Sweden in the fall of 1998 (Davidsson, Low, & Wright, 2001). That session showed advances in the study, both upon the individual entrepreneur and entrepreneurship as a whole. There was a focus on the traits and behaviors of individual entrepreneurs that resulted in identifying “teachable and learnable” issues (Davidsson et al., 2001). One conclusion at that juncture in the year 2008 was a consensus that the studies centering around entrepreneurship remained a “hodgepodge”—a term applied back in 2000 in a paper written by Shane and Vendataraman (2000).

True to this vein of entrepreneurial history, another such workshop occurred in 2008. What followed was 2 years’ worth of debate and dialogue. Those important discussions were then summarized in 2011 in an article entitled, “The Future of Entrepreneurship Research” (Wiklund, Davidsson, Audretsch, & Karlsson, 2011). The intervening decade between the 1998

and 2008 conventions was significant. In that 2011 work, Wiklund et al. described those 10 years this way:

The decade that has passed between these two special issues has been something of a golden era for scholars engaged in entrepreneurship research. The field has emerged as one of the most vital, dynamic, and relevant in management, economics, regional science, and other social sciences. (p. 2)

During that time, the Entrepreneurship Division of the Academy of Management increased its membership by 230% and ranked among the highest segment in the Academy of Management (Fayolle & Riot, 2016). Publications stemming from the Academy covered many important entrepreneurial issues, but as will be shown later in this study, it overlooked some critical components.

It was during those decades of research on entrepreneurship that the current American methods of starting a business developed (Blank, 2013a). The process was a linear procedure, usually resembling this sequence: get an idea, formulate a mission statement, create a business model, develop an extensive business plan, gain financing, start production, seek customers, market heavily, and then turn up the ability to meet demand (Blank, 2013a; Ries, 2011a). That traditional startup method was transformed into a relative clone-factory as angel investors and financiers always called for a well-developed business plan.

The U.S. government then reflected this traditional methodology, and as the Small Business Administration developed its advice and counsel for entrepreneurs, it espoused the linear, traditional model of business startup. This same advice is still seen today on many of the state and federal websites and in many articles including the influential Small Business Administration's official Business Guide section found on the website <https://www.sba.gov/business-guide> (2018).

The following website tabs seen on the SBA.gov website are indicative. This site holds hundreds of pages of input for the person wanting to begin a business; it is listed in this order (U.S. Business Administration, 2015):

- Thinking About Starting A Business,
- Create Your Business Plan,
- Choose Your Business Structure,
- Choose and Register Your Business,
- Obtain Business Licenses and Permits,
- Learn About Business Law and Regulations,
- Finance Your Business,
- Explore Loans, Grants and Funding,
- Filing and Paying Taxes,
- Choose Your Location and Equipment, and
- Hire and Retain Employees.

The SBA begins its input for potential owners by stating in its Starting & Managing section, under Create Your Business Plan: “A business plan is an essential roadmap for business success. This living document generally projects 3–5 years ahead and outlines the route a company intends to take to grow revenues” (U. S. Small Business Administration, 2015, p.1)

They follow with advice to create a business plan that includes

- Executive Summary,
- Organization and Management,
- Funding Request,
- Company Description,

- Service or Product Line,
- Financial Projections,
- Market Analysis,
- Marketing and Sales, and
- Appendix.

With some variation, the advice from many other sources has been the same, in essence, to follow the traditional SBA plan for business startups (Brinckmann, Grichnik, & Kapsa, 2010). Emphasis is needed here as the historic Small Business Administration advice does not publish a single reference to the lean startup methods espoused or employed by entrepreneurs.

The first published paper on the subject of lean startup methods appeared in 2003 (Blank, 2013a), and the book *The Lean Startup* was released in 2008 (Ries, 2008). This exclusion means, among other things, that the literature being presented to most American entrepreneurs and want-to-be business entrepreneurs, espoused only the old way, the traditional approach to any business startup.

The Lean Startup Approach

The problem with this traditional method, say scholars Blank (2013a), Ries (2011a), and others, is that the “build it and they will come” mentality simply did not work well. In fact, they insisted that it continued to add significant risk to the startup process and was at the heart of multiple thousands of business failures each year. Blank and Ries insisted there was a better way to begin a business, a method called the lean startup.

What is meant then by the term, the lean startup? What is involved? What are the guiding concepts and principles?

Although the lean thinking component in the lean startup movement in general can be linked to the lean manufacturing mantras found in *The Toyota Way* (Liker, 2003; Ries, 2011a), the current lean startup movement itself for startups is traceable to two key individuals and two books (Blank, 2015). First, serial entrepreneur Blank began to realize, somewhere between his 5th and 6th startup, that there were patterns to his successes and failures. While also operating as a consultant for two venture capitals firms, he began to trace his successful path, which was called “Customer Development” (2013a). As Blank sat on the boards at two other new ventures, his position as dispassionate observer provided a distinct advantage to see that all startups face very similar challenges. He overheard various venture capitalists using insider lingo and realized, “If great venture capitalists could recognize and sometimes predict the types of problems that were occurring (with startups), didn’t that mean the problems were structural rather than endemic?” (Blank, 2013a, p. vii).

Blank later concluded,

All startups (whether a new division inside a larger corporation or in the canonical garage) follow similar patterns—a series of steps which, when followed, can eliminate a lot of the early wandering in the dark. Startups that have thrived reflect this pattern again and again. (Blank, 2013a, p. viii)

His simple conclusion was that startups that survived the first few difficult years did not follow the traditional product development, product-centric launch model heralded for decades. Rather, through a robust process of trial and error, all of the successful startups created an alternate process. Sometimes that was intentional, but most of the time it was seen as almost accidental. That alternative process of “learning and discovery” could rightly be termed customer development.

That path to success seemed hidden in plain sight. However, it went against the conventional/traditional business startup wisdom and was not the linear method of writing a plan, raising money, and then executing the plan. It was a different *modus operandi*.

Professor Steve Blank then (2013a) published the book, *The Four Steps to Epiphany*, and shortly thereafter, began teaching that customer development process as a full-semester course at the University of California, Berkeley. Enter lean startup key player number two.

Eric Ries was a student of Professor Blank's at Berkeley and became the first practitioner, and passionate and tireless protagonist, for the new model (Blank, 2015). Entrepreneur Ries was able to iterate and test the theories inside his company IMVU (an avatar enabled online chat room), in which Blank also served as a board member.

Out of that process, Ries wrote and published the book, *The Lean Startup*, in 2011. The timing was right, the nomenclature was fresh, the writing made sense, and importantly, the business savvy exhibited by Ries was dead on. Eric hit upon many of the hot buttons and frustration knots of the business startup community. Thus, the lean startup revolution began (Blank, 2015).

The principles and processes outlined by Ries and Blank, and which now define the lean startup building blocks, scratched against the grain of traditional "business plan startups." Following the lean startup publications, there was a large, passionate, and influential underground acceptance of the lean movement. Influential entrepreneurs and business professors lauded the new thinking. Among those were Tim Brown, CEO of IDEO; Geoffrey Moore, author of *Crossing the Chasm*; Noam Wasserman, professor at Harvard Business School; and Ken Blanchard, coauthor of *The One Minute Manager*.

The Difficulty With Using Only Traditional Startup Input

The problem associated with repeating this traditional and Small Business Administration pattern is that it may lead to a huge waste of time, waste of resources, and significantly increases the risk of business failures (Blank, 2013a). Blank, in his book *The Four Steps To Epiphany* (2013a), called the older, traditional method of startup, the product development model. It was the model adopted by the consumer packaged foods industry in the 1950s and infiltrated every aspect of the technology business in the last quarter of the 20th century (2013a).

Blank went on to describe in detail the standard process followed by most startups of that time, whether a small business or a large international endeavor. The product development model, as described by Blank (Figure 1) looked innocent enough at first view, but only works when launching into an established, well-defined market where the competition was well understood and the customers were well known.

The concern was that most startups did not fit those criteria. Ries (2011a) defined a startup this way, “A startup is a human institution designed to create a new product or service under conditions of extreme uncertainty” (p. 27). The emphasis here was upon extreme uncertainty. Startups faced many unknowns and untested hypotheses.

This traditional product development model, depicted in Figure 1, usually unfolds similarly to the following stages:

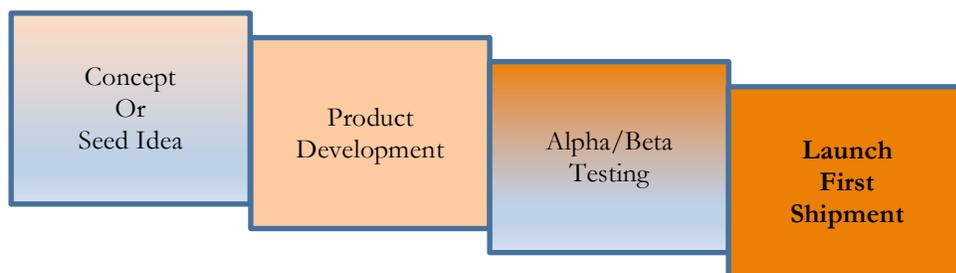


Figure 1. The traditional product development model.

The first stage, the concept and seed stage, is where the founder's vision is captured and reduced to writing, usually the first part of a lengthy process called a business plan. Then there is discussion and explanation about what product or services will be offered. During this debate, there is usually a listing of the feature set and the end-user benefits. This stage usually wraps up with the engineering part of the brain asking, "Can we build this?"

These talks lead to the customer component. Who and where are the potential customers, and where is the market research indicating how big the market is? What follows is the brainstorming about how the startup will get the product or service into the customer's hands—the channel of distribution. The startup distinctions are clearly defined, with a separation from the competitors in this particular space.

Pricing is usually the next consideration, along with costs, budget, production schedules, and all of this is rolled into the financial section of the business plan. The planner then asks, "What will be a reasonable return on investment, and this applies whether one is using the entrepreneur's money, or plans to gain investment from outsiders?"

At this juncture, armed with a smile, and a great deal of passion, the startup principals usually begin the search for money. Creative writing, passionate speaking, and meeting after meeting ensue.

The second stage then begins the product development. Specialization starts to happen, whether a multinational company, or a mom-and-pop startup. The product is designed—whether software or a grand recipe for cookies. Then staff is usually hired to help produce the product.

Key milestones and timetables are established, formal or otherwise. The marketing component kicks in and defines the size of the potential market and begins targeting the first customers.

Key prototypes or demos are built, and the first product sample, or alpha version, gets into the hands of willing customers. At this point, providing some positive response from the samples tasted or seen, the business may begin hiring its sales staff. Here the thoughts of advertising, promotion, and public relations arise. How does the startup get the word out?

In stage three, the test period (alpha, beta, or otherwise), the builders of the product work with potential end users to make sure the product works as designed. If there are investors, they will likely be happy with timetables met, schedules kept, and budgets met. All is looking good, so the founders hit the streets with renewed vigor in search of additional capital for the rollout.

The final step in this product development model is the product launch and first customer shipments. Marketing efforts try and create demand by making the brand known. The board of directors measures the company's performance against the milestones and timelines outlined in the business plan, which in most cases by this time, was written over a year earlier.

So, what is wrong with this model, one might ask. It often leads to failure as customer development is not integral. The new firm usually runs out of money while searching for viability. Often many months, or years, have wonderfully produced a product that no one wants. The lean startup model sits in juxtaposition to this process, and by its very principles, points out the fatal flaws in the old way. The traditional method of starting a business carries with it a large percentage of business failures.

Not Everyone Buys Into the Lean Startup Methodology Alone

While most business entrepreneurs have embraced at least many of the lean startup concepts, there are also those who oppose some of the lean startup assumptions. Some even misconstrue the lean startup principles or misapply them. One such example is Ben Horowitz, the co-founder of Andreessen Horowitz, a leading venture capital firm. Horowitz published an

article in March of 2010 in which he offered harsh criticism for the “running lean” aspect of the lean startup. His article entitled “The Case for the Fat Startup” (Horowitz, 2010) contended that operating lean meant one must constantly cut and reduce any nonessential components of the company to save time and money. That position, however, was later firmly rebuffed by numerous lean startup advocates as a misrepresentation, and that running lean was not equivalent to cost cutting (Bohan, 2010; Graban, 2012; Grady, 2015; Markovitz, 2015; Paterson, 2015; Sarkar, 2012; Waddell, 2011).

John Finneran (2013), a business writer, was at one time a practitioner of the lean startup method, but later observed that he found his clients did not go for some of the principles.

Finneran’s lean startup failed, and his criticism is biting:

Many software copywriters or developers dream of building their own company. Those that do will likely fall under the influence of the celebrated Lean Startup movement. My co-founders and I did. We applied Lean Startup doctrines faithfully over two years as we built a software product that simplified how nonprofits plan and measure their social and environmental impact. Yet the company failed—more of a fat startup than a lean startup.

Based on painful personal experience, this article illustrates the limitations of the Lean Startup theory and how it distracts founders from the fundamentals of successful entrepreneurship—the unclean lessons.

It also explains how to overcome the theory’s shortcomings. Read on and learn how to protect yourself from wasting time and money on building unprofitable products and uncompetitive companies. (Finneran, 2013)

Finneran’s general advice in that blog post was to be critical and skeptical of the lean startup principles, rather than simply presupposing they all apply.

One of the most vocal opponents was the successful business entrepreneur and leader Michael Sharkey, CEO and co-founder of Autopilot (formerly *Bislr*). Sharkey's opposition, published in Venturebeat.com in October of 2013, was well thought out and centered around six key points.

First, Sharkey said the lean startup model encouraged features vs. whole products. His reasoning was that customers need and demand full solutions, not just feature fixes. He added that the lean startup model seemed to provide a framework of excuses for companies for shoddy or incomplete financials.

Second, he added that the lean startup model prematurely burned out the teams. The pace required by the minimum viable product model was exhausting, daunting, and relentless. The constant process of testing and adjusting could cause fatigue and burnout of all concerned.

Third, Sharkey quoted Kawasaki and agreed products and services built on the lean startup model were by their very definition shallow. Producers tended to produce shallow products when customers needed “deep.”

As entrepreneur Guy Kawasaki recently said, “A great product is deep. It doesn’t run out of features and functionality after a few weeks of use. As your demands get more sophisticated, you discover that you don’t need a different product.” (Kawasaki, 2013, para. 4)

The fourth objection to the lean startup methodology was that it allowed developers to devalue architecture. Companies focused on producing the minimum viable product tended to skimp on overall architecture and good design. A good example of good architecture was the software product Evernote. It beat out many competitors because of its solid design and overarching architecture. Its “Trunk” feature allowed independent software vendors to build on top of its platform using the developer’s kit called Trunk.

Sharkey also thought the lean startup process could lead to the wrong conversations and discussions with investors. He believed many were just focused on the “exit strategy” and not on providing an ongoing, stable company for both customers and investors.

Finally, Sharkey thought the lean startup thinking distorted the hiring and acquisition process both in Silicon Valley and other places. It placed undue stress upon single-feature

products that filled some immediate flash-gap, but that might just as quickly be abandoned a few short months later. More importantly, however, over-valued acquisitions take innovative and creative founders out of productive development circulation. The example cited by Sharkey was what happened to the 17-year-old Nick D'Aloisio, founder of *Summly* that was acquired by Yahoo for \$30 million dollars (Stelter, 2013). Nick was typically, by industry values, now out of circulation and his powerful skills as a developer had been silenced for now by money and ego. He was off the shelf of innovation and production.

So, those who are for a traditional means of business startup set up camp around years of traditional training and methodology. Conversely, those who support the new lean startup principles are passionate about why they believe this is the superior methodology.

Ongoing Attempts at Lean Startup Integration

The lean startup literature in book form has now progressed to the stage of implementation and integration. An array of new business books based upon the lean thinking has appeared in the literature.

This is not a complete list, but here a few:

- 2011 *The Lean Startup*—Eric Ries

The seminal book that kick-started the entire lean startup movement.

- 2011 *Nail It Then Scale It*—Nathan Furr and Paul Ahlstrom

A book that synthesizes the current lean startup thinking. Very practical.

- 2012 *Running Lean*—Ash Maurya

A book that teaches a systematic process for rapidly vetting product and service ideas with a hope toward increasing a company's odds for success.

- 2012 *The Startup Owner's Manual*—Steve Blank and Bob Dorf

- A strategic book by one of the founders of the lean startup movement. This book gives step-by-step details on how to build successful startups.
- 2012 *Business Model You*—Tim Clark
This book gives an innovative way to visualize and think through the business model.
 - 2012 *Leading the Lean Enterprise Transformation*, 2nd edition—George Koenigsaecker
This costly, but important book, gives useful information, illustrations, and tools for the entrepreneur looking to use the metrics used by Toyota and others.
 - 2013 *The Lean Entrepreneur*—Brant Cooper and Patrick Vlaskovits
One of the most important books in the movement. Great layout, excellent presentations, and metaphors.
 - 2013 *Lean UX*—Jeff Gothelf and Josh Seiden
This book was written for the web generation. It teaches valuable lean user experience principles along with the tactics and techniques.
 - 2013 *Lean Analytics*—Alistair Croll and Benjamin Yoskovitz
This book shows how to utilize proper metrics in lean startup efforts. With over 30 case studies, the evidence speaks from a base of facts and history.
 - 2014 *Lean Enterprise*—Jez Humble, Joanne Molesky, and Barry O'Reilly
Importantly, this book teaches how to utilize the lean startup principles in daily management practices. This advice becomes even clearer when compared to the traditional management methods.
 - 2014 *Rhythm*—Patrick Thean

Here the author teaches how to think strategically, plan in rhythm, and execute properly for success. The lessons apply to any growing business.

- 2014 *The First Mile*—Scott D. Anthony

This book has a key focus, which is when an entrepreneurial idea goes from idea to paper to the market. New tools, questions, and examples teach the entrepreneur.

- 2014 *XLR8*—John P. Kotter

This award-winning Harvard professor and author is best known for his teaching on managing change, and especially disruptive change. In this particular book, he sets forth a new framework for handling the turbulence and turmoil of rapid change.

- 2014 *The 7 Day Startup*—Dan Norris

Remarkably, Norris teaches how to create a company from scratch in just 7 days.

- 2014 *All In Startup*—Diana Kander

Diana Kander spins the tale of a startup and an entrepreneurial mindset in this fascinating novel. Although fiction, it has great insight into how to start lean.

- 2014 *Make Your Mark: The Creative's Guide to Building a Business With Impact*—Jocelyn K. Glej, Editor

This compilation represents great input from several well-known writers. The examples and stories show how to get from idea to impact.

- 2015 *Startup Idea Action Plan*—Ryan Mulvihill

This book provides guidance on how to get the first 10 customers, and to do so without incurring debt.

- 2015 *The Myth of the Idea and the Upside-down Startup: How Assumption-Based Entrepreneurship Has Lost Ground to Resource-based Entrepreneurship*—Newton M. Campos, PhD

The professor bases his advice and insight on decades of both successful and unsuccessful entrepreneurs. The “Upsidedown” approach is worth the read.

- 2016 *Will It Fly? How to Test Your Next Business Idea, so You Don’t Waste Your Time and Money*—Pat Flynn

Author Flynn helps ask the right questions. Is it a good idea? Will the market want it? It is full of practical suggestions and guidelines.

- 2016 *Startup: From Idea to Launch—Navigating the Four Stages of a Startup Business*—Matthew Smith and Jessica Dawson

As the title indicates, this book is all about the four stages. If a person buys in to the author’s rubric and definition of the four stages, then it becomes very helpful.

- 2016 *From Idea to Launch: Learn How to Brainstorm an Idea and Launch Your Own Business*—Daniel da Silva Lay

An excellent book on how to brainstorm, and then how to take the brainstorm and produce great rain.

In addition, some academic institutions have implemented the lean startup into their business training curriculums. In the *Harvard Business Review* article (Blank, 2013b), “Why the Lean Startup Changes Everything,” Professor Blank wrote, “The Lean Startup method is now taught at more than 25 universities, and through a popular online course at Udacity.” The lean startup Wikipedia listed some 34 universities including the lean startup theory in their curricula. Those included MIT, Harvard, Stanford, Georgetown University, and many other universities of

repute (Wikipedia, 2016). Further, some agencies, such as the Nation Science Foundation (Blank, 2015) had included the lean startup approach into their training criteria and were collaborating with several notable universities for training.

The question remains about whether this lean startup theory, along with its principles and premises, has also taken root in local business entrepreneurship. Has this approach successfully trickled out of Silicon Valley actually to impact business beginnings in faraway cities? This study sought to explain findings that answered those questions and others, as they related to selected entrepreneurs found in south Texas.

Chapter 3: Methodology

Review of Purpose

The purpose of this study was to examine the extent to which entrepreneurs in south Texas were aware of the lean startup methodology and had utilized its principles in their business startup decisions. If so, how had those lean startup methods impacted their ongoing entrepreneurial management? Additionally, this study ascertained the degree of satisfaction those entrepreneurs had with their own startup process. Finally, this study sought to determine whether selected entrepreneurs would recommend a lean startup approach to other entrepreneurs. The research focused only upon selected business entities formed since 2000. The following queries guided this study.

The Questions

As a reminder, the questions guiding this study were as follows:

- To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on familiarity with lean startup terms such as minimum viable product?
- To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on the importance of the chosen startup method and how it affected the ongoing daily operations?

Design

This was a quantitative study. The survey methodology chosen followed closely the teachings of lead scholar in this discipline, John W. Creswell (Creswell, 2014). In particular, Creswell's instruction on the survey design (2014, p.157) was implemented.

- The purpose of doing a survey design was to sample a population of San Antonio business entrepreneurs so that inferences could be made about whether their use or not of the lean startup theory could be used to generalize to a larger population of entrepreneurs.
- A survey was desired because of the economy of design, plus the potential for rapid turnaround without invasive interviews.
- The survey was cross-sectional, and data was collected within a short period.
- This survey was collected electronically utilizing a web-hosted service called SurveyMonkey™.

Additionally, two university online guides for quantitative studies were utilized:

- University of Southern California (USC Libraries-Research Guides) found at <http://libguides.usc.edu/writingguide/purpose>.
- Purdue University (OWL Online Writing Lab) found at <https://owl.english.purdue.edu/owl/section/2/8/>.

Setting of the Study

Since it was not practical or economical to include every state or even every region within the state of Texas, I chose to focus on one region. The region of choice was the southwestern section of Texas, and in particular, businesses found in and around San Antonio, Texas. The following reasons guided that choice:

- I had a keen understanding of this region, having conducted business there for many years.
- This region consistently maintained a robust business community.

- Because of the high military presence, plus the proximity to the southern U.S. border, that region continuously maintained a diverse business community. The thinking was that a diverse population might yield richer survey results.

Population of the Study

The population under study was business entrepreneurs in south Texas. The target population was certain business entrepreneurs in and around the south Texas region who had started a least one business since the year 2000.

The sample came from business entrepreneurs who subscribed, and were listed, in the *San Antonio Business Journal*. The companies Geekdom™ and the Tech Bloc™ also made our survey available for response to its members. While those lists were certainly not inclusive of all business people in the region, or even in San Antonio, they were nevertheless representative of entrepreneurs in south Texas.

The *San Antonio Business Journal* listing contained some 2,220 names and e-mail addresses of business operators in the San Antonio area. The Geekdom™ list had several hundred names and e-mail addresses. Those were tech-evangelists who had formed a group under the direction and financing of Graham Weston, a co-founder of Rackspace. That group provided both physical space (a downtown San Antonio, Texas, facility) and promotion for the creative, entrepreneurial spirits in the region. The Tech Bloc™ group was a rapidly growing group formed in mid-2015. The group was connected politically and highly promoted the tech-sector of San Antonio.

Research Strategies

The strategy for research involved the following:

- Creating a reliable and custom online survey,

- Pilot-testing the survey instrument, and making necessary modifications,
- Obtaining e-mail lists purchased from local sources,
- Cleaning and sorting e-mail lists,
- Submitting the custom online survey to the e-mail list through SurveyMonkey,
- Collecting data from SurveyMonkey,
- Exporting data from SurveyMonkey into IBM-SPSS software for analyzing, and
- Processing and then analyzing this data through IBM-SPSS statistical software.

Research Instruments

I found it necessary to create a custom online survey for this design:

- No other questionnaire of this specific sort was located at large.
- No other survey was found that would answer those specific research questions under this topic.

I did, however, utilize conventional academic answer banks under each survey question, for the purposes of clarity, validity, and reliability.

The questions on the survey instrument were designed to collect needed demographic and independent variable data, as well as provide other dependent variable data for analysis. They included the following:

- (a) Gender,
- (b) Age,
- (c) Education level,
- (d) Ethnicity,
- (e) Type of industry,
- (f) Year of company founding,

- (g) Job role,
- (h) Familiarity with the lean startup term: minimum viable product,
- (i) Number of companies personally started,
- (j) Importance of chosen lean startup method upon ongoing daily operations,
- (k) Level of satisfaction with chosen startup method,
- (l) Likelihood to recommend the chosen startup method to others, and
- (m) A qualitative question (one sentence of advice).

I endeavored to create an online e-mail survey instrument that built upon the research questions, sought to prove or disprove the pertinent hypotheses, while also gleaning information without creating confusion or bias. The results of that effort may be seen by viewing the Business Startup Survey in the Appendix A.

Table 2 shows early thinking on relevant relationships. Later, the information in Table 2 morphed into a better model (Table 3) for conducting statistical analysis, which more closely followed the key research questions.

Validity and Reliability

The intention was to follow a four-step process for ensuring validity and reliability of the instrument.

Validity was ensured by the following:

- A survey instrument that was fair and unbiased,
- A survey that was repeatable,
- Results shown were not generalized unless applicable, and
- An expert panel of my committee members reviewed the results.

Table 2

Relationship Between Probing Inquiries, Hypothesis, and Instrument Questions

Research questions probing...	Hypothesis	Survey instrument questions
	Each of the Questions 1–7 was designed to prove either the Null or the Alternative hypothesis	Survey Questions 1–7 Demographic Information: Gender, Age, Education, Ethnicity, Industry, Founding Year, Job role
Probe To what <u>extent</u> were those business entrepreneurs <u>aware</u> of the new lean startup and customer development concepts when they began their business startup processes?	Hypothesis Null: Most were not aware Question 8 is THE strategic qualifying question	Survey Question 8 How familiar are you with the term minimum viable product?
	Question 9 is a strategic filtering question:	Survey Question 9 How many companies have you personally helped start up?
Probe What is the <u>frequency</u> with which the entrepreneurs <u>referred</u> directly to the principles found within their chosen startup process?	Hypothesis Alternative: if aware, then used it as a guide, therefore frequency will be high	
Probe How familiar are entrepreneurs with the terms and meaning of key lean startup phrases such as: minimum viable product and/or build-measure-learn?		
Probe To what <u>degree</u> do the lean startup methods now influence the daily management of their business, post startup?	Hypothesis Null: Not that important. Most were not fully using the lean startup Principles to daily manage their company.	Survey Question 10 How important was your startup methodology to the way you conduct daily management operations now?
Probe What <u>level</u> of satisfaction do these entrepreneurs have that their startup process was the right one?	Hypothesis Alternative: If they used the lean startup methodology, then there is a high degree of satisfaction.	Survey Instrument 11 Overall, are you satisfied, dissatisfied, or neither satisfied nor dissatisfied with the business startup methodology you used?
Probe <u>How likely</u> are these entrepreneurs to recommend their chosen startup methodology to others?	Hypothesis Alternative: If they used the lean startup methodology, then there is a high likelihood they would recommend it to others.	Survey Instrument 12 How likely are you to recommend your startup methodology to others?
	Hypothesis Alternative: If they used the lean startup methodology, then they will refer to it in their free comments.	Survey Instrument 13 If you were to offer one phrase or sentence of advice to entrepreneurs planning a business startup, what would you say?

Table 3

Research Variables and Questions for Analysis

Quantitative questions		Qualitative question	Research intent
Independent Variables	Dependent Variables		
1. Gender			
2. Age			
3. Education Level			
4. Ethnicity			
5. Industry Type			
6. Year Company Founded			
7. Job Role			
8. Number of Companies Started			
	9. Familiarity with the lean startup term minimum viable product (MVP)		To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on familiarity with lean startup terms such as minimum viable product (MVP)?
	10. Importance of startup method chosen, to ongoing operations		To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on the importance of the chosen startup method and how it affected the ongoing daily operations post-startup?
	11. Level of satisfaction		
	12. Likelihood of recommendation		
		13. Qualitative question: Advice	

Reliability was ensured by the following:

- A sound survey instrument;
- Pilot testing of the survey instrument for readability, clarity, flow and logic; and
- Cronbach's alpha .748.

The scores from the instrument allowed stability and consistency. The questions were repeatedly screened for clarity and ambiguity. The internal consistency of the study instrument was based on the average correlation of items within the survey. Cronbach's Alpha was utilized to produce a reliable coefficient.

The pilot group was administered the survey instrument in person at both Southwest Sound and Electronics, Inc. (25 people) and VenturePath, LLC (10 people). The test groups were given basic instructions, shown the questions on a screen, given a survey questionnaire, and the results were collected by me. Discussions ensued in person as each gave specific input into the design of the survey, clarity, the order, and the flow. That helped ensure reliability in that the pilot testers assisted in determining whether the survey itself made sense, as well as whether the flow and answer banks were consistent.

Finally, the dissertation committee members carefully mentored the research process. They each had high levels of expertise within the fields of statistics, business, and educational research.

Protection of Human Subjects and Ethical Considerations

I first obtained approval from the University of the Incarnate Word (UIW) IRB. All appropriate UIW-IRB procedures and processes were followed carefully to ensure fully that all participants in the online e-mail survey were treated ethically, protected, informed, and were

provided full informed consent information. The elements included in that protection were found in the introduction on page one of the instrument/survey. Those included the following:

- A statement that the study involved research;
- An explanation of the purposes of the research;
- The expected duration of the subject's participation;
- A description of the procedures to be followed;
- Identification of any procedures that were experimental, if any;
- A description of any reasonably foreseeable risks or discomforts to the subject;
- A description of any benefits (to subject or others) reasonably expected from the research;
- A disclosure of appropriate alternative procedures or courses of treatment, if any, that might be advantageous to the subject;
- A statement describing the extent, if any, to which confidentiality would be maintained;
- An explanation of who to contact for answers to pertinent questions,
 - Research questions,
 - Rights questions and who to contact,
 - Injury questions and who to contact;
- A statement that participation was voluntary, refusal to participate would involve no penalty or loss of benefits to which the subject was otherwise entitled; and
- A statement that the subject might discontinue participation.

Data Collection Procedures

The e-mail addresses from the *San Antonio Business Journal* list were scrubbed for errors and duplicates. The prepared survey instrument was loaded into and hosted by SurveyMonkey™. The e-mail list, totaling some 3,000 names, was also loaded and the e-mails distributed. Careful monitoring occurred through the SurveyMonkey™ dashboard, and e-mail bounce backs were rechecked for accuracy. Responses were then collected and counted by SurveyMonkey™ and prepared for initial analysis.

I used my personal master key in SurveyMonkey™. According to the SurveyMonkey™ website, over 20 million people relied on that service.

Reminders were e-mailed on four different occasions, which included another link to the previously e-mailed survey location. The survey was up and available for answering for a total of 14 days.

Data Analysis Procedures

The data was analyzed using the IBM Statistical Package for the Social Sciences (SPSS) version 24 for Mac. Data was coded according to the company's demographic data and the specific questions that were asked. As Table 3 shows, the survey instrument questions should provide much data for analysis.

Chapter 4: Results

Review of Purpose

The purpose of this study was to examine the extent to which the entrepreneurs in south Texas were aware of the lean startup methodology and had utilized its principles in their business startup decisions. If so, how then had those lean startup methods impacted their ongoing entrepreneurial management? Upon receiving any positive response, this study then also sought to ascertain the degree of satisfaction those entrepreneurs had with their own startup process. Finally, this study sought to determine whether selected entrepreneurs would recommend their chosen startup approach to other entrepreneurs. The lean startup research focused only upon selected business entities formed since 2000. This study was guided by the following research queries.

Review of the Research Questions

As a reminder, the questions guiding this quantitative study were as follows:

1. To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on familiarity with lean startup terms such as minimum viable product?
2. To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on the importance of the chosen startup method and how it affected the ongoing daily operations?

Analysis of Data and Plan

The next step in this study was to analyze the data ($n = 520$) collected. The data gathered using SurveyMonkey™ was recoded and then entered into IBM SPSS™ version 24 statistical program for the purpose of analysis. Those results follow.

The analysis plan followed the path of the data and my manipulation of it. I used descriptive statistics, correlational statistics (a subgroup of descriptive), and inferential statistics for analysis.

In the first section Part A, by way of the survey questions and answers, I looked at the descriptive data. The descriptions of those findings were both discussed and also illustrated with tables and charts. While remaining within this survey question data, I then also ran appropriate correlational tests such as the Pearson r and inferential tests such as Chi-square.

In the second section Part B, I ran strategic inferential tests, such as ANOVA and t -tests, as I sought to reach conclusions and find statistical significance beyond what the immediate data alone provided. Table 4 illustrates the data analysis plan.

Table 4

Analysis Plan at a Glance

Analysis plan	Description of section	Analysis type	Specific tests
Part A	Mixed descriptive and inferential	Descriptions and inferential analysis	Tables and charts
		Comparative analysis	Pearson r
		Inferential analysis	Chi-square and t -tests
Part B	Inferential only	Inferential tests	ANOVA, t -tests, Chi-square

Part A: Mixed-Descriptive Data With Inferential Analysis From the Survey Instrument

Gender. Of the 520 respondents, the greater percentage was female. Males respondents were 7.6% less. Those ratios changed as specific lean startup question filters were applied. For instance, as seen in Table 7, fewer females versus males were extremely familiar with the term minimum viable product. Females again edged out the male respondents when indicating the not familiar at all option regarding lean startup. First, the descriptive data regarding gender is shown.

Table 5

Gender: Survey Question 1

Are you male or female?
<input type="checkbox"/> Male
<input type="checkbox"/> Female

Table 6

Gender: Response Rate

Are you male or female?		
Answer options	Response percent	Response count
Male	46.2%	240
Female	53.8%	280

Note. All 520 respondents answered the question.

It was somewhat surprising that more women than men responded to the survey. That was not necessarily indicative of business ownership, rather it was likely a propensity of women to respond to surveys at a higher rate than men.

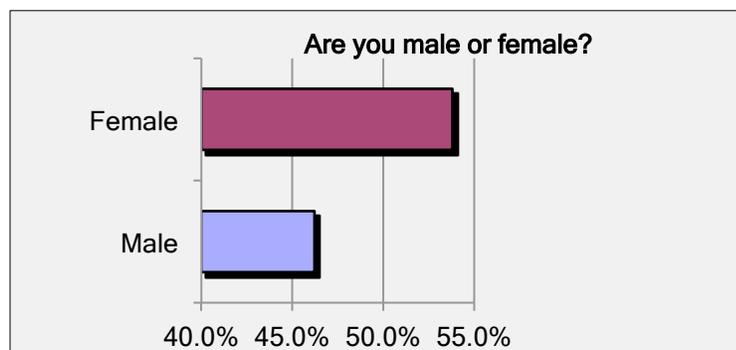


Figure 2. Gender.

Table 7

Gender and Familiarity With the Term Minimum Viable Product—Crosstabulation

		How familiar are you with the term minimum viable product (MVP)?						
			Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar	Total
Gender	Male	Count	10	19	58	54	99	240
		Expected count	7.8	14.3	60.5	53.5	103.8	240.0
		% within gender?	4.2	7.9	24.2	22.5	41.3	100.0
		% within MVP?	58.8	61.3	44.3	46.6	44.0	46.2
		% of Total	1.9	3.7	11.2	10.4	19.0	46.2
	Female	Count	7	12	73	62	126	280
		Expected count	9.2	16.7	70.5	62.5	121.2	280.0
		% within gender?	2.5	4.3	26.1	22.1	45.0	100.0
		% within MVP?	41.2	38.7	55.7	53.4	56.0	53.8
		% of Total	1.3	2.3	14.0	11.9	24.2	53.8
Total		Count	17	31	131	116	225	520
		Expected count	17	31	131	116	225	520
		% within gender?	3.3	6.0	25.2	22.3	43.3	100.0
		% within MVP?	100.0	100.0	100.0	100.0	100.0	100.0
		% of Total	3.3	6.0	25.2	22.3	43.3	100.0

Table 8

Gender and Familiarity With the Term: Minimum Viable Product—Chi-Square Tests

	Value	<i>df</i>	Asymptotic significance (2-sided)
Pearson chi-square	4.569 ^a	4	.334
Likelihood ratio	4.568	4	.335
Linear-by-linear association	2.111	1	.146
<i>N</i> of valid cases	520		

^a 0 cells (0.0%) had expected count less than 5. The minimum expected count was 7.85.

A chi-square test of independence was calculated comparing the result of gender and familiarity of minimum viable product. No significant relationship was found, $\chi^2(4) = .334, p > .05$. Gender and familiarity with the term minimum viable product were not related.

The post-test of Cramer's V (Table 9) simply confirmed that there was no correlation.

Table 9

Gender and Familiarity With the Term Minimum Viable Product—Symmetric Measures

		Value	Asymptotic significance
Nominal by nominal	Phi	.094	.334
	Cramer's V	.094	.334
<i>N</i> of valid cases		520	

The greatest percentage age group of participants was the 60 or older sector, registering 123, or 23.7% of respondents. A close second was the age 30–39 group at 111, or 21.3%. The 40–49 age group, however, indicated the greatest familiarity of any group with the minimum viable product filtering query, but it was only 1%, indicating they were extremely familiar with

the term. Only 3.3% total of all age groups revealed they were extremely familiar with lean startup (Table 12).

Age. The age demographic from the respondents was well balanced, which gave greater confidence in the answers (Figure 3).

Table 10

Age: Survey Question 2

What is your age?	
<input type="checkbox"/>	18-29
<input type="checkbox"/>	30-39
<input type="checkbox"/>	40-49
<input type="checkbox"/>	50-59
<input type="checkbox"/>	60 or older

Table 11

Age: Response Rate

What is your age?		
Answer options	Response percent	Response count
18-29	16.9	88
30-39	21.3	111
40-49	19.4	101
50-59	18.7	97
60 or older	23.7	123

Note. All 520 respondents answered the question.

Worth noting, the age group range from 40–49 showed the most familiarity with the filtering term minimum viable product in Table 12.

A chi-square test of independence was calculated (Table 13) comparing the result of age and familiarity of minimum viable product. No significant relationship was found, $\chi^2(16) = .518, p > .05$. Therefore, age and familiarity with the term minimum viable product were not related.

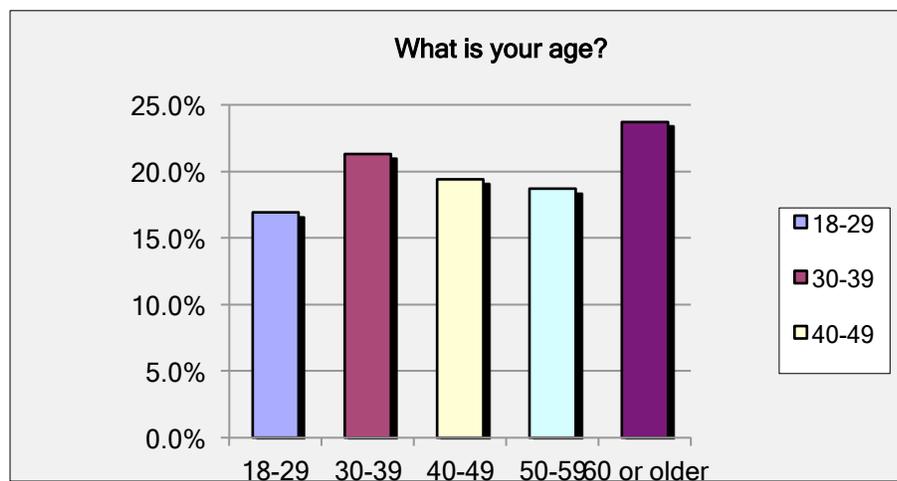


Figure 3. Age of respondents.

Table 12

Age and Familiarity With the Term Minimum Viable Product—Crosstabulation

		How familiar are you with the term minimum viable product?						
		Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar	Total	
Age	18–29	% of total	.6	1.3	4.8	3.5	6.7	16.9
Age	30–39	% of total	.6	1.2	6.9	5.2	7.5	21.3
Age	40–49	% of total	1	1.2	4.2	3.8	9.2	19.4
Age	50–59	% of total	.8	1.0	4.4	5.2	7.3	18.7
Age	60 or +	% of total		1.3	4.8	4.6	12.5	23.7
Total		% of total	3.3	6.0	25.2	22.3	43.3	100.0

The post-test of Cramer's (Table 14) simply confirmed that there was no correlation.

Education level. A healthy cross section with the overall category of education was also represented. The leading group at 32.1%, or 167, of the respondents held at least a bachelor's

degree, while another 20.8% combined also held one of two graduate degrees. Table 16 shows the response counts.

Table 13

Age and Familiarity With the Term: Minimum Viable Product—Chi-Square Tests

	Value	<i>df</i>	Asymptotic significance (2-sided)
Pearson chi-square	15.096 ^a	16	.518
Likelihood ratio	14.929	16	.530
Linear-by-linear association	4.903	1	.027
<i>N</i> of valid cases	520		

^a 5 cells (20.0%) had an expected count less than 5. The minimum expected count was 2.88.

Table 14

Age and Familiarity With the Term: Minimum Viable Product—Symmetric Measures

		Value	Asymptotic significance
Nominal by nominal	Phi	.170	.518
	Cramer's V	.085	.518
<i>N</i> of Valid Cases		520	

Table 15

Education Level: Survey Question 3

What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree
- High school degree or equivalent (e.g., GED)
- Some college but no degree
- Associate degree
- Bachelor degree
- Graduate degree
- Doctoral degree

Note that those having at least a bachelor's degree or above indicated a greater familiarity with the lean term minimum viable product.

Table 16

Education Level of Respondents

What is the highest level of school you have completed or the highest degree you have received?		
Answer Options	Response percent	Response count
Less than high school degree	1.3	7
High school degree or equivalent (e.g., GED)	10.6	55
Some college but no degree	24.6	128
Associate degree	10.6	55
Bachelor degree	32.1	167
Graduate degree	17.5	91
Doctoral degree	3.3	17

Note. All 520 respondents answered the question.

While Table 17 indicates 3.3% have doctoral degrees, there seems to be no statistical significance nor relative importance to this finding. It could be that a legitimate percentage, or rather a function of the fact that those holding doctoral degrees were more familiar with taking surveys.

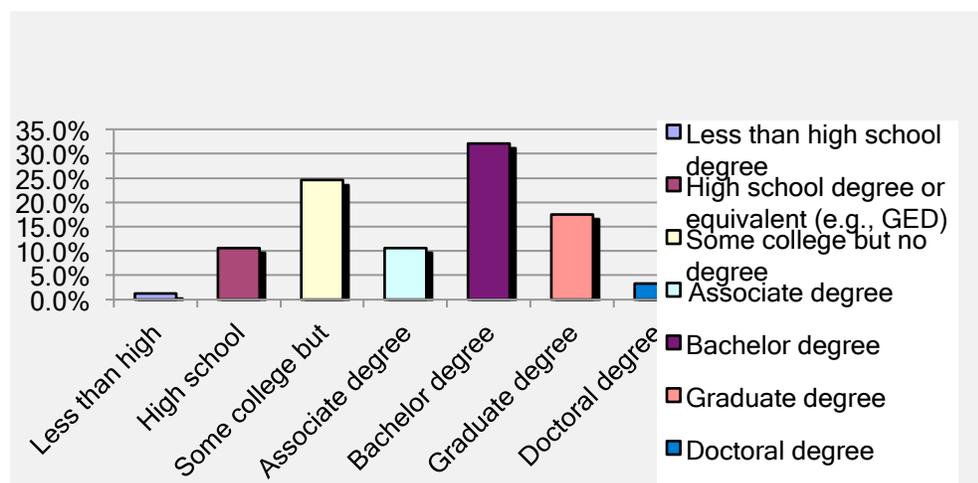


Figure 4. Education level of respondents.

Table 17

Education Level and Familiarity With the Term Minimum Viable Product—Crosstabulation

			How familiar are you with the term minimum viable product?					
			Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar	Total
Level	< HS	% of total	0.2	0.0	0.0	0.2	1.0	1.3
	HS/GED	% of total	.6	1.2	2.3	2.5	4.0	10.6
	< College	% of total	0.2	1.7	6.7	6.3	9.6	24.6
	AD	% of total	0.2	0.6	2.3	2.3	5.2	10.6
	Bachelor	% of total	1.0	2.1	9.8	6.5	12.7	32.1
	Graduate	% of total	0.8	0.4	3.8	3.8	8.7	17.5
	Doctoral	% of total	0.4	0.0	0.2	0.6	2.1	3.3
	Total	% of total	3.3	6.0	25.2	22.3	43.3	100.0

A chi-square test of independence was calculated (Table 18) comparing the result of education level and familiarity with the term minimum viable product. No significant relationship was found, $\chi^2(24) = .155, p > .05$. Therefore, the level of education attained and familiarity with the term minimum viable product were not related.

The post-test of Cramer's V (Table 19) simply confirmed that there was no correlation.

Table 18

Education and Familiarity With the Term Minimum Viable Product —Chi-Square Tests

	Value	<i>df</i>	Asymptotic significance (2-sided)
Pearson chi-square	30.950 ^a	24	.155
Likelihood ratio	33.257	24	.099
Linear-by-linear association	1.072	1	.300
<i>N</i> of valid cases	520		

^a 15 cells (42.9%) had an expected count less than 5. The minimum expected count was .23.

Table 19

Education Level and Familiarity With the Term Minimum Viable Product—Symmetric Measures

		Value	Asymptotic significance
Nominal by nominal	Phi	.244	.155
	Cramer's V	.122	.155
<i>N</i> of valid cases		520	

Ethnicity. Regarding ethnicity, a large majority of the 520 respondents were white, showing 349, or 67.1% (Table 21). Those figures were not altogether surprising given the preponderance of white-owned versus minority-owned businesses in south Texas that also belonged to the sampled groups such as *San Antonio Business Journal*.

Table 20

Ethnicity: Survey Question 4

Are you White, Black or African-American, Hispanic, Latina/o, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, or some other race?

White

Black or African-American

Hispanic or Latina/o

American Indian or Alaskan Native

Asian

Native Hawaiian or other Pacific Islander

From multiple races

Some other race (please specify)

Table 21

Ethnicity of Respondents

Are you White, Black or African-American, Hispanic, Latina/o, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific islander, or some other race?

<u>Answer Options</u>	<u>Response percent</u>	<u>Response count</u>
White	67.1	349
Black or African-American	7.9	41
Hispanic or Latina/o	15.8	82
American Indian or Alaskan Native	0.6	3
Asian	3.1	16
Native Hawaiian or other Pacific Islander	0.2	1
From multiple races	3.3	17
Some other race (please specify)	2.1	11

Note. All 520 respondents answered the question.

Figure 5 visually depicts the predominance of the white and Hispanic respondents versus all other ethnicities of participants.

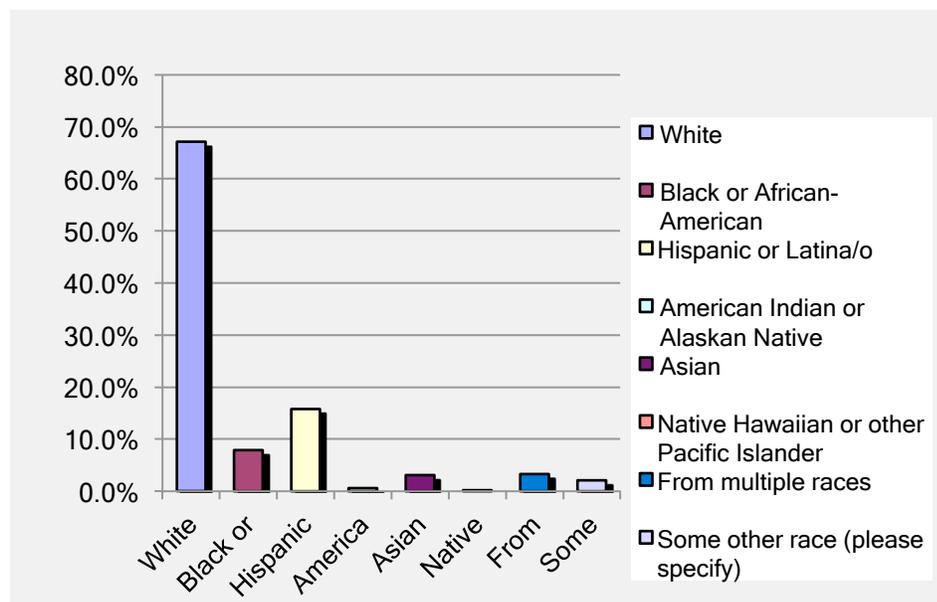


Figure 5. Ethnicity of respondents.

Table 22 shows that a chi-square test of independence was calculated comparing the result of comparing ethnicity and familiarity with the term minimum viable product. No significant relationship was found, $\chi^2(28) = .276, p > .05$. Therefore, the level of education attained and familiarity with the term minimum viable product were not related.

There might have been an expectation that the level of education would prove significant; however, it was not. This is both a commentary on the fact that business schools within colleges and universities have not been teaching any lean theory in their curriculum.

Table 22

Chi-Square Tests Ethnicity Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	df	Asymptotic significance (2-sided)
Pearson chi-square	31.974 ^a	28	.276
Likelihood ratio	27.835	28	.473
Linear-by-linear association	2.438	1	.118
N of valid cases	520		

The symmetric measures (Table 23) confirmed the chi-square test. There was no correlation.

Respondents came from various industries, but as Table 25 and Figure 6 indicate, the majority of those familiar with the term minimum viable product work in education, healthcare, and professional services.

Table 23

Symmetric Measures: Ethnicity Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

		Value	Approximate significance
Nominal by nominal	Phi	.248	.276
	Cramer's V	.124	.276
N of valid cases		520	

Tests (Table 26) showed that the type of industry was significant, which also stands to common logic. Those working in a government sector might surely be less susceptible to the advantages of lean thinking than those doing software programming, for instance.

Type of industry. Table 26 shows that a chi-square test of independence was calculated showing the result of comparing type of industry and familiarity with the term minimum viable product. A significant relationship was found, $\chi^2(44) = .003, p < .05$. Therefore, the type of industry and familiarity with the term minimum viable product were related.

Note here that the technology sector shows much great familiarity with minimum viable product and might logically be expected to have a greater knowledge of lean thinking.

Table 24

Type of Industry: Survey Question 5

What industry does your company belong to?
(Please select the best one from the dropdown box)

- Healthcare
- Nonprofit
- Technology
- Energy & Utilities
- Transportation
- Materials
- Consumer
- Finance
- Education
- Government
- Professional Services
- Manufacturing

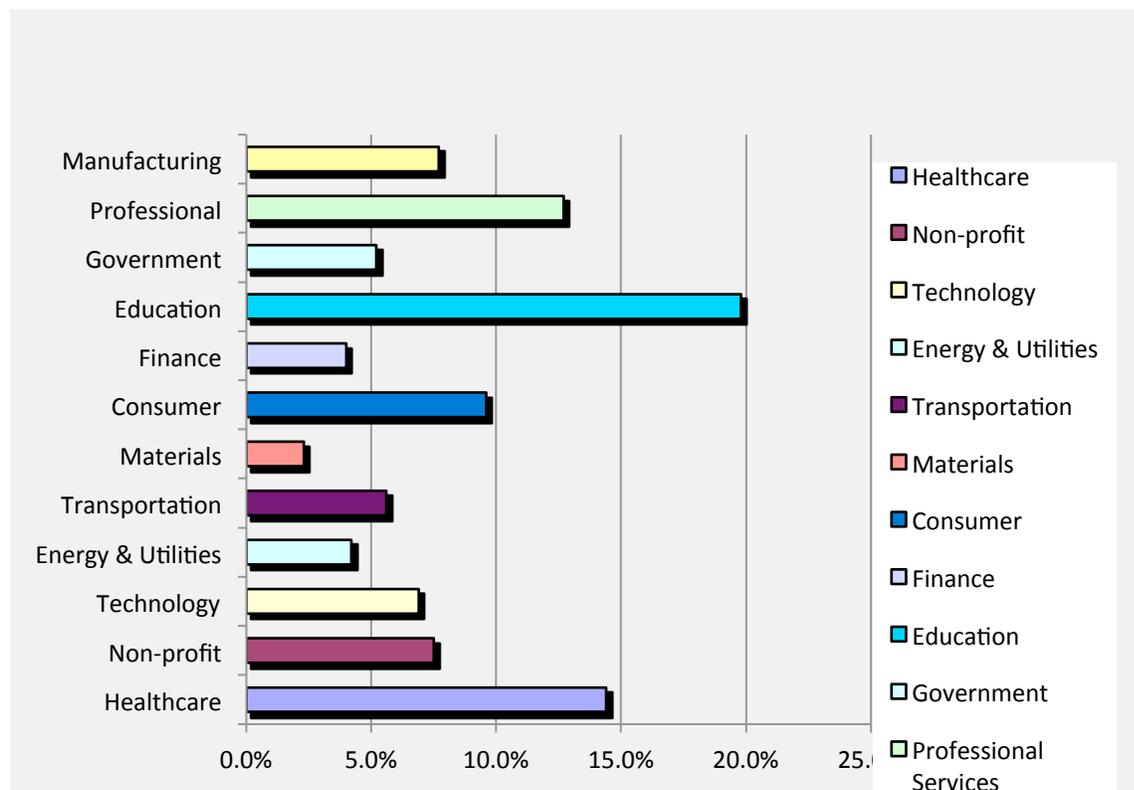


Figure 6. Industry of experience from respondents familiar with the term minimum viable product.

Table 25

Industry of Experience: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

Industry of Experience	How familiar are you with the term minimum viable product?					Total Count	% of Total
	Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar		
Healthcare	2	2	21	16	34	75	14.4
Nonprofit	3	1	8	6	21	39	7.5
Technology	4	3	8	7	14	36	6.0
Energy/utilities	0	2	8	4	8	22	4.2
Transportation	2	2	6	8	11	29	5.6
Materials	0	2	5	3	2	12	2.3
Consumer	0	1	16	15	18	50	9.0
Finance	2	2	8	3	6	21	4.0
Education	1	1	19	23	59	103	19.8
Government	0	4	0	5	18	27	5.2
Professional	1	6	21	16	22	66	12.7
Manufacturing	2	5	11	10	12	40	7.7
Total	17	31	131	116	225	520	100.0

The symmetric measures (Table 27) showed that the strength of association was weak at .003. Cramer's V varied between 0 and 1, with values close to 0 showing little association between variables.

Table 26

Chi-Square Tests: Industry Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	df	Asymptotic significance (2-sided)
Pearson chi-square	73.849 ^a	44	.003
Likelihood ratio	80.885	44	.001
Linear-by-linear association	0.000	1	.997
N of valid cases	520		

^a 27 cells (45.0%) had an expected count less than 5. The minimum expected count was .39.

Table 27

Symmetric Measures: Industry Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	Approximate significance
Nominal by nominal		
Phi	.377	.003
Cramer's V	.188	.003
N of valid cases	520	

Year of company founding. Respondents indicated (Table 28) that most of their companies were started prior to the year 2000. The significance of this is noted when one remembers that the lean startup methodology, as presented by Blank and Reis, was not on the business scene prior to 2000. In retrospect, I might have provided more choices in the year designation for this study, which would have allowed greater granularity. While this might not have shown any difference in familiarity with lean startup, it might have linked extremely familiar with the years of either Blank's publications in 2005, or the Reis work in 2011.

Table 28

What Year was Your Company Founded: Survey Question 6

-
- Prior to 2000
 2000 or after
-

Table 29

Company Origination

What year was your company started?

<u>Answer options</u>	<u>Response percent</u>	<u>Response count</u>
Prior to 2000	73.6	374
2000 or after	26.4	134

Note. Of the 520 respondents, 508 answered the question and 12 skipped the question.

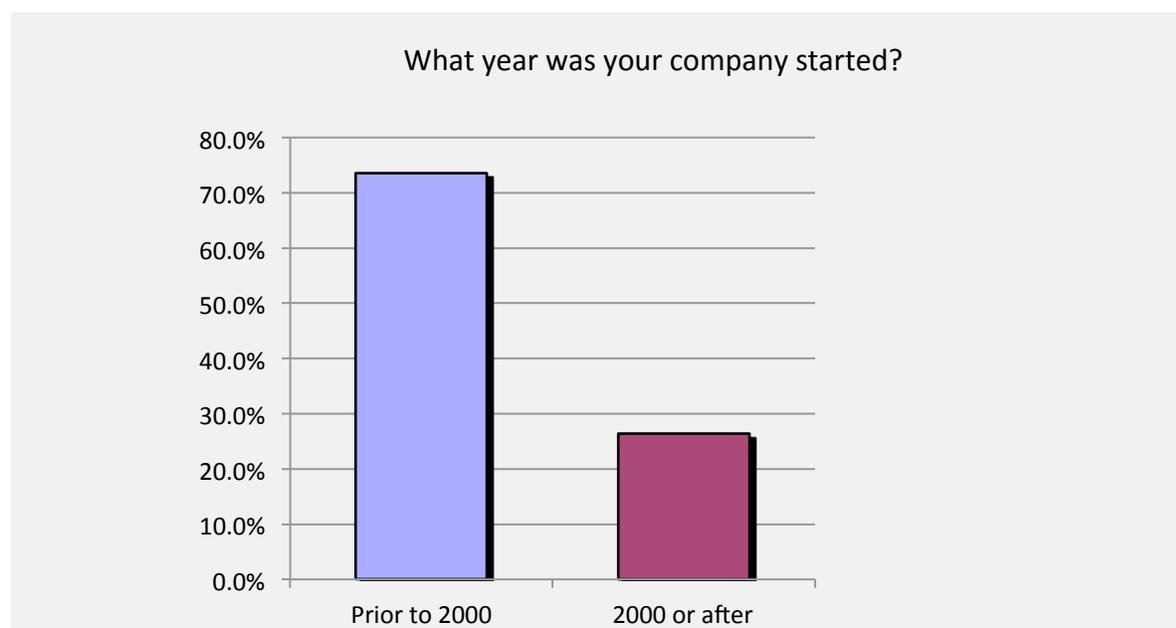


Figure 7. Company origination year from respondents.

Job role. When given a broad array of choices, respondents indicated (Table 31) their varied job roles and responsibilities, alongside their familiarity with the term minimum viable product. A very important crosstabulation appears in the Table 31. It is important because it

might be presumed that the respondents' role would closely link to their knowledge of the filtering minimum viable product question.

Table 30

Job Role: Survey Question 7

What is your job role?

- Individual Contributor
 - Team Lead
 - Manager
 - Senior Manager
 - Regional Manager
-

What is your job role?

- Vice President
 - Management/C-Level
 - Partner
 - Owner
 - Volunteer
 - Intern
 - Other
-

Table 32 shows that a chi-square test of independence was calculated showing the result of comparing job role and familiarity with the term minimum viable product. A significant relationship was found, $\chi^2(44) = .001, p < .05$. Therefore, the job role and familiarity with the term minimum viable product were related. As expected, the Individual Contributors and the Owners indicated greater knowledge of the filtering minimum viable product question.

Table 31

Job Role/Responsibility: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

Job role	How familiar are you with the term minimum viable product?					Total count	% of total
	Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar		
Individual Contributor	6	1	26	27	59	119	22.9
Team lead	2	8	9	8	12	39	7.5
Manager	2	3	18	16	23	62	11.9
Sr. manager	2	3	6	6	4	21	4.0
Regional mgr	0	1	1	1	0	3	.6
VP	0	1	6	2	2	11	2.1

Job Role	How familiar are you with the term minimum viable product?					Total count	% of total
	Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar		
C-Level Mgmt	1	0	5	5	5	16	3.1
Partner	1	1	3	6	8	19	3.7
Owner	3	7	23	9	22	64	12.3
Volunteer	0	1	0	3	7	11	2.1
Intern	0	1	6	3	6	16	3.1
Other	0	4	28	30	77	139	26.7
Total	17	31	131	116	225	520	100.0

Note. The *Regional Mgr* designation may be a term not currently used in companies.

Table 32

Chi-Square Tests: Job Role Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	df	Asymptotic significance (2-sided)
Pearson chi-square	77.450 ^a	44	.001
Likelihood ratio	81.823	44	.000
Linear-by-linear association	5.018	1	.025
N of valid cases	520		

^a 38 cells (63.3%) had an expected count less than 5. The minimum expected count was .10.

The symmetric measures (Table 33) showed that the strength of association was weak at .001. Cramer's V varied between 0 and 1, with values close to 0 showing little association between variables.

Table 33

Symmetric Measures: Job Role Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	Approximate significance
Nominal by nominal Phi	.386	.001
Cramer's V	.193	.001
N of valid cases	520	

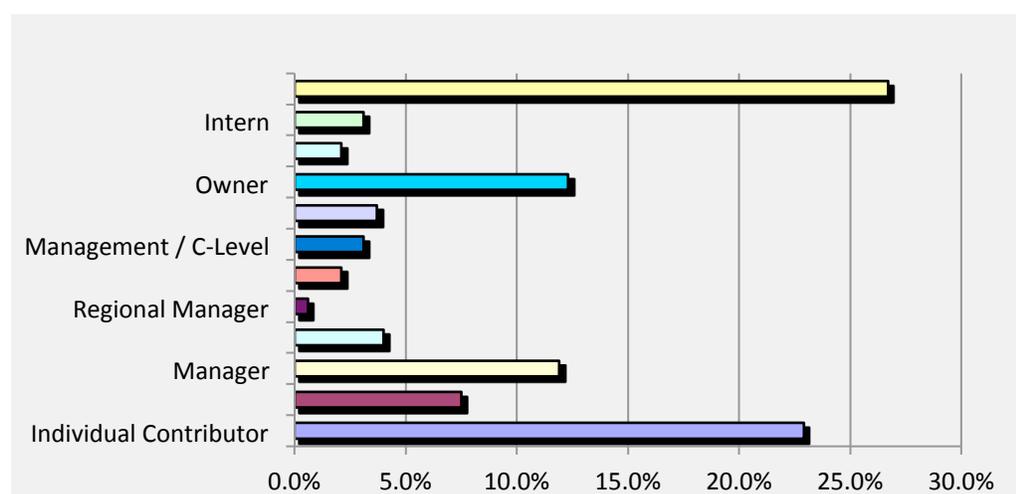


Figure 8. Individual job role from respondents familiar with minimum viable product.

Familiarity with minimum viable product. The job role becomes germane when compared to the respondents' knowledge of the principal filtering term in Table 35. Only 9.3% of the participants were either very familiar or extremely familiar with the term. That closely corresponded to the job role indicated as owner in Table 31.

Table 34

Familiarity With Minimum Viable Product: Survey Question 8

How familiar are you with the term minimum viable product?
<input type="checkbox"/> Extremely familiar
<input type="checkbox"/> Very familiar
<input type="checkbox"/> Somewhat familiar
<input type="checkbox"/> Not so familiar
<input type="checkbox"/> Not at all familiar

Again, this was an overarching question of the entire study. The term minimum viable product is one of the key components within the lean startup methodology, and any adherent should be extremely familiar with this reference. The responses strongly showed that most the 520 respondents were simply not so familiar, or not at all familiar with the term.

Table 35

Main Respondent Filtering Question 8

How familiar are you with the term minimum viable product?		
Answer options	Response percent	Response count
Extremely familiar	3.3	17
Very familiar	6.0	31
Somewhat familiar	25.2	131
Not so familiar	22.3	116
Not at all familiar	43.3	225

Note: Somewhat familiar, in this case, showed the respondents did not apply lean startup principles to their venture. All 520 respondents answered Question 8.

Only a combined 9.3% (Table 35) indicated knowing the main filtering question very well. That weighed in as the single most indicative answer of the survey regarding lean startup familiarity.

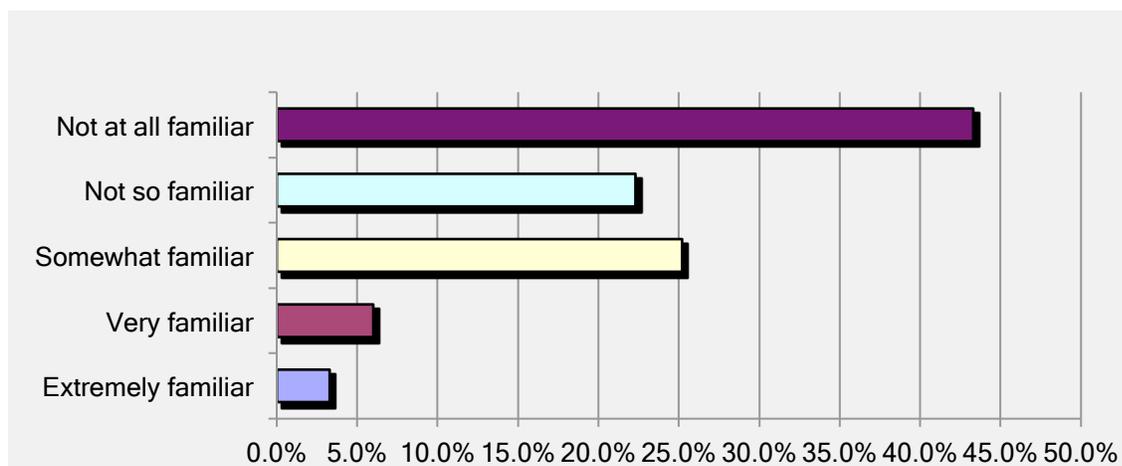


Figure 9. Respondents' familiarity with the term minimum viable product.

Number of personal company startups. The question posed here was a logical follow-on to the previous one, as job title alone (Table 28) could not indicate whether the individual respondents personally helped to start an enterprise. That question (Table 36) provided verification as to whether they had in fact started at least one company.

Table 36

Personal Startups: Survey Question 9 (Respondent Pivot Question)

How many companies have you personally helped start?
 (Note: If you selected "Not So" or "Not At All," then
 proceed to the last question #13 please)

- None
 - One
 - More than one
-

Note also that this question marked the only dividing point in the survey of respondents. Namely, if one had started at least one company, then there were other pertinent follow-on questions, including some follow-on *t*-tests analysis desired. If not, then interest in the respondent's answers from that point were not relevant or needed for this specific study.

Further, I also sought to determine a comparison of personal company startups to familiarity with the filtering term of minimum viable product. Results are shown in Table 34.

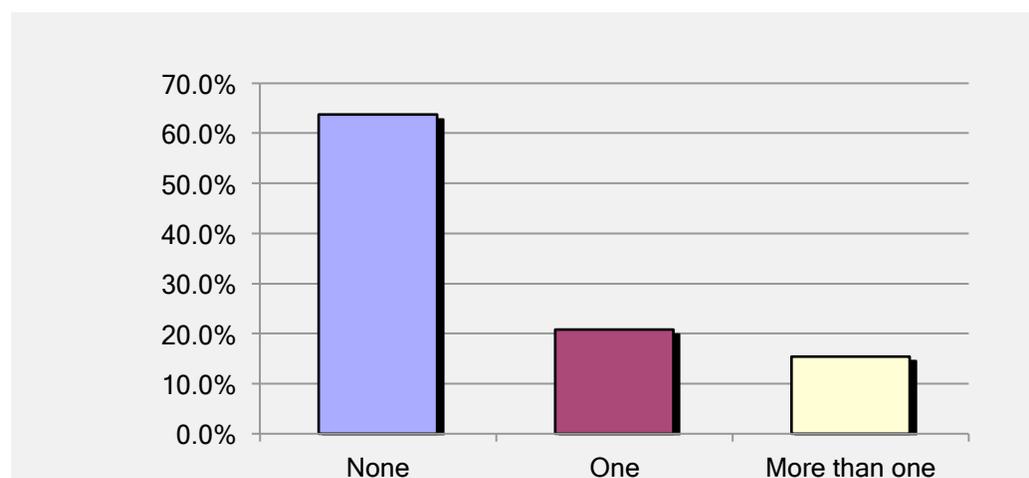


Figure 10. Number of company starts indicated by respondents.

Table 37

Number of Companies Started Personally—Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

Number of Companies Personally Started	How familiar are you with the term minimum viable product?					Total count	% of total
	Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar		
None	8	11	70	75	168	332	63.8
One	5	9	32	27	35	108	20.8
More than one	4	11	29	14	22	80	15.4
Total	17	31	131	116	225	520	100.0
% of total	3.3	6.0	25.2	22.3	43.3	100.0	

Table 38 shows that a chi-square test of independence was calculated showing the result of comparing the number of companies personally started and familiarity with the term minimum viable product. A significant relationship was found, $\chi^2(8) = .000, p < .05$. Therefore, the job role and familiarity with the term minimum viable product were related.

Table 38

Chi-Square Tests: Number of Companies Started: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	df	Asymptotic significance (2-sided)
Pearson chi-square	34.971 ^a	8	.000
Likelihood ratio	33.728	8	.000
Linear-by-linear association	29.580	1	.000
N of valid cases	520		

^a 3 cells (20.0%) had an expected count less than 5. The minimum expected count was 2.62.

Cramer's V (Table 39) shows a weak significance level at .000.

Table 39

Symmetric Measures: Number of Companies Started: Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	Approximate significance
Nominal by nominal		
Phi	.259	.000
Cramer's V	.183	.000
N of valid cases	520	

Importance of Chosen Startup Method to Ongoing Daily Operations

The assumption was that if one used the lean startup methodology, then one would indicate it also held an extremely important role in the ongoing management style. This is part of the lean startup paradigm itself and would, therefore, be a key component for any entrepreneur using this method.

Table 40

Importance of Startup Method to Ongoing Operations: Survey Question 10

How important was your startup methodology to the way you
conduct daily management operations now?

- Extremely important
- Very important
- Moderately important
- Slightly important
- Not at all important
-

Table 41 indicates some respondents' inconsistency. The anticipated number of skipped question respondents at this point would be 332, as seen in Table 37 by those indicating None in the field of how many startups; however, only 187 skipped forward here (Table 41).

Table 41

Importance of Lean Startup to Ongoing Management

How important was your startup methodology to the way
you conduct daily management operations now?

<u>Answer Options</u>	<u>Response percent</u>	<u>Response count</u>
Extremely important	16.5	55
Very important	28.8	96
Moderately important	16.5	55
Slightly important	9.9	33
Not at all important	28.2	94

Note. Of the 520 respondents, 333 answered the question and 187 skipped the question.

Here again, a bit better granularity in the survey itself might have afforded better explanations. For instance, although a respondent might indicate accurately he/she had zero

startups, the respondent might in fact have assisted in some consultative, or other substantive manner.

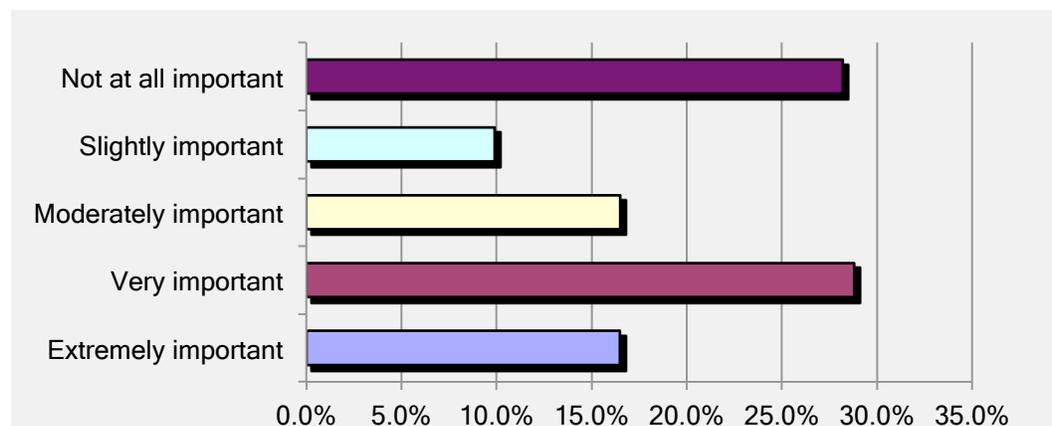


Figure 11. Importance of startup methodology in current daily management.

The 14.5% indicated on daily management in Table 42 is noteworthy and might prove somewhat disheartening to Reis (2011a). Reis was a strong advocate in the fact that the lean thinking and theory not only altered the startup sequence and process, but directly impacted daily operations and management as well. He would have expected a higher significance here.

Table 43 shows that a chi-square test of independence was calculated showing the result of comparing the number of personal business startups to the influence upon post-startup daily operations. A significant relationship was found, $\chi^2(16) = .000, p < .05$. Therefore, the job role and familiarity with the term minimum viable product were related.

Satisfaction level with startup method chosen. It was assumed that if even a small number of respondents were using the lean startup methods to commence their business enterprise, then they might be more satisfied with their choice than perhaps other methods. Table 43 shows the combined 54.3% positive response.

Table 42

Crosstabulation: How Important Was Your Startup Methodology to the Way You Conduct Daily Management Operations Now? And How Familiar Are You With the Term Minimum Viable Product?

Important to Daily Management		Familiarity with the term minimum viable product					Total
		Extremely familiar	Very familiar	Somewhat familiar	Not so familiar	Not at all familiar	
Extremely important	Count	8	6	15	5	21	55
	% within daily mgmt	14.5	10.9	27.3	9.1	38.2	100.0
	% within how familiar with MVP	53.3	26.1	17.2	6.8	15.6	16.5
	% of total	2.4	1.8	4.5	1.5	6.3	16.5
Very important	Count	5	16	40	21	14	96
	% within daily mgmt	5.2	16.7	41.7	21.9	14.6	100.0
	% within how familiar with MVP	33.3	69.6	46.0	28.8	10.4	28.8
	% of total	1.5	4.8	12.0	6.3	4.2	28.8
Moderately important	Count	1	1	15	17	21	55
	% within daily mgmt	1.8	1.8	27.3	30.9	38.2	100.0
	% within how familiar with MVP	6.7	4.3	17.2	23.3	15.6	16.5
	% of total	.3	.3	4.5	5.1	6.3	16.5
Slightly Important	Count	0	0	10	13	10	33
	% within daily mgmt	0.0	0.0	30.3	39.4	30.3	100.0
	% within how familiar with MVP	0.0	0.0	11.5	17.8	7.4	9.9
	% of total	0.0	0.0	3.0	3.9	3.0	9.9
Not important	Count	1	0	7	17	69	94
	% within daily mgmt	1.	0.0	7.4	18.1	73.4	100.0
	% within how familiar with MVP	6.7	0.0	8.0	23.3	51.1	28.2
	% of total	.3	0.0	2.1	5.1	20.7	28.2
Total	Count	15	23	87	73	135	333
	% within daily mgmt	4.5	6.9	26.1	21.9	40.5	100.0
	% within how familiar with MVP	100.0	100.0	100.0	100.0	100.0	100.0
	% of total	4.5	6.9	26.1	21.9	40.5	100.0

Table 43

Chi-Square Tests: Crosstabulation With Importance of the Number of Personal Startups to Influence Upon Post-Startup Operations

	Value	df	Asymptotic significance (2-sided)
Pearson chi-square	117.691 ^a	16	.000
Likelihood ratio	125.753	16	.000
Linear-by-linear association	66.128	1	.000
N of valid cases	333		

^a 8 cells (32.0%) have expected count less than 5. The minimum expected count is 1.49.

Symmetric measures in Table 44 merely confirmed the weak association.

Table 44

Symmetric Measures: Crosstabulation With Importance of the Number of Personal Startups to Influence Upon Post-Startup Operations

		Value	Approximate significance
Nominal by nominal	Phi	.594	.000
	Cramer's V	.297	.000
N of valid cases		333	

Table 45

How Satisfied: Survey Question 11

Overall, are you satisfied, dissatisfied, or neither satisfied nor dissatisfied with the business startup methodology you used?

- Extremely satisfied
- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very dissatisfied
- Extremely dissatisfied

Likelihood to recommend chosen startup method. By the nature of the survey, and the fact that an obvious “filtering question” must be used in place of a direct lean startup query, it

became difficult to know by the respondents' likelihood of recommending whether they utilized lean startup or not. If their business was and is a success, then it was logical to assume they would be pleased enough with their startup methodology, whatever that was, to possibly recommend it.

Table 46

Satisfaction With Startup Method

Overall, are you satisfied, dissatisfied, or neither satisfied nor dissatisfied with the business startup methodology you used?	Response percent	Response count
Extremely satisfied	10.4	35
Very satisfied	22.1	74
Somewhat satisfied	21.8	73
Neither satisfied nor dissatisfied	35.2	118
Somewhat dissatisfied	5.1	17
Very dissatisfied	3.3	11
Extremely dissatisfied	2.1	7

Note. Of the 520 respondents, 335 answered the question and 185 skipped the question.

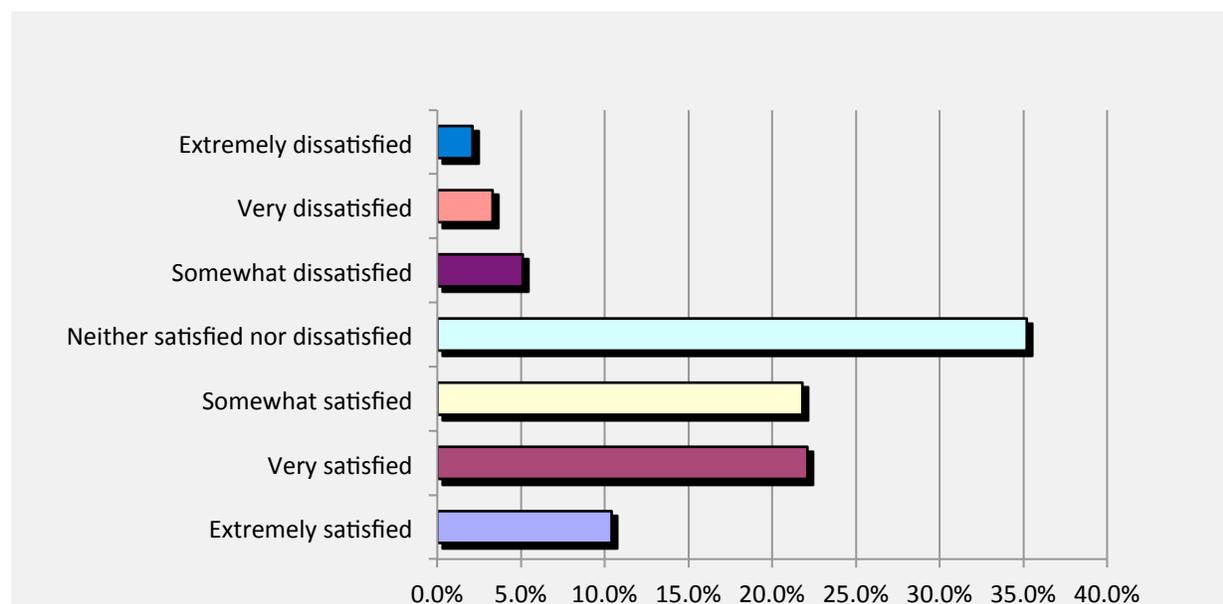


Figure 12. Satisfaction with startup methodology indicated by respondents.

This question's response, therefore, indicated in Table 48, cannot stand alone. Rather it must be seen alongside all the other relevant responses. Nevertheless, a combined 30.9% of the respondents were either extremely or very likely to recommend.

Table 47

Likelihood of Recommendation: Survey Question 12

How likely are you to recommend your startup methodology to others?

- Extremely likely
 - Very likely
 - Moderately likely
 - Slightly likely
 - Not at all likely
-

Table 48

Likelihood of Respondents to Recommend Their Startup Method

How likely are you to recommend your startup methodology to others?

Answer options	Response percent	Response count
Extremely likely	11.1	37
Very likely	19.8	66
Moderately likely	28.4	95
Slightly likely	13.5	45
Not at all likely	27.2	91

Note. Of the 520 respondents, 334 answered the question and 186 skipped the question.

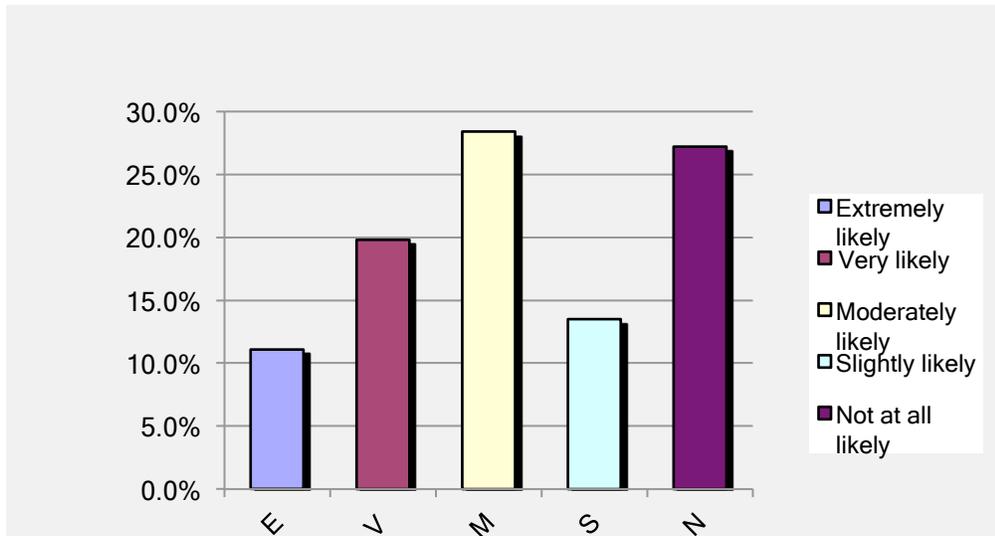


Figure 13. How likely are respondents to recommend their startup methodology?

Part B: Inferential Analysis Only

As a reminder, the questions guiding this study were as follows:

1. To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on familiarity with lean startup terms such as minimum viable product?
2. To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on the importance of the chosen startup method and how it affected the ongoing daily operations?

Use of *t*-tests

The study conducted *t*-tests on this same base group of entrepreneurs who indicated they had personally started at least one company. Here the difference between two sample means was tested for significance. The drill-down included both group statistics and independent sample *t*-tests:

- Independent Variable: How many companies have you personally helped start?

- Dependent Variable: How familiar are you with the term minimum viable product?

Table 49

Results of t-Test 1a: Group Statistics—How Familiar Are You With the Term Minimum Viable Product (MVP)?

	How many companies...?	<i>N</i>	Mean	Std. deviation	Std. error mean
How familiar are you with MVP?	One	108	3.7222	1.14250	.10994
	More than one	80	3.4875	1.17994	.13192

Table 50

Results of t-Test 1b: Independent Samples Test—How Familiar Are You With the Term Minimum Viable Product (MVP)?

Levene's test for equality of variances		<i>t</i> -test for equality of means								
									95% confidence interval of the <u>difference</u>	
		<i>F</i>	Sig.	<i>t</i>	<i>df</i>	Sig. (2 tailed)	Mean diff	Std. error diff	Lower	Upper
How familiar are you with the term MVP	Equal variances assumed	.250	.618	1.373	186	.171	.23472	.170901	-.10242	.57187
	Equal variances not assumed			1.367	167.267	.174	.23472	.17172	-.10430	.57375

An independent sample *t*-test compared the mean score of those indicating familiarity with the term minimum viable product with the number of companies they personally started. No significant difference was found, $t(2) = .171, p > .05$. The mean of the number of companies

started ($M = 3.722$, $sd = 1.1425$) was not significantly different from the mean of those familiar with the term minimum viable product ($M = 3.4875$, $sd = 1.1799$).

- Independent Variable: How many companies have you personally helped start?
- Dependent Variable: How important was your startup methodology to the way you conduct daily management operations now?

Table 51 reveals an important component of the lean startup philosophy. Namely, that the lean philosophy extends beyond simply commencing a business by holding principles that characterize both the structure and management of ongoing operations—post startup.

Table 51

Results of t-Test 2a: Group Statistics—How Important Is Your Startup Methodology to Ongoing Daily Management Now?

	How many companies...?	N	Mean	Std. deviation	Std. error mean
Importance to daily mgmt now?	One	105	2.8000	1.28901	.12579
	More than one	79	2.2278	1.5414	.12985

An independent-samples *t*-test compared the mean score of those indicating the importance of their chosen startup methodology to the influence upon post-startup ongoing operations. A significant difference was found, $t(182) = .002$, $p < .05$. The mean of those indicating importance to daily operations was significantly lower ($M = 2.80$, $sd = 1.289$) than the mean of those indicating the number of companies started ($M = 2.22$, $sd = 1.54$).

Again, the thinking here was to determine how important the chosen startup methodology was in the role of ongoing daily management. Reis (2011a) and the entire lean startup concept indicated that in addition to utilizing the lean startup principles for beginning a business, the ongoing management style would also change to accommodate the lean startup mindset.

- Independent Variable: How many companies have you personally helped start?
- Dependent Variable: Overall, are you satisfied, dissatisfied, or neither satisfied nor dissatisfied with the business startup methodology you used?

Table 52

Results of t-Test 2b: Independent Samples Test—How Important Is Your Startup Methodology to Ongoing Daily Management Now?

		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig. (2 tailed)	Mean diff	Std. error diff	95% confidence interval of the difference	
									Lower	Upper
How important daily mgmt now??	Equal variances assumed	4.745	.031	3.116	182	.002	.57215	.18364	.20981	.93449
	Equal variances Not assumed			3.165	176.508	.002	.57215	.18079	.21536	.92894

An independent-samples *t*-test compared the mean score of those indicating how many companies they started with the level of satisfaction. No significant difference was found, $t(2) = .365, p > .05$. The mean of those indicating level of satisfaction ($M = 3.056, sd = 1.287$) was not significantly different from the mean of those showing the number of personal startups ($M = 2.87, sd = 1.44$)

- Independent Variable: How many companies have you personally helped start?
- Dependent Variable: How likely are you to recommend your startup methodology to others?

Table 53

Results of t-Test 3a: Group Statistics—Overall Are You Satisfied, Dissatisfied, or Neither With the Business Startup Methodology You Used?

	How many companies...?	<i>N</i>	Mean	Std. deviation	Std. error mean
How satisfied?	One	107	3.0561	1.28732	.12445
	More than one	79	2.8734	1.44442	.16251

Table 54

Results of t-Test 3b: Independent Samples Test—Overall Are You Satisfied, Dissatisfied, or Neither With the Business Startup Methodology You Used?

Levene's test for equality of variances		<i>t</i> -test for equality of means								
									95% confidence interval of the difference	
		F	Sig.	<i>t</i>	<i>df</i>	Sig. (2 tailed)	Mean diff	Std. error diff	Lower	Upper
How important daily mgmt now??	Equal variances assumed	.287	.593	.908	184	.365	.18266	.20117	-	.57955
	Equal variances Not assumed			.892	156.665	.374	.18266	.20469	-	.58696

An independent-samples *t*-test compared the mean score of those indicating how many companies they started with the likelihood for recommendation. No significant difference was found, $t(183) = .089, p > .05$. The mean of those indicating likelihood of recommendation ($M = 3.056, sd = 1.20$) was not significantly different from the mean of those showing the number of personal startups ($M = 2.74, sd = 1.23$).

Table 55

Results of t-Test 4a: Group Statistics—How Likely Are You to Recommend Your Startup Methodology to Others?

	How many companies...?	<i>N</i>	Mean	Std. deviation	Std. error mean
How likely are you to recommend to others?	One	106	3.0566	1.20972	.11750
	More than one	79	2.7468	1.23484	.13893

Worth noting here is that Table 56 reveals yet another integral component of lean startup thinking. That is, if entrepreneurs have utilized the lean startup method in beginning their business, they tend to highly recommend it, regardless of the outcome (successful or not) or their business venture (Blank, 2017). That makes sense when one recalls that there are many reasons that contribute to the success and/or failure of a new venture. One might have correctly engaged potential customers up front, yet failed to see that the venture was adequately capitalized. The lack of funding is a major contributor to business failure (Blank, 2017).

Gender and Importance of Startup Methodology in Daily Management

It was also important to ascertain whether gender made any difference in conducting ongoing and daily management, considering a knowledge of minimum viable product. Table 57 indicates the responses.

Table 58 shows that a chi-square test of independence was calculated showing the result of comparing gender and the importance of the chosen startup method to the influence upon post-startup daily operations. No significant relationship was found, $\chi^2(4) = .086, p < .05$. Therefore, the number of companies started had no influence upon post-startup operations.

Table 56

Results of t-Test 4b: Independent Samples Test—How Likely Are You to Recommend Your Startup Methodology to Others?

		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig. (2 tailed)	Mean diff	Std. error diff	95% confidence interval of the difference	
									Lower	Upper
How likely are you to recommend to others?	Equal variances assumed	.775	.380	1.708	183	.089	.30977	.18141	- .04815	.66769
	Equal variances Not assumed			1.702	166.289	.091	.30977	.18195	- .04947	.66901

Table 57

Are You Male or Female? How Important Was Your Startup Methodology to the Way You Conduct Daily Management Operations Now? Crosstabulation

Are you male or female		Familiarity with the term minimum viable product					Total
		Extremely important	Very important	Moderately important	Slightly important	Not at all important	
Male	Count	30	53	23	21	39	166
	% within gender?	18.1	31.9	13.9	12.7	23.5	100.0
	% within daily mgmt?	54.5	55.2	41.8	63.6	41.5	49.
	% of total	9.0	15.9	6.9	6.3	11.7	49.8
Female	Count	25	43	32	12	55	167
	% within gender?	15.0	25.7	19.2	7.2	32.9	100.0
	% within daily mgmt?	45.5	44.8	58.2	36.4	58.5	50.2
	% of total	7.5	12.9	9.6	3.6	16.5	50.2
Total	Count	55	96	55	33	94	333
	% within gender?	16.5	28.8	16.5	9.9	28.2	100.0
	% within daily mgmt?	100.0	100.0	100.0	100.0	100.0	100.0
	% of total	16.5	28.8	16.5	9.9	28.2	100.0

Again, it is seen that lean startup was no respecter of gender. Whether one was male or female did not seem to affect any component of a business startup within the lean concept.

Table 58

Chi-Square Tests: Importance Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	df	Asymptotic significance (2-sided)
Pearson chi-square	8.144 ^a	4	.086
Likelihood ratio	8.198	4	.085
Linear-by-linear association	2.540	1	.111
N of valid cases	333		

^a Eight cells (32.0%) had an expected count less than 5. The minimum expected count was 1.49.

The symmetric measures in Table 59 confirm that there was no significance.

Table 59

Symmetric Measures: Importance Crosstabulation With How Familiar Are You With the Term Minimum Viable Product?

	Value	Approximate significance
Nominal by nominal		
Phi	.156	.086
Cramer's V	.156	.086
N of valid cases	333	

Qualitative Advice Question

The final question on the survey was certainly a one-off. It was not only a qualitative-styled question, but it sought advice at random. There was not great desire to find significance, or even wisdom here. I merely thought that if any respondents did in fact utilize the lean startup methodology, there might be a word or phrase referenced in this section. There were only four such references from all the answers.

Table 60

Qualitative: Advice Survey Question 13

If you were to give one phrase or sentence of advice to entrepreneurs
Planning a business startup, what would you say?

Table 61 shows selected representative results. The original intent was to determine which, if any of these, would respond with the term *lean startup* within their answers. Only four respondents did include the specific words *lean startup*. Otherwise, the advice was random and scattered; informative but hardly significant to this study.

Table 61

Answers to Question 13

Selected answers to the qualitative advice question

- Remember to continually invest in leadership and staff development.
- Never give up.
- Listen to all the advice you can from everyone you can.
- Do not under capitalize.
- Get a good small business accountant to help you and learn how to take care of the majority of tax, legal and accounting yourself when you are first starting out.
- Make a check list for a daily basis startup, just like the pilots fly the airplanes.
- Do homework.
- Make sure your business is in a field you enjoy, and is not crowded.
- WORK HARD.
- Know your passion.
- Have a solid business plan prior to launch of company and be flexible to adapt to changes in the marketplace.
- Put in a strong set of financial and budget controls early in the game. That way you don't have to go back to the VC's until you really need to.
- Get good backing.
- Get it in writing.
- Customer service and appreciation.
- Let's get her done.
- Don't take in a partner(s) unless you absolutely positively have to.
- Do your diligent research.
- Do it thoughtfully with careful planning.
- Know your business, know your market, know your customer base.

- Don't borrow anything.
 - Plan for the worst and hope for the best
 - Work hard and stay focused.
 - You will need a lot of energy.
 - Be patient and work hard.
 - Take your time in the conception phase and really know what you're getting into.
 - Important to know the market you intending to target and don't base your decision on assumptions.
 - Pay particular attention to Customer Service.
 - Make sure you have a lot of support.
 - Do your homework and ensure you have enough capital to withstand the slow times.
 - Plan, document, act, repeat.
 - Persevere.
 - Have an end goal.
 - Use the lean startup thinking.
-

Chapter 5: Discussion, Recommendations, and Conclusions

Purpose and Summary of Research Study

The purpose of this quantitative study was to examine the extent to which entrepreneurs in south Texas were aware of the lean startup methodology, and if so, had utilized its principles in their business startup decisions.

As a reminder, the questions guiding this study were as follows:

- To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on familiarity with lean startup terms such as minimum viable product?
- To what extent did the seven demographic variables (gender, age, educational level, ethnicity, number of personal business startups, industry type, and job role) make a difference on the importance of the chosen startup method and how it affected the ongoing daily operations?

There were also overarching probative questions that were addressed by this study. They are summarized as follows:

- Awareness—Had they heard of the lean startup paradigm?
- Frequency—How often did they refer to the lean startup principles during startup?
- Familiarity—Were the participants familiar with lean startup terms?
- Degree—To what degree did the lean startup methodology influence daily management now?
- Satisfaction—What level of satisfaction would individuals reveal about their chosen startup process?

- Likelihood—How likely were participants to recommend their chosen startup process?

This led to the creation and administration of a customized survey for participant input as seen in Appendix A. Those queries included gender, age, education, ethnicity, type of industry, company origination date, job role, how many startups, measures of satisfaction with their chosen startup paradigm, how satisfied they were with their chosen startup method, and how likely were they to recommend their startup method to others.

The Findings and the Literature

Overall the findings of this study indicated that most respondents were not aware of the lean startup methodology, neither were they familiar with relevant terms. The conclusion, therefore, was that the lean startup paradigm was not largely utilized in the formation of their respective companies.

The massive amount of literature available from the pen of Dr. Peter Drucker never mentioned the words lean startup. However, there is evidence that lean thinking itself, a concept adopted by Toyota, was influenced by Drucker (Drucker Institute, 2015). The beginning and running lean can be lifted from most all of his writings. Drucker was exceedingly pragmatic, and his approach to beginning new divisions, as well as managing existing ones, was one of prudence and practicality. Running lean was inherent in his thinking and teaching:

- Have a clear sense of mission—True north in lean startup parlance.
- Keep the customer prominent at all times.
- Organizational front-line responsibility and accountability.
- Systematic improvement of products and services.
- Continuous improvement of processes adding value.

It is, therefore, entirely possible that the results of this research survey on lean startups might have lean concepts embedded within the thinking of participants, without actually knowing and using the term lean.

Additionally, the literature, and in particular the writings of Horowitz (2010), might lead us to think that at least one or more of this study's respondents would in fact be opposed to the lean startup approach. The results, however, did not show it. Not a single respondent indicated any negativity, or showed disdain, toward the lean startup thinking. That would be consistent with the fact that the participants of this research survey were not aware enough of the lean startup paradigm to be opposed to it.

Further, the literature from Blank (20113a) indicated no significant variance in regard to basic demographic filtering preferences by gender, age, ethnicity, or education. The results of this research showed exactly that. However, Blank (2013a) did imply a bias when it came to the industry of experience. His writings indicated a very strong propensity among traditional software developers to utilize a non-lean approach.

A study of the literature available from the one who coined the term lean startup, Reis (2011a), also predicted no demographic bias regarding gender, age, education, ethnicity, age of company, or even the age of the company. However, the role of the individual within the company might be seen as significant. Namely, a closed minded, or strict traditionalist, within any company, tends not only to deflect new startup methods, but also may reject any lean management principles. That was seen in the results of this study where respondents' role showed some significance in their responses.

The writings of Reis, in particular his book *Lean Startup* (2011a), provided the primary filtering device for this present study. It was a direct question regarding the participants'

familiarity with minimum viable product. As seen below, the question was direct, but unrevealing, as presented in the survey itself.

This question was designed to test participants' familiarity with this new startup concept, without asking them directly, or using the term lean startup. To have used lean startup directly would have biased the study beyond repair.

Table 62

Question 8 From the Participant Survey (Appendix)

* 8. How familiar are you with the term minimum viable product?

- Extremely familiar
 - Very familiar
 - Somewhat familiar
 - Not so familiar
 - Not at all familiar
-

Findings indicated those methods and principles were not utilized in the formation of respondents' business enterprises, nor were they key to their ongoing operations now. That was the crux of this study.

The early and consistent prediction from the literature studies surrounding the lean startup theory suggested that entrepreneurs chose either the traditional startup route, or would endorse the lean method (Blank, 2013a; Ries, 2011), but not both. There would be no middle ground. This study confirmed those suggestions and revealed that respondents stayed true to their chosen startup methods without co-mingling theories.

Traditionalists, as some respondents might be called in our study, indicated no familiarity with the key term used in lean startup parlance. They, therefore, seemed consistent in answering follow-on survey questions with little interest into ongoing opportunities to indicate their

knowledge and appreciation for any lean startup thinking. The literature foreshadowed that and was embedded in numerous statements especially by Blank (2005) and Reis (2011a).

Discussion and Interpretation

The singular purpose of this study was to determine whether south Texas entrepreneurs were aware of the lean startup methodology when they began their new enterprise. The clear finding was that they were not. That begs the question as to why. Why had they not heard of it, especially in south Texas? Four main thoughts occurred in partial answer.

First, resourcing, influencing, and educational institutions have been slow to embrace new startup paradigms including lean. Government agencies, banks, and other lending entities, continue using traditional guidelines for assisting startups. Further, colleges and universities have been very slow to examine, and even slower to adopt, any lean startup principles. Proof of that lies in the fact that the education level of the participants in our survey did not matter at all. It should have. Respondents with business education, or coursed at universities, should have encountered this lean startup theory. However, it may be noted that many entrepreneurs are self-taught. This points us to our second potential answer.

Second, most entrepreneurs simply do not conduct adequate research on their own. The same mentality that makes entrepreneurs heavy risk takers, often makes them highly independent. In developing their vision, they are often given so much negative input that the tendency is to move forward and shut out the naysayers. The survey question in our study regarding minimum viable product should have been a dead giveaway to any researcher in startup literature. Our participants apparently did not do much reading on startups.

Third, while successful enterprises are often widely publicized and vocalized, business failures are not usually considered healthy conversation. Few want to conduct public post-

mortems on their failed business ventures. The principal reason that I did not conduct a qualitative study of business owner failures and bankruptcies was that no one wants to talk about them. Even though court records are somewhat available, early attempts to locate and converse with individuals filing business bankruptcy proved almost impossible. The research questions in the survey regarding the level of satisfaction and the likelihood of recommendation indicated most respondents thought very little of their chosen methods.

The fourth and final reason I believe the lean startup methods have historically had little influence upon entrepreneurs in south Texas centers around the nature of necessity. If necessity is truly the mother of all invention as Plato indicated in his *Republic*, then south Texas entrepreneurs have not as yet felt that parenting urgency. I call it necessity-adaption-motivation. Why are entrepreneurs so slow to adopt and adapt? There is a lack of pressing motivation. The circumstances have simply not been dire enough to seek other methods.

The pool of investment money has always been deep in Texas. In fact, a recent CNBC Report by Elaine Pofeldt (2016) showed that the top startup mecca in America was far from California's Silicon Valley, it is in fact Austin, Texas. San Antonio also ranked high in that same list, making the Top 40 according to the 2016 Kauffman Index.

The report showed that 5.56% of the adult population owned a business as their main job in San Antonio. Also, the number of established, and by established I mean older than 4 years, small businesses per 1,000 firms in San Antonio was 575.61. That same report also showed the number of San Antonio businesses remaining in operation after 5 years to be only 47.08%.

In other words, there was an overall very healthy environment for business in Texas. Organizations with histories of flowing investment money are not always motivated to try lean startup methods.

Not everyone, nor every place, is so fortunate. When stark necessity knocks, many entities look for new and proven methods. This applies to countries as well as companies. One countrywide example of this necessity-adaptation-motivation is India. Across India, individuals and organizations have embraced lean startup thinking. Again, in part, this is out of necessity. Nitin Rakesh, CEO of Mphasis, was recently elected to spearhead the transformation of general IT services countrywide in India (Mphasis, 2017). Rakesh is a firm supporter and early embracer of the lean startup methodology (Rakesh, 2017).

Another Indian example is Sandeep Mallya, the CEO of startup Cafe Digital. Mallya has been a key player in what is called Silicon India and is a strong believer in all things lean. One of his companies headquartered in Singapore has as its manifesto: First do it, then do it right, then do it better (Mallya, 2017). This manifesto thinking is a great summary straight from the Reis handbook (2011a), it seems.

This necessity-type thinking certainly may also apply to companies in prosperous countries. A good American example is Kodak, whose historically stale technology led to a rapid decline in profits. However, Kodak Alaris was formed in 2013 with a new, and necessary, focus on being relevant. Chief Information Technology Officer Dan Hurst is a fan of lean startup and had this to say when interviewed in *CIORevue Magazine*:

To compete in today's digital economy, and to offer the world class products and services our customers demand, we knew we had to offer a broader, more extensible product set. The world is changing rapidly, and the firms that keep pace with these changes will win in the marketplace. For us, this means adopting a lean startup approach to accelerate innovation. (Hurst, 2017)

While there may be other reasons, these four examples may help explain the south Texas reticence for slow adoption of the lean startup paradigm.

Limitations and Recommendations

First, this effort was limited by the number of participants. Time did not afford the opportunity to gather greater numbers of business entrepreneurs in Texas, or even in south Texas. Second, limited resources to find and/or purchase additional e-mail lists limited this study. Third, and importantly, this study was limited to an e-mail list that only included subscribers to the *San Antonio Business Journal*. It is obvious that not all south Texas business entrepreneurs were subscribers to that journal. Fourth, this study was also limited by the survey instrument itself. Although the wording and sequence of survey questions were carefully thought out, there nevertheless remained possibilities of bias or lack of clarity.

While specificity helped this study, it also clearly limited it. Namely, the survey was designed to accomplish only very specific input, and it did so. The chief query was first and foremost to determine whether or not entrepreneurs were even aware of the lean startup method. In order to accomplish that without bias, the survey questions themselves could not lead the participants in any manner. For instance, the difference in asking participants, “Have you heard of the lean startup theory?” or “Are you familiar with the term minimum viable product?” is the difference between honest inquiry and biased setups.

The study was, therefore, limited beyond that point. A prime example was the desire, post survey, to know by name exactly what method of startup the respondents did use. Further, it would also be beneficial to know the source of input and training the responding entrepreneurs received prior to beginning their business. Additionally, it would add to discussion significantly to know if their startup was successful, or had closed down, or ended in bankruptcy.

However, asking direct and leading questions such as those would have skewed the survey. Therefore, other studies should be conducted to answer other important and ancillary questions.

Finally, this study was limited by the ability of participants to self-report data. The ability of the respondents to interpret the questions and post their answers accurately was largely uncontrolled by me. Often participants' preconceived notions and predetermined mindsets may influence or skew their responses. Perception was critical.

There are, then, some recommendations for future research.

Recommendations

More studies should be done into this lean startup component. Eight are listed here, somewhat in order of personal ranking, as to how practically soon these studies could be engaged.

First, a future study could focus upon a subset of actual lean startup method adherents who employed that method in beginning their business. Studies should be conducted to determine specific results of having applied lean startup methods. Did those companies succeed or fail? Enough time has passed since 2011 that results can be found. Those surveys should directly target leaders of companies and should help measure the impact, positive or negative, of the lean thinking upon their respective enterprises. Additionally, surveys should be conducted into whether or not the lean startup theory has worked within existing companies beginning new silos, not just full business startups. Existing companies often face harsh realities when beginning new products and services and applying lean principles may be proving helpful.

Second, a study could be done to determine what is being taught in college and university business schools. One wonders whether south Texas colleges and universities have incorporated

new startup paradigms into their business and MBA programs. If not, why not? One educator, who desired to remain anonymous, told me privately that changing his university's already crowded MBA curriculum to include a theory like lean startup was not likely. His thoughts were that their program was "just too limited and the time demands too great." Yet many universities have already adopted the lean startup paradigm. At the very least, it should be taught in a mini-session.

To that end, Craig E. Armstrong (2017) recently published an article in *Management Teaching Review*, and carried by SAGE, entitled "Running Lean Startup in the Classroom: From Idea to Experiment in 1 Week." That well-written article showed how students from undergraduate to MBA level could experience five modules of lean startup principles within five lecture sessions. Students were given the basics on how to "run lean" and at least enlivened the mindset and skillset needed for later new ventures, or expansion within established firms.

Third, a study should be conducted to determine if financial and lending agencies that generally support business startups are including lean startup thinking into the qualifying processes.

Fourth, surveys should be conducted to determine what other, nonuniversity, educational sources are teaching regarding lean startup. Webinars, seminars, online courses, books, magazines, and scholarly articles can be scanned for lean thinking.

Fifth, surveys of existing companies, still within the small business sector, should be conducted to determine whether or not lean principles are being utilized in launching new products and services.

Sixth, are any of the branches of the U.S. military utilizing lean thinking? If so, specifically how?

Seventh, what information is being disseminated from agencies tasked with assisting business startups? Studies should be done to determine exactly what information emanates from institutions, both secular and governmental. Have the state and federal agencies in charge of dispensing advice for hungry entrepreneurs now included the lean startup thinking? If so, to what extent? Are their websites and materials indicative? A specific study should be done in collaboration with the Small Business Administration to determine the following:

- How many entrepreneurs come to them and their resources for help?
- What specific help is given, and does it include lean startup thinking?
- There should be a follow-on survey of those who initially came to the SBA for help to see what advice was followed, and with what results.
- There should be a survey from participants to improve the SBA's resources.

Eighth and finally, a study should be conducted of recommendations for the business community itself. The time for introducing the positive aspects of any business startup theory, including the lean startup methodology, is prior to beginning a business. Startup incubators, whether within the business or academic communities, should consider teaching the lean startup at least as an alternative method. As mentioned, this would also apply to existing businesses that should consider whether the lean startup methods can be effective when launching new products and services. In addition to educational entities, local south Texas and San Antonio organizations such as Geekdom™ and Techbloc™ should provide handy access to lean materials, resources, and courses.

This would also apply to any city or state business assistance too. Importantly, those institutions, organizations, and companies should both report and publicize such efforts. The lean startup impact should be felt.

Conclusions

The successful realization of any entrepreneurial vision requires translating that opportunity into a viable and sustainable business model (Amit & Zott, 2001). As simple as that sounds, this objective is often unrealized, because startup dreams are normally born into a vitreous solution of uncertainty. That uncertainty often reveals itself in terms of both the technical “how to’s” as well as market feasibilities crying “to whom” (Anderson & Tushman, 1990). The lean startup process, while certainly not a panacea, holds great promise for startup enterprises and entrepreneurs. However, no theory, method, or process will prove effectual if it is not known, and therefore, not applied.

This study revealed that although the lean startup thinking has been around since 2003, and specifically published by name since 2011, the south Texas business community had very little knowledge of it. In fact, it hardly seemed to be on the methodology radar and mindset of most queried. Meanwhile the failure rates of newly commenced companies continue to be very high. The number of bankruptcies in Bexar County, Texas, alone each year is staggering. The debate and the dialogue continues regarding best practice for beginning a business.

While the lean startup theory holds much promised guidance for anyone desiring to begin a business, this specific study showed it was not readily known at the street level in south Texas. The trickle-down from origination to shoe leather implementation was either too slow, or was being passed over. Continuous elucidation of the lean startup principles, coupled with incorporation of this process into traditional institutions including MBA programs at universities, may prove effective over time.

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Appendices

Appendix

Note: This Business Startup Online Survey of 13 questions, along with this introductory letter, was emailed to the chosen population and forwarded through SurveyMonkey™

Dear Madam or Sir:

You are invited to participate in a research study about business startups here at the University of the Incarnate Word (UIW).

The information obtained from this survey will be used by me in partial fulfillment of my PhD studies in Organizational Leadership. Filling out this short, 13-question survey will take only 5-6 minutes. Your participation is completely voluntary and you may decline to take this survey if you choose. Please note there is no direct benefit that will accrue to you from taking this survey; however, your participation will contribute directly to my completion of doctoral program requirements, plus it will add greatly to our knowledge and future efforts regarding business startups.

If you are under the age of 18, then this survey is not intended for you and you should disregard the email invitation.

Things you should know-

Your responses to this survey will be anonymous and the research findings from the data collected will be reported in aggregate form. Since I am not collecting any personally identifying information from you, your responses will not be linked back to you.

Taking the survey-

Completing and submitting this survey represents informed consent to participate in the research study. You may choose to opt out of the study at any time. To do so, you may refuse to complete the survey. To take the survey, please click on the link below and follow the directions.

This survey will be available for your response until August 31, 2016.

<https://www.surveymonkey.com/survey-XXXX>

If you have questions at any time about the study or survey, you may contact either:

Gary W. Boyd at boydgary@gmail.com or

Dr. Noah Kasraie@uiwtx.edu.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information or offer input, contact the UIW Institutional Review Board (IRB) at (210) 805-3036. This research and survey tool has been approved by the UIW IRB (IRB #XX-XX-XXX).

Thank you in advance for your time.

Sincerely,

Gary W. Boyd, PhD Candidate 2017

Business Startup Survey

*1. Are you male or female?

- Male
- Female

* 2. What is your age?

- 18-29
- 30-39
- 40-49
- 50-59
- 60 or older

*3. What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree
- High school degree or equivalent (e.g., GED)
- Some college but no degree
- Associate degree
- Bachelor degree
- Graduate degree
- Doctoral degree

*4. Are you White, Black or African-American, Hispanic, Latina/o, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific islander, or some other race?

- White
- Black or African-American
- Hispanic or Latina/o
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- From multiple races
- Some other race (please specify)

*5. What industry does your company belong to?

(Please select the best one from the dropdown box)

- Healthcare
- Non-Profit

- Technology
- Energy & Utilities
- Transportation
- Materials
- Consumer
- Finance
- Education
- Government
- Professional Services
- Manufacturing

*6. What year was your company started?

- Prior to 2000
- 2000 or after

*7. What is your job role?

- Individual Contributor
- Team Lead
- Manager
- Senior Manager
- Regional Manager
- Vice President
- Management / C-Level
- Partner
- Owner
- Volunteer
- Intern
- Other

* 8. How familiar are you with the term: Minimum Viable Product?

- Extremely familiar
- Very familiar
- Somewhat familiar
- Not so familiar
- Not at all familiar

*9. How many companies have you personally helped start?

(Note: If you selected "Not so" or "Not at all" then proceed to the last question #13 please)

- None
- One
- More than one

10. How important was your startup methodology to the way you conduct daily management operations now?

- Extremely important
- Very important
- Moderately important
- Slightly important
- Not at all important

11. Overall, are you satisfied, dissatisfied, or neither satisfied nor dissatisfied with the business startup methodology you used?

- Extremely satisfied
- Very satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Very dissatisfied
- Extremely dissatisfied

12. How likely are you to recommend your startup methodology to others?

- Extremely likely
- Very likely
- Moderately likely
- Slightly likely
- Not at all likely

*13. If you were to give one phrase or sentence of advice to entrepreneurs planning a business startup, what would you say?

- Please comment in the box below:

* indicates required answers