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# EDITORIAL REVIEW BOARD

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# GO FUND YOURSELVES! PREDICTING THE LIKELIHOOD OF OBTAINING CAPITAL THROUGH ONLINE CROWDFUNDING

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## ABSTRACT

*This study explores the various endogenous factors that affect the likelihood of obtaining required capital (LORC) for online crowdfunding platform projects in Kickstarter and The Spark Project. These factors include amount of capital required, campaign length, currency, Facebook connectivity, month of launch, number of FAQs, number of images, number of reward levels, number of updates, number of videos, and product market category. Based on a dataset sample of 400 projects for Kickstarter (95% confidence level) and dataset of 63 projects for The Spark Project (100%) confidence, the researchers conducted linear discriminant analysis and binary logistic regression. The researchers also interviewed three respondents who have had firsthand experience with online crowdfunding. Based on a cross analysis, the results showed that in Kickstarter, the following variables are conclusively significant to LORC: amount of capital required, campaign length, number of images, and number of videos. On the other hand, only amount of capital required was conclusively significant in The Spark Project.*

*In the Philippines, entrepreneurs face multiple challenges to receiving the funding they need from traditional methods. Because of this, many great ideas and profitable ventures fall short even before they could begin. This hampers the innovative environment of the country and makes it harder for the common enterprising Filipino to alleviate their economic challenges and attain their dreams.*

*Given this, rewards-based online crowdfunding has a strong potential to uplift the entrepreneurial ecosystem of the Philippines and to help struggling entrepreneurs by serving as an easy-to-access and viable alternative source of startup capital. Online crowdfunding is a recent phenomenon wherein entities (i.e., project creators) seek funding for their projects by*

*appealing to large groups of people (i.e., potential backers) who provide smaller contributions in order to obtain larger capital within a given period of time. Due to its open and accessible nature, even the most marginalized members of society can benefit from this avenue.*

*Multiple endogenous factors (i.e., features of the campaign) affect a crowdfunding project's likelihood of obtaining required capital (LORC). Based on various studies, the researchers decided to investigate the following variables: amount of capital required, campaign length, currency, Facebook connectivity, month of launch, number of FAQs, number of images, number of reward levels, number of updates, number of videos, and product market category.*

*Using linear discriminant analysis, the researchers found that currency has a discriminating power towards global platforms, while number of FAQs and month of launch have a discriminating power towards local platforms. Likewise, using logistic regression, the researchers found that amount of capital required, number of FAQs, number of updates, and product market category are highly significant ($\alpha = 0.01$) under global platforms (i.e. represented by Kickstarter). In local platforms (i.e., represented by The Spark Project), none of the variables were highly significant, but amount of capital required was very significant ($\alpha = 0.05$).*

*The study also considers the insights of three key stakeholders who had firsthand experience with online crowdfunding, particularly in Kickstarter and/or The Spark Project. All three respondents gave insights on each of the variables, identifying some with significant impact on LORC. For Kickstarter, all three agreed that amount of capital required, campaign length, number of images, and number of videos are significant. For The Spark Project, all three concurred that amount of capital required, Facebook connectivity, number of videos, and product market category have significant impact. They also identified three new variables: story, crowd, and product.*

*With such insights, this study may help aspiring entrepreneurs in the Philippines launch projects successfully through online crowdfunding. The researchers developed a machine learning program based on the results of the statistical analysis of this study, which will be turned into an application that determines the likelihood of a project's success at obtaining LORC and its suitability in local or global platforms based on project features inputted by the user. This will be released as a product for entrepreneurs as a means of helping them plan their project campaigns for success should they set out to access online crowdfunding.*

Keywords*:* Crowdfunding, LORC, endogenous factors, project campaign, project creators, backers, Kickstarter, The Spark Project

## INTRODUCTION

Crowdfunding is the "financing of a project by a group of individuals (collectively, 'the crowd') instead of professional 'accredited' entities or individuals such as banks, venture capitalists or business angels" (Mitra, 2012, p. 67). As globalization accelerates the e-commerce industry, it is becoming easier to access countless resources online. The most common methods of attaining capital funding have been through equity and debt, but online crowdfunding has made its niche by providing unique attributes that traditional methods do not have (Beier & Wagner, 2015). Many entrepreneurs are unable to access traditional methods due to a lack of credit rating, low starting capital, the need for collateral, and stringent requirements. Furthermore, it is often difficult to convince a few investors to invest large amounts of money, especially for novel and innovative ideas. In the Philippines, these issues are very apparent, compounded by the fact that the economy is predominantly impoverished.

Online crowdfunding has the potential to address all these issues and to help entrepreneurs. The avenue does not have stringent requirements. It is easily accessible through the internet. It does not rely on a few large investors, but rather, on small investments made by many investors. It has a free and convenient marketing system and promotes novel and innovative ideas. It also encourages the promotion of social causes, allowing marginalized members to benefit from the contributions of many in an effort similar to social enterprises.

Nonetheless, online crowdfunding is not perfect, and projects are prone to fail if they are not managed correctly. As such, this study seeks to gain a better understanding of how certain features (i.e., endogenous variables; crowdfunding campaign elements) impact a project's likelihood of obtaining the capital amount it needs.

Before proceeding, an important term to consider is the likelihood of obtaining required capital (LORC). This refers to how likely a project will successfully reach its capital target within its campaign period.

In this study, the researchers set out to answer the following research questions:

What is the likelihood that a crowdfunding campaign would best be suited for global or local crowdfunding platforms, given the following factors:
Amount of Capital Required
Campaign Length (*for Kickstarter only*)
Currency (*for Kickstarter only*)
Facebook Connectivity
Month of Launch
Number of FAQs
Number of Images

Number of Reward Levels
Number of Updates
Number of Videos
Product Market Category

Considering the case of a global and a local platform, what are the odds that the likelihood of attaining its required amount of capital would increase or decrease given the following variables:

*See the 11 variables listed in Research Question 1*

To what extent do the discriminant functions used in this study provide an accurate representation of the predicted group membership of crowdfunding projects within global and local crowdfunding platforms?

To what extent do the logit link functions used in this study provide an accurate representation of the relationship between the endogenous factors and the likelihood of attaining the required amount of capital?

From a qualitative standpoint, what factors contribute most prominently to the success of crowdfunding projects at attaining their capital targets in global and local crowdfunding platforms? How do these factors contribute to such success?

Furthermore, the researchers fulfilled the following **research objectives:**

- To ascertain which endogenous factors affect the likelihood of crowdfunding projects being grouped in either global or local crowdfunding platforms, and to what extent these factors do so;
- To determine which endogenous variables, affect the likelihood of crowdfunding projects obtaining their required amount of capital in global and local crowdfunding platforms, and to what extent these variables do so;
- To determine the statistical significance between the relationships mentioned in the first two objectives, and the goodness of fit for the models used in this study;
- To create a predictive machine learning model using linear discriminant algorithms and logistic regression algorithms that would enable crowdfunding project creators to know the likelihood of attaining their required amount of capital, and to determine whether global or local platforms are more appropriate based on the characteristics of their projects; and,
- To determine how and why such significant endogenous variables affect the likelihood of crowdfunding projects obtaining their required amount of capital, through the insights derived from a qualitative in-depth interview.

In the succeeding table, the **hypotheses of the study** are listed and detailed:

**Table 1**
**Hypothesized Relationship of Endogenous Variables**

| Variable | Label | Expected Sign | Alternative Hypothesis | Null Hypothesis |
|---|---|---|---|---|
| | | | ($H_A$) | (Ho) |
| Amount of Capital Required | $X_{CAP}$ | Positive | The variable increases the LORC of an online crowdfunding project campaign | The variable *does not* increase the LORC of an online crowdfunding project campaign |
| Campaign Length | $X_{LEN}$ | Positive | | |
| Currency | $X_{CUR}$ | Positive | | |
| Facebook Connectivity | $X_{FBC}$ | Positive | | |
| Month of Launch | $X_{MON}$ | Positive | | |
| Number of FAQs | $X_{FAQ}$ | Positive | | |
| Number of Images | $X_{IMG}$ | Positive | | |
| Number of Reward Levels | $X_{RWD}$ | Positive | | |
| Number of Updates | $X_{UPD}$ | Positive | | |
| Number of Videos | $X_{VID}$ | Positive | | |
| Product Market Category | $X_{CAT}$ | Positive | | |

Likewise, the study considers two *a priori* propositions for its qualitative analysis:

Proposition 1: *There are select factors (i.e., those identified in the related literature and the research questions of this study) that affect the likelihood of obtaining the required capital for crowdfunding projects, for local and international crowdfunding platforms.*

Proposition 2: *There are other factors (i.e., those not identified in the related literature and the research questions of this study) that affect the likelihood of obtaining the required capital for crowdfunding projects.*

Furthermore, the study considers several **limitations:**

Study only covers rewards-based crowdfunding projects
Study only samples Kickstarter and The Spark Project
The study considers aggregate data due to lack of access to time series data
The statistical results for Kickstarter have a 95% confidence level
Only three respondents were considered, for purposes of accessibility and focus
The study does not specifically investigate other possible factors beyond the eleven listed out, although it does employ a stochastic error term in its statistical analysis

## LITERATURE REVIEW

Research has shown that financing in the Philippines, especially by SMEs, has proven to be difficult. SMEs become risky and costly as they face the following challenges and limitations that make it difficult for them to even reach banking standards: poor credit history, limited track

record, lack of credit info, limited acceptable collateral, unstable business type/environment, limitations in financial and management capabilities, and lack of familiarity with SME business environment (Aldaba, 2012). The Philippines has enough resources to assist in funding SMEs but difficult processes, requirements and regulations make it difficult to do so. Therefore, the lack of access to financing is observed to be the most difficult constraint to SME growth (Aldaba, 2012; Ibrahim, 2015).

With this financial problem the concept of crowdfunding has become ever-more significant. Schwienbacher and Larralde (2010) described it as an innovative and relatively new method for funding a variety of new ventures whether for-profit, cultural, or social projects through the financial support of many individuals, usually in exchange for future products or equity. Projects range greatly in terms of goals & magnitude from small artistic ones to large-scale businesses. Further studies also show the benefits of the model of crowdfunding in various forms such as traditional approach streamlines with acquiring capital made is made easier by providing the economy more opportunities to grow at a faster rate. Moreover, larger audiences are reached as through the internet, online crowdfunding becomes an internal hub for entrepreneurs and potential investors to interact. Startup creation is also made efficient, from the introduction of a product or service to the PR and Marketing, and to its payment processing scheme. And with its unique model, it not only holistically prepares startups by looking at every angle of the business, but also crowdfunding has ingenuity at its score. It provides excellent opportunities for refinement of products/services; its success largely boils down to its purpose, innovation, and demand in the market (Garecht, n.d.; Jenik et al., 2017; Kraus et al., 2016; Mollick, 2014; The World Bank, 2013).

**Table 2**
**Review of Related Literature – Main Findings and Insights**

| **Main Author/s (Year)** | **Topic/Variable considered** | **Relevant Insights and Findings** |
|---|---|---|
| Mollick (2014) | Endogenous factors: Amount of Capital Required | Likely backers lean towards projects that provide them a higher sense of security in terms of investments. |
| Pappaioannou, 2006; Patnaik, et. al., 2015 | Endogenous factors: Currency | Crowdfunding projects can reap potential hedge benefits but also face risks that come because of fluctuations in the foreign exchange market. |
| Cumming, et. al., 2015; Crossetto & Regner, 2014; An et. al., 2014 | Endogenous factors: Number of Reward Levels | Backers have a positive perception of certain types of rewards, particularly product-oriented rewards. *Number of reward levels* also affect their perception. |

| | | |
|---|---|---|
| Canada Media Fund (2015) | Endogenous factors: Campaign Length | The right length of time is essential to the success of a campaign. The optimal length for a campaign is 45 days. |
| Liu, et al. (2010); Canada Media Fund (2017) | Endogenous factors: Product Market Category | Product market categorization allows the segregation of a "heterogeneous market" into a group of "smaller homogeneous markets". This addresses different demands and product preferences that may positively affect campaign's promotion under certain circumstances. The Canada Media Fund reveals the following findings in terms of success rates at Kickstarter: Games (35%), Film (40%), Dance (71%), Theater (64%), and Music (55%). These suggest that certain market categories are more successful than other market categories and could suggest a correlation. |
| Beier & Wagner, (2015); Kerkhof, (2016) | Endogenous factors: Facebook Connectivity | Social capital is a very important tool for marketing crowdfunding projects, since having a strong social network aids in the marketing of a project. Through Facebook, project creators can reveal their project, market their product, and have constant interaction with the potential backers. |
| Daniele & Gangi (2017); Kerkhof (2016); Mollick (2014) | Endogenous factors: Updates | Updates serve as a means for project creators to communicate with backers. Furthermore, they send out "quality signals" to backers, assuring them that their investment going through progress in a quality product. |
| Shane and Cable, (2002); Chen, et al., (2015) | Endogenous factors: FAQs | Information asymmetry is one of the problems that entrepreneurs encounter when they start a project. Due to this, backers lack knowledge on the project's success, thus creating risk and doubt. Having FAQs is a form of interaction with the backers that assures them of the credibility of the project. |
| Jiang & Benbasat (2007); Koch & Siering (2015); Mollick (2014); Egger (2001); Fogg, et al. (2001); Park & Hopkins (1993); | Endogenous factors: Number of Videos | Videos provide backers with a better understanding of the project and serve to grab attention and add aesthetics. Furthermore, they provide a visual appeal that static images cannot. They allow backers to "meet" the project creators virtually, establishing greater trust. It also sends quality signals that reassures backers, as magnified through the Matthew Effect. |
| Siri (2015); Coveyou (2017) | Endogenous factors: Month of Launch | Campaign times are typically short. As such, project creators must execute these at optimal times. When planning when to launch a project, the creator must consider times and seasons potential backers are most likely connected online. Holiday seasons are least profitable. |

## RESEARCH DESIGN AND METHODOLOGY

The researchers based their assumptions on *Shul Vun Thun's Theory of Communication* aka the Four-Sides Model (Kraus, 2016), which Kraus (2016) adapted in his own theory of crowdfunding. The theory suggests that any message sent from a sender to a receiver comprises of four types of information: facts, self-revealing, relationship, and appeal. In relation to crowdfunding, these four types can be likened to the features of a crowdfunding page.

In line with this theory, the researchers proposed a conceptual framework that details each of the eleven endogenous factors surfaced from the literature, and listed in the hypothesis as having an effect, whether positive or negative, on the LORC of a campaign.

A *convergent parallel mixed methods* research design was used (Creswell, 2014), wherein both the quantitative and qualitative analyses were conducted at roughly the same time, followed by a cross-analysis and integration of results to generate further insights.

Throughout the analyses, two main platforms were used as samples - Kickstarter as a representative of global rewards-based crowdfunding platforms, and The Spark Project as a representative of local ones. For the quantitative analysis, datasets were sourced from publicly available data. For the qualitative analysis, information was gathered from interviews.

In the quantitative analysis, a predictive machine learning model with two main components was created. The first was a *linear discriminant analysis* (LDA) model that predicts the appropriate group membership of crowdfunding projects in either local or global crowdfunding platforms and determines the strongest discriminating variables amongst the eleven variables. The second is a *logistic regression* model that tests the significance of the eleven variables of this study on the LORC of projects, based on the datasets used. The logistic regression analysis was conducted twice - once for Kickstarter, and once for The Spark Project - since the researchers speculated that the variables with a significant impact on LORC would vary between global and local platforms.

In the qualitative analysis, *guided, semi-structured in-depth interviews* were conducted, centered primarily on the eleven variables. This involved three key respondents who have had firsthand experience with online crowdfunding in Kickstarter and/or The Spark Project. One respondent was Patch Dulay, the CEO and founder of The Spark Project, who also has experience in creating and backing projects locally and internationally. The other respondent was Richard Dacalos, the creator of the Upstart board game, which was successfully funded in both Kickstarter and The Spark Project. He is also a project backer in both platforms. The other respondent was Stephen Co, creator of Tropic Haze, which is one of the first projects in The Spark Project. He is also a project backer in The Spark Project. It is worth noting that none of the respondents were told the results of the statistical analyses before or during the interview, so as to avoid biasing their responses.

The results from both quantitative and qualitative analyses were then compared in a cross-analysis that focused on the endogenous factors that most affect LORC, as well as identifying variables for future studies to investigate.

To see a summary of the methodology design described, see the figure below:

## DATA ANALYSIS AND INTERPRETATION (QUANTITATIVE)

For the quantitative analysis, the researchers first performed linear discriminant analysis (LDA). However, prior to that, they performed certain pre-tests such as: a Covariance Matrix Heteroscedasticity Test and a Multivariate Outlier Test, wherein necessary adjustments to the dataset were made. The linear discriminant analysis results are below:

**Table 3**
**Standardized Canonical Discriminant Function Coefficients**

| Independent Variables | | Canonical Coefficients |
|---|---|---|
| Currency | USD | 4.437 |
| | CAD | 2.369 |
| | GBP | 3.538 |
| | AUD | 1.893 |
| Month of Launch | Jul | -0.157 |
| | Sep | -0.135 |
| | Nov | -0.113 |
| Number of FAQs | | -0.202 |

The group centroid for local platforms was derived to be located at -10.876 on an axis, while that of global platforms is located at 1.699. Considering the midpoint of -4.5885 between both centroids, observations with discriminant scores greater than -4.5885 are more likely to be suited for global platforms, while those with discriminant scores less than -4.5885 are projects that are more likely to be suited for local platforms. Hence, variables with positive coefficients make a project more likely to be suited for global platforms, while those with negative coefficients point to local platforms.

The discriminant score of an observation can be calculated by substituting values in the discriminant function:

$$x\lambda = (4.437)X_{CURusd} + (2.369)X_{CURcad} + (3.538)X_{CURgbp} + (1.893)X_{CURaud} + (-0.202)X_{FAQ} + (-0.157)X_{MONjul} + (-0.135)X_{MONsep} + (-0.113)X_{MONnov} + \varepsilon$$

To determine the goodness of fit for the linear discriminant model, the researchers examined its eigenvalue (18.568), and its Wilk's Lambda (0.051, sig. 0.000). Since the eigenvalue is a positive non-zero value, and Wilk's lambda is significant, then the model used for the LDA is good representation of the given phenomenon.

After the linear discriminant analysis, the researchers performed binary logistic regression analysis twice—once for global platforms (i.e. Kickstarter), and another for local platforms (i.e. The Spark Project). Prior to which, they also did certain pre-tests such as: Multicollinearity Test, Misspecification Test, and Autocorrelation Test. The results of such pre-test showed no problems in the datasets. The results for the binary logistic analysis are as below:

**Table 4**
**Logistic Regression Results for Kickstarter (Global)**

| | | Coefficient | Odds Ratio | p-value | Significance |
|---|---|---|---|---|---|
| Constant | | 1.82922 | - | 0.2022 | |
| Amount of Capital Required | | −0.731154 | 0.4814 | <0.0001 | *** |
| Campaign Length | | −0.0348117 | 0.9658 | 0.0155 | ** |
| Number of Videos | | −0.261224 | 0.7701 | 0.0135 | ** |
| Number of Images | | 0.0411576 | 1.0420 | 0.0293 | ** |
| Number of FAQs | | 0.308802 | 1.3618 | 0.0074 | *** |
| Facebook Connectivity | | −0.574965 | 0.5627 | 0.0631 | * |
| Number of Updates | | 0.387468 | 1.4732 | <0.0001 | *** |
| Currency | USD | 3.14488 | 23.2170 | 0.0107 | ** |
| | CAD | 2.44607 | 11.5429 | 0.0819 | * |
| | EUR | 3.54397 | 34.6039 | 0.0591 | * |
| | GBP | 2.42095 | 11.2565 | 0.0590 | * |
| Product Market Category | Arts | 1.15396 | 3.1707 | 0.0102 | ** |
| | Music | 1.59048 | 4.9061 | 0.0005 | *** |
| | Film | 1.43325 | 4.1923 | 0.0006 | *** |
| | Publishing | 1.09270 | 2.9823 | 0.0152 | ** |
| Month of Launch | Apr | 0.676241 | 1.9665 | 0.0326 | ** |

*Significant: α = 0.10; **Very Significant: α = 0.05; ***Highly significant: α = 0.01

**Table 5**
**Logistic Regression Results for The Spark Project (Local)**

| | | Coefficient | Odds Ratio | p-value | Significance |
|---|---|---|---|---|---|
| Constant | | 10.9290 | - | 0.0088 | *** |
| Amount of Capital Required | | −1.32592 | 0.2656 | 0.0125 | ** |
| Number of Reward Levels | | −0.290980 | 0.7475 | 0.0796 | * |
| Number of FAQs | | 0.181634 | 1.1992 | 0.0776 | * |
| Number of Updates | | 0.351522 | 1.4212 | 0.0763 | * |
| Month of Launch | May | 2.05191 | 7.7827 | 0.1105 | |
| | Jul | 1.63476 | 5.1282 | 0.0960 | * |

*Significant: α = 0.10; **Very Significant: α = 0.05; ***Highly significant: α = 0.01

Similar to the LDA, the researchers also determined the goodness of fit for both the global and local models. Using three pseudo-R-squared values (McFadden's $R^2$, Cox & Snell $R^2$, and Nagelkerke $R^2$), the researchers arrived at values ranging from 0.353 to 0.506 for the

global model, and 0.250 to 0.384 for the local model. According to McFadden, Hensher, and Stopher (1979), values of at least 0.2 to 0.4 already represent an excellent fit for the model. Hence, the logistic regression models used for this study are accurate representations of the relationship between the different endogenous factors and LORC.

After both linear discriminant analysis and binary logistic regression, the researchers used the derived discriminant function and logit link functions to create a machine learning model that predicts if a project would be more suited to a global or local platform, and if it would have a high or low LORC. The model correctly predicts platform membership 99.30% of the time, and correctly predicts LORC 79.30% for a global platform, and 77.80% for a local platform (considerably greater probability in comparison to chance prediction).

## DATA ANALYSIS AND INTERPRETATION (QUALITATIVE)

The respondents shared contextual insights on all eleven variables set out for this study, as well as on new variables (i.e., quantifiable and unquantifiable) that factor in prominently in a project campaign's LORC. Among the new variables, the most emphasized ones included *story, product* (i.e., quality, marketability), and *crowd* (i.e., initial network, community). For the purposes of this summary, the researchers focus on the insights that indicate that a variable has a significant impact on LORC. These are detailed in the succeeding table:

**Table 6**
**Respondents' insights resulting from in-depth interview**

| | KICKSTARTER | | | | | THE SPARK PROJECT | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Variables** | **PD** | **RD** | **SC** | **Supported** | | **PD** | **RD** | **SC** | **Supported** |
| Amount of Capital Required | ✓ | ✓ | ✓ | FS | | ✓ | ✓ | ✓ | FS |
| Campaign Length | ✓ | ✓ | ✓ | FS | | ✓ | | ✓ | PS |
| Currency | | | | NS | | ✓ | ✓ | | PS |
| Facebook Connectivity | ✓ | | ✓ | PS | | ✓ | ✓ | ✓ | FS |
| Month of Launch | | ✓ | | PS | | ✓ | ✓ | | PS |
| Number of FAQs | ✓ | | ✓ | PS | | ✓ | | | PS |
| Number of Images | ✓ | ✓ | ✓ | FS | | ✓ | | ✓ | PS |
| Number of Reward Levels | ✓ | ✓ | | PS | | ✓ | | | PS |
| Number of Updates | ✓ | | ✓ | PS | | ✓ | | ✓ | PS |
| Number of Videos | ✓ | ✓ | ✓ | FS | | ✓ | ✓ | ✓ | FS |
| Product Market Category | | | ✓ | PS | | ✓ | ✓ | ✓ | FS |
| Story** | ✓ | ✓ | ✓ | FS | | ✓ | ✓ | ✓ | FS |
| Crowd** | ✓ | ✓ | ✓ | FS | | ✓ | ✓ | ✓ | FS |
| Product** | ✓ | | ✓ | PS | | ✓ | | ✓ | PS |

Note: PD = Patch Dulay; RD = Richard Dacalos; SC = Stephen Co;

FS = Full Supported; PS = Partially Supported; NS = Not Supported
** New variables that emerged during the interview

In the table shown, the check marks signify that the designated respondent indicated that the corresponding variable has a meaningful impact on LORC under the given online platform. In cases where all three respondents indicate a significant impact (i.e. three checks), the variable is “fully supported”. In cases with less than three, then it is “partially supported”. In cases with none of the respondents, then it is “not supported”. Table7 contains the further insights of respondents.

**Table 7**
**Insights from the Respondents**

| | PD | RD | SC |
|---|---|---|---|
| **Amount of Capital Required** | "Doable" goal needed; 80-30 rule; backers need to feel like their contribution has impact | Very important in both local and global platforms; lower target may be more effective | Ideal amount would depend on the type of product; although he says its not important, he still makes suggestions and insights. For The Spark Project, somewhere between 600,000 to 800,000 is doable. |
| **Campaign Length** | 30-45 days is ideal; "peak" at start and end of campaign | Nothing more than 30 days is good; First 48 hours is peak of hype | About one month to 45 days; within first two weeks, about 70% of target should have been achieved |
| **Currency** | Says PHP is good for local, but says nothing about its impact abroad | Not a major issue | No major comment; PHP locally is common; |
| **Facebook Connectivity** | FB is a good indicator of social network, and can be valuable for gaining a following prior to a project; "first level supporters" | Facebook has a high penetration rate in the Philippines. FB is not as prominent abroad, since alternatives like Instagram, Twitter, and even Reddit and Product Hunt are chosen for credibility | People tend to do background checks on projects. They would want to investigate the FB page for credibility, information, the creators, etc |
| **Month of Launch** | He implies that projects require preparation phases and timing, he does not make any specific reference to international seasons. Locally, two main seasons: Christmas and Summer. | Can be challenging to time; In the case of Kickstarter, consider when backers pay credit card bills. Consider Christmas and summer | No comment; said it could be important, but did not consider it; just launch when you're not busy and when your project is ready |
| **Number of FAQs** | Important for transparency | Mentioned its inclusion, but nothing on its impact | Although he does not make use of it, he acknowledges it is important for disclosing information in relation to the projects' post-funding activities. In his experience locally, questions are usually directed at him. |
| **Number of Images** | Has comparable effect to videos | Important for showing features | More images is better, but |

| | | | |
|---|---|---|---|
| | | | quality is also important |
| **Number of Reward Levels** | 5-7 Levels based on Kickstarter insights. One must appeal to different appetites; for The Spark Project, minimum of 500 pesos, max of 10K reward | 3 is optimal; fewer is good to make things less confusing | Not as important, but maybe 5 would be good |
| **Number of Updates** | Transparency is important to assure backers; noise needed to keep people engaged, even if some projects do not post | Emphasized the use of videos for updating people, rather than the typical updates (text-based) | More updates would be better to give the impression of movement and progress; good for marketing |
| **Number of Videos** | Video is one of the first things that a potential backer sees and acts as first pitch. | Videos are essential for building trust and getting backers to trust the creator | Quality of video is essential; however, having just one would be enough |
| **Product Market Category** | Suggests that Kickstarter started out as film and art, then got tech projects; but made no insights on current trends and impact. Locally, product design (fashion, bags, shoes, etc.) and food that doesn't spoil quickly are popular. | Simply mentioned check Kickstarter statistics but did not give any specific insights. Mentioned that in The Spark Project, all rewards-based products are more popular or prominent | Product category should be determined based on target market; "crowfundability" (i.e., can the product thrive on crowdfunding, or should you course it through other funding methods); follow trends. In The Spark Project, tangible and durable products are the most popular |
| **Story**** | The most important factor: it lets people relate to the project and the team behind it | "Why are you crowdfunding"; if money is the motive, then don't do it; a good story is important to back good video, etc. | Story is essential, and he asserts it's the most important factor; story can determine whether a product can be crowdfunded or not; most projects that succeeded had "a good story to tell" |
| **Crowd**** | Friends and network who a project creator initially taps; 80 percent of funding comes from them; need to identify them first before launching | Larger starting community is good, since 33% of funding target will come from them | Suggests that one must approach initial family and friend first when asking for funding; also, importance of marketing is emphasized |
| **Product**** | A unique product is a source of motivation for people who want to own a product before it even reaches the market; Quality is essential | | Product needs to be timely and relevant to market demands. If product is not relevant or timely, then it might not succeed, even with a good story |

** New variables that emerged during the interview

## DATA ANALYSIS AND INTERPRETATION (CROSS-ANALYSIS)

initially, variables were identified that were significant to LORC based on statistical analysis and the insights of respondents. Now, the results from both methods are compared, as shown in the next table:

**Table 8**
**Tabulated Cross Analysis results**

| Factors | Quantitative | | Qualitative | |
|---|---|---|---|---|
| | Kickstarter | The Spark Project | Kick-starter | The Spark Project |
| Amount of Capital Required | ✓ (-) | ✓ (-) | FS | FS |
| Campaign Length | ✓ (-) | | FS | PS |
| Currency | ✓ (+) USD, CAD, EUR, GBP | | NS | PS |
| Facebook Connectivity | ✓ (-) | | PS | FS |
| Month of Launch | ✓ (+) Apr | ✓ (+) Jul | PS | PS |
| Number of FAQs | ✓ (+) | ✓ (+) | PS | PS |
| Number of Images | ✓ (+) | | FS | PS |
| Number of Reward Levels | | ✓ (-) | PS | PS |
| Number of Updates | ✓ (+) | ✓ (+) | PS | PS |
| Number of Videos | ✓ (-) | | FS | FS |
| Product Market Category | ✓ (+) Arts, Music, Film, Publications | | PS | FS |

*✓ = Statistically significant
FS = Full Supported; PS = Partially Supported; NS = Not Supported

The results of the cross-analysis show the variables that are conclusively impactful (considered both significant in the quantitative analysis and fully supported in qualitative analysis) to the LORC of a campaign project and those which require further study.

## CONCLUSIONS AND RECOMMENDATIONS

The following are the variables that were both statistically significant (quantitative method) and fully supported by all three respondents (qualitative method) for each platform:

### Kickstarter

- Amount of Capital Required
- Campaign Length
- Number of Images
- Number of Videos

### The Spark Project

- Amount of Capital Required

All variables not mentioned above as to be considered both statistically significant (quantitative method) and fully supported by all three respondents (qualitative method) for each

platform require further studies as these variables only showed some form of support for only either the quantitative or qualitative method.

**Table 9**
**Table of Accomplished Objectives**

| **Approaches** | Methods | Research Question(s) Addressed | Objectives Addressed | A priori propositions |
|---|---|---|---|---|
| **Quantitative (Phases 1 & 2)** | Linear Discriminant Analysis<br>Binary Logistic Regression<br>Predictive Machine Learning Model | 1,2,3,4 | 1,2,3,4 | 1 |
| **Qualitative (Phases 1 & 2)** | Qualitative in-depth interviews | 5 | 5 | 2 |
| **Quantitative & Qualitative (Phase 3)** | Cross-Analysis of Findings | 2,4,5 | 1,2,4 | 1,2 |

*Machine Learning Program (Contribution to Practice)*

As mentioned earlier, the Python-based machine learning program uses a supervised discriminant algorithm and logistic algorithms to predict platform membership and LORC. To execute the algorithms, the program implemented the *pandas*, *numpy*, *matplotlib*, and *sklearn* modules. The researchers hope that this program can and will be implemented in various online crowdfunding platforms to help future entrepreneurs determine which platform is best suited for them, and if their projects are predicted to have a high LORC.

The program is available at this link:
https://github.com/J1Barcelon/crowdfundingPredictor

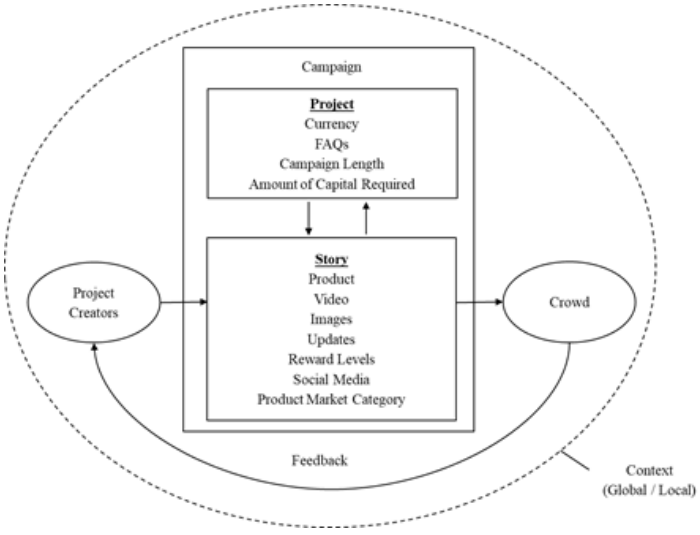
***Theory Recommendation (Contribution to Scholarship)***

Based on the results of the study, the researchers propose a new theory to contribute to academic research on the topic. The new theory is a modification to the crowdfunding adaption to the Theory of Communication described earlier in Chapter 3. Among the changes to the theory include the *project owners* of the message is replaced with *project creators* while retaining the *crowd* element. In addition, the *project* element was replaced with *campaign*, wherein *campaign* refers to the general phenomenon behind a crowdfunding project, encapsulating two new concepts or layers: *story* and *project*. The *story* consists of certain variables that act as the foundation of a campaign. The researchers believe that in a crowdfunding context, story includes variables that answer the 5Ws, what, where, why, when, where, who, and how. This also pertains to the first components project creators usually address when conceptualizing a crowdfunding campaign, which in turn are also the first aspects the

crowd will usually acknowledge or identify in a campaign. These variables are namely: *product, video, images, updates, reward levels, social media, and product market category.* Together, these creates a coherent story of the campaign and how it's delivered. These are based on the qualitative results; the *story* of a campaign communicates is ultimately one of the main factors that contributes to its successful backing. Ultimately, the campaign cannot move forward if the project creator is not convinced with the compulsion of the campaign's story.

On the other hand, *project* includes technical and external variables that are influenced by the campaign's story and are technical aspects that also contribute to the information communicated by the project but do not directly affect the story. These include *currency, FAQs, campaign length, and amount of capital required.* With the explanation of the concept behind the separate layers, story and project, the researchers believe that under campaign, these are mutually inclusive, where one cannot exist without the other. However, factors that differ between these two concepts are based on the variables' indispensability in communicating the essence of a campaign as well as their significance to LORC based on the study's quantitative and qualitative analyses. The researchers proposed is the inclusion of a *feedback* element from the crowd to the campaign, which is communicated back to the project creators. While many responses are possible, feedback in the context of crowdfunding is merely limited to the dichotomous choice of whether one backs the project or not to determine campaign's effectivity. Thus, the flow of communication, begins with the project creator first conceptualizes the story then extracts the project details. Upon communicating the campaign, the crowd processes the story, recognizes the project or details behind it, and gives feedback on the campaign to the project creators. The entirety of this theory's outcomes will then be based on the interaction that occurs in either the global or local context due to the varying results from using global and local crowdfunding platforms. This modified theory, is visualized in Figure 1:

**Figure 1**
**Proposed revised theory of communication**



### *Recommendations for Future Research*

As for our recommendation for future research, we identified six (6):

1. Extend the topic to other types of crowdfunding (debt, equity, donation-based)
2. Extend the topic to other prominent online crowdfunding platforms (Indiegogo, Gofundme, etc.)
3. Acquire a greater sample dataset confidence level, perhaps 99%
4. Look into factors discovered in the qualitative aspect of this study, outside the initial list of endogenous factors (e.g. Product, Story, Crowd)
5. Review the differences in quantitative and qualitative results of this study and create as basis for future research to confirm, explore, and explain these differences
6. Program a graphical user interface (GUI) using packages such as *tkinter* or *kivy*

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# REVENGE OF THE ELECTRIC CAR IN THE 2020s: A CASE STUDY

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**ABSTRACT**

*To say Elon Musk is a disrupter is quite an understatement. The self-made billionaire has transformed several industries (Electric Vehicles, financial services, space travel, hyperloops, artificial intelligence, etc.). He is also a charismatic marketing genius who is able to create buzz and excitement whenever he speaks or tweets. Tesla is the king of Electric Vehicles (EVs) with a state-of-the-art production factory in California. The company delivered 245,000 vehicles globally, and the Model 3 was the top selling electric car in the United States in 2018. The company turned in a profit for the first time in 2019; and is in the process of building a lithium-battery gigafactory in Nevada and an EV manufacturing facility in China. Between the California and Shanghai factories, Tesla will have the capacity to produce 1 million vehicle a year. The new Roadster, Model Y, and Cybertruck will commence production in 2020. This is all great news for many stakeholders, especially Musk who has never received a paycheck from Tesla. Shareholders voted in 2019 to grant him $2.6 billion in stock options to be vested if Tesla's market value reaches $100 billion by 2028. This could substantially boost the 48-year-old entrepreneur's net worth and make him the richest person on Earth even though he prefers to die on Mars.*

*Now that Tesla has removed every doubt it can be done, nearly every big name in the industry is trying to get a piece of the electric car market. Major automakers are jumping on the EV bandwagon to capture a piece of the growing pie. Audi, Mercedes, Porsche, and Volvo are rolling out luxurious electric vehicles for the first time. GM, Honda, Nissan, and Toyota are upping their EV game. Tesla will soon compete with a sea of EVs both in the United States and overseas. Only time will tell if Tesla and its boss will keep the crown. The paper highlights the challenges involved in the auto industry in general and the EV niche in particular.*

Keywords: Innovation, Entrepreneurship, Self-Made Billionaire, New Product Development, Underdog

## INTRODUCTION

The South African-Canadian-American entrepreneur, Elon Musk, is best known for his cosmic imagination and risk-taking drive to bring about a more high-tech world. Musk has an impressive resume and a knack for founding avant-garde companies, with Tesla as the crown jewel. He is the primary investor with 22% of shares and $80 million invested in 2004. Since then, Musk almost single handedly established the electric car market; and now there is no doubt the future of cars is electric. Tesla is the king of EV with a luxurious and innovative product mix: Roadster, Model S, Model X, Model Y, Model 3, and Cybertruck. Global deliveries in 2018 were 245,000 vehicles, and the company's market capitalization was $43 billion. However, Tesla has struggled to become profitable. After a decade of being in the red and billions of dollars in losses, the company turned a profit for the first time in the third quarter of 2019. The credit goes to the affordable Model 3 and a record delivery of almost 100,000 vehicles to the mass market.

Elon Musk is the world's richest inventor with a net worth of $20 billion. Although Musk is the CEO and Product Architect of Tesla, he has never received a salary from the company. However, his current contractual arrangement could be extremely rewarding if Tesla's market capitalization soars to $100 billion. In January 2019, Tesla shareholders voted to award Musk $2.6 billion in stock options if he manages to hit that market cap in the next 10 years. This is not far-fetched given the company's phenomenal growth in terms of revenues and deliveries. It is safe to say that the self-made billionaire is striving to revolutionize mobility both on Earth and in space, and he might become the world's richest person in the process.

## ELON MUSK

Elon Musk is one of the most controversial inventors in history and he is promising to deliver the future today. He is promising to get rid of internal combustion engines and fossil fuels. He is promising 100% self-driving cars with zero emissions. He is promising hyperloops below Earth and colonies on Mars. Fortunately, he has the passion and the money to make it happen. Known for the companies he has founded or developed including PayPal, Tesla, and SpaceX, Elon Musk has had a gigantic impact on multiple industries and is poised to have a major impact on the auto industry in particular. In the 70's there were a lot of concept cars that were slick and futuristic. However, none of them ever became a reality. The genius of Tesla and Musk is that they are rolling out concept cars and selling them as a production cars. People know what they see will become a reality they will get to enjoy. So Musk/Tesla's brand strategy is: We deliver on the future. For instance, when the Model X was launched in 2015, consumers saw humans driving around in pods shaped like huge eggs, with doors that open upwards like wings, and are smart enough to drive themselves without hitting other cars. In 2019, the Cybertruck came along, and it certainly looked like nothing else. It didn't just look "different," it looked like it was literally from another planet. Nevertheless, its price started at $39,900. The average American consumer can afford a 40-grand brand-new vehicle and that's why Tesla received 200,000 orders ($8 billion in sales) in just 72 hours. A Cybertruck first impression YouTube video has garnered 10 million views and had 40,000-plus comments in a matter of a

few days. Consumers' faith in Musk's ability to deliver the future today has garnered this brand loyalty.

On the other hand, the fact that Tesla's fate is closely linked to Musk's actions is a double-edged sword. Musk is still leading the field in innovation, but he is rebellious and nonconformist. For instance, Musk hopes to die on Mars not Earth! Should he leave the company or suddenly sell his 38.6 million Tesla shares, the stock price will fall dramatically. Musk has arguably too much responsibility serving as Tesla and SpaceX CEO, plus running the Boring Company and OpenAI, which raises the risk of him being pulled in too many directions. Musk is also an unpredictable person. The controversial rocket scientist smoked weed during a live interview causing Tesla's shares to crash and key executives to quit (Mitchell, 2018). Then he settled with the SEC in September 2018 for making alleged "false statements" about a plan to take Tesla private and had to step down as chairman. Musk took the deal to avoid a treacherous battle with the agency that may have cost him his CEO position as well (Goldstein, 2018).

## TESLA

Founded in 2003 and named after the engineering genius Nikola Tesla[i], the California-based company aims to transition the world to electric mobility by manufacturing and mainstreaming electric vehicles (EVs). Commercial production started in 2008 when the Tesla Roadster was debuted. Then Tesla introduced Model S in 2012, Model X in 2015, Model 3 in 2017, Model Y and Cybetruck in 2019. The company went public in 2010 and has roughly 50,000 employees. Global deliveries in 2018 were about 250,000 vehicles. As of 2019, Tesla had a market value of $43 billion. Musk is the primary investor with 22% of shares and $80 million invested (Alvarez, 2019).

**Table 1**
**Number of Tesla Vehicles Delivered Worldwide (2016 – 2019)**

| Quarter/Year | Vehicles |
|---|---|
| Q1 2016 | 14,820 |
| Q2 2016 | 14,370 |
| Q3 2016 | 24,500 |
| Q4 2016 | 22,200 |
| Q1 2017 | 25,000 |
| Q2 2017 | 22,000 |
| Q3 2017 | 26,150 |
| Q4 2017 | 29,870 |
| Q1 2018 | 29,980 |
| Q2 2018 | 40,740 |
| Q3 2018 | 83,500 |
| Q4 2018 | 90,700 |
| Q1 2019 | 63,000 |
| Q2 2019 | 95,200 |
| Q3 2019 | 97,000 |
| Q4 2019 | 105,000 (Forecast) |

Source: Statistica

It has been a bumpy ride for Tesla and Musk. The first Roadster was scheduled to be delivered in 2006. However, production was delayed, and the first 100 vehicles were delivered almost 2 years later in 2008. The Roadster came with a price tag that most people could not afford ($100,000). The price was a message not only about the car, but also the owner. Musk's initial strategy was to position Tesla as a premium product and create a luxury image before gradually producing affordable vehicles for the mass market. His next move was to offer more reasonably priced sedans. Model S was introduced in 2012, and Model X in 2015. In 2017, more than 500,000 orders have been placed for the highly anticipated Model 3. In November 2019, Musk unveiled his company's first electric pickup truck. The Cybertruck is Tesla's sixth vehicle and definitely its most peculiar. Musk taunted Ford and Porsche when he boasted his futuristic truck's torque and speed in a controversial tweet. Then he decided to double down on his new truck's superiority and escalate the war by another provocative tweet boasting a "tug of war" video showing a Cybertruck pulling an F-150 uphill with ease. The tweet garnered 14 million views; and more than 200,000 orders were placed within 72 hours (Liao, 2019). Ford was not very happy with the video and has requested a rematch claiming the first one was not fair.

**Table 2**
**Tesla Models**

| Model | 0-60 MPH (Seconds) | Top Speed (MPH) | Range (Miles) | Price (USD) |
|---|---|---|---|---|
| Roadster | 1.9 | 250 | 620 | 200,000-260,000 |
| Model S | 2.4 | 160 | 370 | 90,000-110,000 |
| Model X | 4.4 | 155 | 325 | 85,000-105,000 |
| Model Y | 5.5 | 130 | 300 | 47,000-57,000 |
| Model 3 | 5.3 | 140 | 300 | 39,000-49,000 |
| Cybertruck | 6.5 | 110 | 250 | 40,000-70,000 |

Source**:** Tesla Homepage (November 2019)

Another distinguishing characteristic of Tesla is the experience of buying and owning the vehicle. Tesla customers do not go to a dealership or haggle with a pushy salesperson. Tesla sells its vehicles directly through its own stores and website. Typically, the stores are placed in upscale malls or wealthy suburbs, very close to the Apple stores on which they were modeled after. The salespeople are not compensated on commission and are there simply to answer questions. Regardless of how the vehicle is purchased (in store or online), Tesla would bring it to the buyer's home, office, or anywhere else they wanted it. The company also offers customers the option of picking their cars up from the factory in Silicon Valley and inviting

their friends and family to a complimentary tour of the facility. If something goes wrong with the car, Tesla's engineers would tap into the car via the Internet and download software updates. All new Tesla cars come standard with advanced hardware capable of providing autopilot. It is noteworthy that the self-driving feature has allegedly caused numerous crashes. Despite the adverse media attention, Tesla has unequivocally defended its autopilot feature. Musk has even boasted that by 2022, Tesla would "probably" stop producing cars with steering wheels or pedals, implying that self-driving cars will be the most desired vehicle type by then (Ottley, 2019).

Regardless of all this hype, Tesla has been in the red from inception until late 2019. Selling a lot more vehicles wasn't translating into profits. Table 3 shows how revenues grew from nearly $15 million in 2008 to $21.5 billion in 2018. Although this may seem like phenomenal growth, the company has lost $3 billion over the last 3 years alone. Though Tesla may be making quality, luxurious, and futuristic vehicles it is no exemplar of financial stability.

**Table 3**
**Tesla Revenues and Losses (2008 - 2018)**

| Year | Revenue (USD) | Operating Expenses | Non-Operating Expenses | Pre-Tax Income |
|---|---|---|---|---|
| 2008 | 14,742,000 | 93,246,000 | 4,181,000 | (82,685,000) |
| 2009 | 111,900,000 | 163,840,000 | 3,817,000 | (55,714,000) |
| 2010 | 116,700,000 | 263,582,000 | 7,317,000 | (154,155,000) |
| 2011 | 204,200,000 | 455,730,000 | 2,434,000 | (253,922,000) |
| 2012 | 413,260,000 | 807,539,000 | 1,794,000 | (396,077,000) |
| 2013 | 1,997,790,000 | 2,074,799,000 | 10,143,000 | (71,426,000) |
| 2014 | 3,198,360,000 | 3,385,045,000 | 97,947,000 | (284,636,000) |
| 2015 | 4,046,020,000 | 4,762,654,000 | 158,995,000 | (875,264,000) |
| 2016 | 7,000,130,000 | 7,667,472,000 | 79,008,000 | (746,348,000) |
| 2017 | 11,758,750,000 | 13,390,840,000 | 576,946,000 | (2,209,032,000) |
| 2018 | 21,461,270,000 | 21,849,340,000 | 616,672,000 | (1,004,745,000) |

Source**:** Macrotrends (2019)

Things turned around for the first time in 2019 when Tesla defied all expectations and achieved $143 million profitability in the third quarter ($1.86 earnings per share versus expected losses of 42 cents per share). That's a breakthrough for the decade-old automaker and its boss who became $2 billion richer that day because of the stock's abrupt spike (Stillman, 2019). Between June and September 2019, Tesla delivered a record 97,000 vehicles to customers. The company is on a smooth ride to sell at least 360,000 vehicles by the end of 2019. Thanks to a strong performance of its Model 3 sedan. Approximately 6,000 cars per week found new homes during the quarter, contributing to the company's bottom line (Liedtke, 2019).

This is good news to many stakeholders, especially Elon Musk who has never taken a paycheck from Tesla, refusing his $56,000 minimum salary every year. In March 2019, Tesla shareholders approved a new payment plan awarding Musk $2.6 billion in stock options, if (and only if) Tesla hits the $100 billion market value cap in the next decade. The $2.6 billion amount was March 21 current stock valuation. Then for the next 10 years, Tesla won't pay its boss anything (no salary, bonus, or stock) until the company reaches that $100 billion market

capitalization. If Musk meets the challenge, he could net more than $184 billion by 2028. If and when that happens, Musk could potentially surpass Amazon's CEO, Jeff Bezos[ii], as the richest person in the world (Wieczner, 2018).

## THE AUTO INDUSTRY

The automobile manufacturing industry has witnessed bumpy roads over the five years to 2019. Revenues have been stagnant, and many companies are in the red. Major players include Audi, Fiat Chrysler, Ford, General Motors, Honda, Mercedes Benz, and Toyota. These companies compete primarily based on price, fuel economy, reliability, styling, and utility.

**Table 4**
**Automobile Industry Revenue Growth (2005 – 2019)**

| Year | Revenue ($ million) | Growth % |
|---|---|---|
| 2005 | 114,143.7 | 0.0 |
| 2006 | 118,143.0 | 3.5 |
| 2007 | 103,503.3 | -12.4 |
| 2008 | 96,822.0 | -6.5 |
| 2009 | 60,645.7 | -37.4 |
| 2010 | 84,591.5 | 39.5 |
| 2011 | 94,458.4 | 11.7 |
| 2012 | 122,839.7 | 30.0 |
| 2013 | 127,758.1 | 4.0 |
| 2014 | 135,121.4 | 5.8 |
| 2015 | 134,445.7 | -0.5 |
| 2016 | 138,571.4 | 3.1 |
| 2017 | 123,508.4 | -10.9 |
| 2018 | 112,384.1 | -9.0 |
| 2019 | 112,540.2 | 0.1 |

Source: IBIS World (2019)

Over the five years to 2024, the industry is expected to continue its struggle. Automakers are projected to continue producing fewer and fewer internal combustion engine cars. As consumers become increasingly environmentally conscious, major players have focused operations on the production of hybrid and electric cars. This product category is set to generate the greatest revenue moving forward. The conventional automobile industry is in the mature stage of its life cycle. Industry output has decreased despite overall economic improvements and rising consumer confidence. Compact vehicles, midsize sedans, and SUVs have been doing poorly. When coupled with brand consolidation, the result is a phasing out of many inefficient vehicles as major players restructure to meet consumer preference. The largest technological change in this industry's products has been more widespread availability of green technologies. Each year, many automakers are reintroducing vehicle makes and platforms to include hybrid or electric versions. The increased production of green vehicles shows a general trend that the industry is heading in. This might be the only factor keeping the industry from getting into the decline stage.

## WILL MUSK'S PASSION PAY OFF?

Despite a considerable net worth hovering around $20 billion, Musk has never taken a paycheck from Tesla, snubbing his $56,000 minimum salary every year. Musk invested 80 million from his PayPal earnings in 2004, then he was awarded $2.6 billion in stock options (valued at today's stock price) to be vested if (and only if) Tesla's market value hits $100 billion by the end of 2028. Under the new payment plan, Musk is the major shareholder in Tesla with 38.6 million shares or 20% of all outstanding shares. In late November 2019, Tesla shares hovered around $330 putting Musk's stake in the company at $12.7 billion. Musk has struggled for a decade to prove that building and selling electric cars can be a sustainably profitable business. Tesla turned in a profit for the first time in the third quarter of 2019, and Musk is optimistic that once the Shanghai factory starts production, Tesla will have the capacity to deliver 1 million car a year. Musk is also the CEO and major shareholder in SpaceX with a 54% stake. His next generation spacecraft, Starship, may eventually take humans to Mars for a mere $100 grand for a one-way ticket. Students born in the 2000s will see this in their lifetime. The impact on Musk's net worth will be astronomical if this borderline science fiction materializes!

Some students may contend that if Model 3 along with the new models do well in the United States, China, and Europe; it is not far-fetched that Musk's stake in Tesla could exceed $80 billion by 2028. Other students will argue that gasoline engines are going to remain very relevant for a long time. Even with this push towards electrification, the point where we get to a full battery-electric fleet across the country is very far away. Regardless of the hype generated by Tesla, even the most optimistic forecasts call for full EVs to account for only around 8 percent of the U.S. market by 2025. They represent less than 2 percent today. Also, some students will be skeptical of the 1 million number, given Tesla sold about 250,000 vehicles globally in 2018.

The bottom line is that it will be much easier to answer this question in the future. The one thing we know today is that Musk he has a knack for theatrics. The tech guru seems to be overly optimistic with a tendency to overpromise. And if you are doubting this, watch how he announced the Tesla Cybertruck or SpaceX Starship in November 2019. We have to respect his boldness, but that doesn't mean it's going to be successful.

## WHO WILL COME OUT ON TOP?

Tesla is currently the king of EVs. Tesla's Model 3 is on the leading edge of auto technology but is priced at only $35,000. The upcoming Cybertruck is expected to disrupt the pickup truck market and is priced at only $40,000. In 2019, Tesla was approved to build a manufacturing facility in China and is wrapping up a lithium-battery gigafactory in Nevada. Revenues and deliveries are growing at an exponential rate. In brief, Tesla is the industry leader and has proven that electric cars can be fast, luxurious, and even affordable.

However, the California electric car company will soon have formidable EV competition from premium brands it does not have today. However, with a new wave of electric cars already

on the market or coming from Audi, BMW, Fiat, GM, Hyundai, Mercedes, Nissan, Porsche, Jaguar, and Volvo; Tesla will have to prove itself in a crowded field of competitors. For example, Audi's first-ever EV, the $75,000 e-Tron, is already contributing nearly 5% of the automaker's sales mix. Boeing and Porsche even announced they are jointly developing a flying EV concept for urban settings (Rosevear, 2019). General Motors anticipates the launch of its steering wheel-free, electric Chevy Bolt in 2020. Volvo XC90 self-driving EVs are coming out around the same time. BMW is pushing its "i" models, with the catchy slogan: "Innovation starts with i". Fiat is expected to do well with its all new 500e model. The same goes for the Hyundai Kona. Mercedes is cutting 10,000 jobs around the world to put more resources in EVs as the industry races toward its electric future. The German giant is rolling out its first EV, EQC, in 2020. The Amazon-backed Michigan-based startup, Rivian, is in the process of producing all-electric pickups and SUV. Amazon has ordered 100,000 electric delivery vans, to hit the roads in 2021 and 2022 (Dawson & Naughton, 2019). Toyota announced six new EV models launching for 2020–2025 to meet global demand (Greimel, 2019).

In conclusion, the paper highlights the complexity of mainstreaming futuristic products to the mass market. The paper also attempts to predict who will dominate the EV market in the future. Tesla has a chance to be the dominant EV firm and is a leader in autonomous vehicle technology, but it will probably have to fight harder to maintain its leadership. The competitive landscape is suddenly getting crowded. But Tesla has Elon Musk and the first-mover advantage.

## LECTURE NOTES/DISCUSSION QUESTIONS

Tesla is a marketing case study in endless motion. The author typically starts the case discussion by asking students to go to Tesla's website and spend a few minutes browsing the available models and even customize their own Tesla. This approach triggers a conversation about innovation, creativity, and visionary entrepreneurs. Depending on the scope and time of the class, the instructor can play clips from the two classic documentaries: "Who Killed the Electric Car?" and "Revenge of the Electric Car". This should naturally lead to a debate about the future of EVs and who will dominate that market.

Another approach that the author has found valuable in generating discussion is to poll students: "Would you consider purchasing an EV?" or "What comes to your mind when you hear or see the Tesla brand?" or "What do you think of Elon Musk?" This will get students to talk about their perceptions of both Tesla and Musk. Students could also be asked to browse the websites of other major automakers and check the strides they are making in the EV category. The instructor may ask students to go online after the discussion is over and find updates on Tesla's current deliveries, revenues, and profitability. Finally, since the case has brought up the possibility of Musk becoming the richest person in the world in the next decade, students could be asked to check out his net worth in real time. It would be intriguing to see if his passion for and bet on Tesla has paid off. And if he hasn't beaten Jeff Bezos, students could locate his Roadster in space. After all, it is the only car orbiting the solar system and it should be there for millions of years. As a middle-aged man myself, I believe that having your car in outer space is a more ego-booster than being the richest man in history!

## 1. How did Elon Musk evolve as a maverick entrepreneur?

Elon Musk, (1971-), is a technology entrepreneur and engineer. Arguably, the South African/Canadian/American tech guru has single handedly revolutionized a number of industries. Over the last 25 years, Musk has built an inspiring resume that would normally take many lifetimes to accomplish. Some of the titles held included:

- Founder of The Boring Company
- Co-founder of Neuralink
- Co-founder of OpenAI
- Co-founder of SolarCity
- Co-founder, CEO, Product Architect of Tesla, Inc.
- Founder, CEO, Lead Designer of SpaceX
- Founder of X.com (now PayPal)
- Co-founder of Zip2

Musk grew up in Pretoria, South Africa. When he was 12, he taught himself to code, and even sold the source code for his first video game for $500. After finishing high school, he moved to Canada to attend Queen's University in Ontario. In 1990, he transferred to the University of Pennsylvania, where he received two bachelor degrees (in economics and physics). When Musk was at college, he fed himself for less than $1 a day. In 1995, he moved to California to pursue his PhD in applied physics at Stanford University; but dropped out within days to establish an internet startup with his brother, Kimbal. They started Zip2, a city guide software for newspapers, with a $28,000 loan from their father. In 1999, they sold Zip2 for $307 million, and Elon walked out with $22 million. He invested his Zip2 earnings to co-found X.com, an online banking service. The start-up quickly merged with its rival and became PayPal. In 2002, eBay bought PayPal for $1.5 billion, and Musk netted $180 million. He used $100 million of his earnings to found SpaceX, an aerospace manufacturer and space transport services company. Meanwhile, he invested the remaining $80 million in Tesla, an EV manufacturer, in 2004, the year after it was founded, and became its CEO and product architect. In 2006, he co-founded SolarCity, a solar energy services company (now a subsidiary of Tesla) and functioned as its chairman. In 2015, Musk co-founded OpenAI, a nonprofit research company that aims to promote artificial intelligence. In July 2016, he co-founded Neuralink, a neuro-technology company focused on developing brain–computer interfaces. In December 2016, Musk founded The Boring Company, an infrastructure and tunnel-construction company, specializing in building hyperloops.

Musk has overtly articulated that the mission statements of Tesla, SolarCity, OpenAI, and SpaceX stem from his vision to change the world and humanity. His goals include combating climate change through sustainable energy production and consumption. With a gigantic net worth hovering around $20 billion[iii], Musk is the world's richest rocket scientist. The notorious workaholic who will turn 49 on June 28, 2020, has expressed he won't rest until we have escaped Earth and colonized Mars! His goal is to drop the cost of the trip to Mars from

$10 billion per person today to just $100,000 by 2024. According to him, people should be able to sell their homes on Earth and move to Mars and save money in the process. In other words, the cost of living on Mars will be less than Earth at one point in the future

2. **Develop a SWOT analysis for Tesla.**

| | |
|---|---|
| **Strengths:**<br>- Current dominant player in electric cars.<br>- Location in Silicon Valley.<br>- Strong brand and customer loyalty.<br>- Elon Musk's ingenuity and passion.<br>- Car resale value.<br>- Autonomous driving technology. | **Weaknesses:**<br>- Limited number of charging stations.<br>- Poor financial performance.<br>- Logistical problems delaying deliveries.<br>- Car service limitation.<br>- High prices (some models). |
| **Opportunities**:<br>- Gigafactory can supply competitors with batteries.<br>- Depletion of oil reserves or drastic increase in oil prices.<br>- Innovation and R&D.<br>- Chinese booming EV market and global sales expansion.<br>- Ride-sharing services.<br>- Growing demand for green products. | **Threats**:<br>- More automakers focusing on EVs.<br>- Development of hydrogen-powered cars.<br>- Laws regulating self-driving cars and local dealerships.<br>- Economic slowdown. Another recession would hurt sales. |

3. **Elon Musk is a passionate entrepreneur who runs Tesla for "free". Do you think this passion will pay off and make him the richest person in the world?**

Despite a considerable net worth hovering around $20 billion, Musk has never taken a paycheck from Tesla, snubbing his $56,000 minimum salary every year. Musk invested 80 million from his PayPal earnings in 2004, then he was awarded $2.6 billion in stock options (valued at today's stock price) to be vested if (and only if) Tesla's market value hits $100 billion by the end of 2028. Under the new payment plan, Musk is the major shareholder in Tesla with 38.6 million shares or 20% of all outstanding shares. In late November 2019, Tesla shares hovered around $330 putting Musk's stake in the company at $12.7 billion. Musk has struggled for a decade to prove that building and selling electric cars can be a sustainably profitable business. Tesla turned in a profit for the first time in the third quarter of 2019, and Musk is optimistic that once the Shanghai factory starts production, Tesla will have the capacity to deliver 1 million car a year. Musk is also the CEO and major shareholder in SpaceX with a 54% stake. His next generation spacecraft, Starship, may eventually take humans to Mars for a mere

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## END NOTES

[i] Nikola Tesla (1856–1943) was a Serbian-American inventor known for designing the alternating-current (AC) electric system, which is the predominant electrical system used across the world today.

[ii] Jeffrey Bezos is an American internet entrepreneur, who founded Amazon in 1994.

[iii] Musk was the 23rd wealthiest American in 2019 according to Forbes.

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# EFFECTS OF INTERNAL AND EXTERNAL FACTORS ON ACCOUNTING PROFIT OF FIRMS: A PANEL DATA ANALYSIS FOR GCC COMPANIES

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## ABSTRACT

*This study comprehensively analyzes the effects of internal (micro) and external (macro) factors on the accounting profit of firms in the manufacturing and service sectors of the Gulf Cooperation Council (GCC) countries. The study used balanced panel data of 56 firms in manufacturing sector and 51 firms in services sector for the period of 2013 to 2017. The estimation results of the fixed effect model show that there are five internal and five external factors that significantly affect the profitability of a firm in the manufacturing sector of the GCC countries. The fixed-effect model for the firms in the services sector shows that there are five internal and four external factors that significantly affect the profitability of the firm in this sector. The comparison of actual and estimated profit shows that there exists enough potential for higher profit for the firms in the manufacturing and service sector of the GCC countries.*

Keywords: Accounting profit, internal factors, external factors, profit potential, panel data

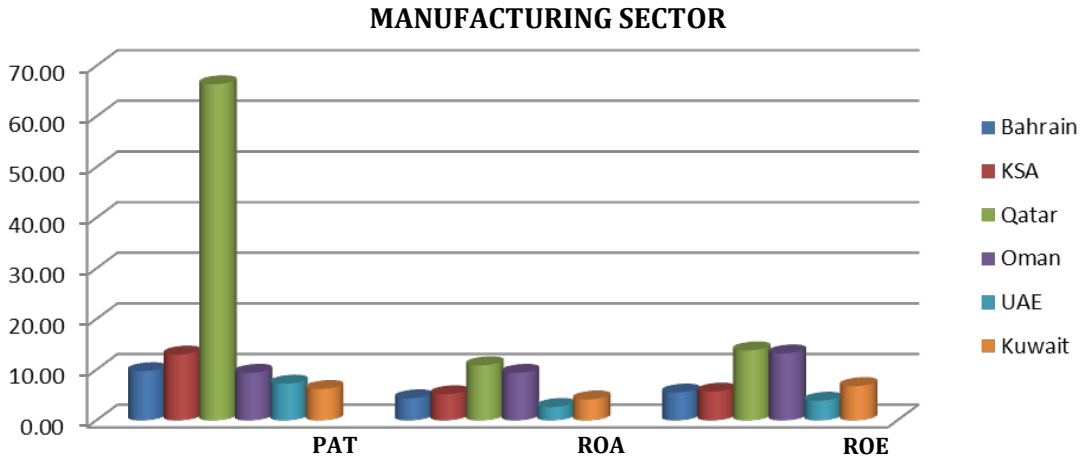
## INTRODUCTION

Profitability is generally considered the most vital precondition for the survival of A company in the long run, and it is the most important aspect in any company or industry—not only from the shareholders' perspective, but also significant for all other stakeholders.

The Cooperation Council for the Arab states of the Gulf, originally known as the Gulf Cooperation Council (GCC), is a regional inter-governmental political and economic union consisting of all Arab states of the Persian Gulf: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). There are several reasons for making the GCC countries as the sample for this study. Firstly, there are few studies on this issue focusing on the GCC countries. Secondly, the previous studies on this region are mostly time-series studies, but this current study uses panel data. Finally, previous studies used simple techniques, while this study used rigorous econometric techniques to analyze the profitability of firms in the GCC countries.

Figure 1 is the sector-wise average profitability, that is, PAT (Profit After Tax), ROA (Return on Assets), and ROE (Return on Equity) trends of firms in manufacturing and services sectors in the GCC countries covering the period 2013 to 2017.

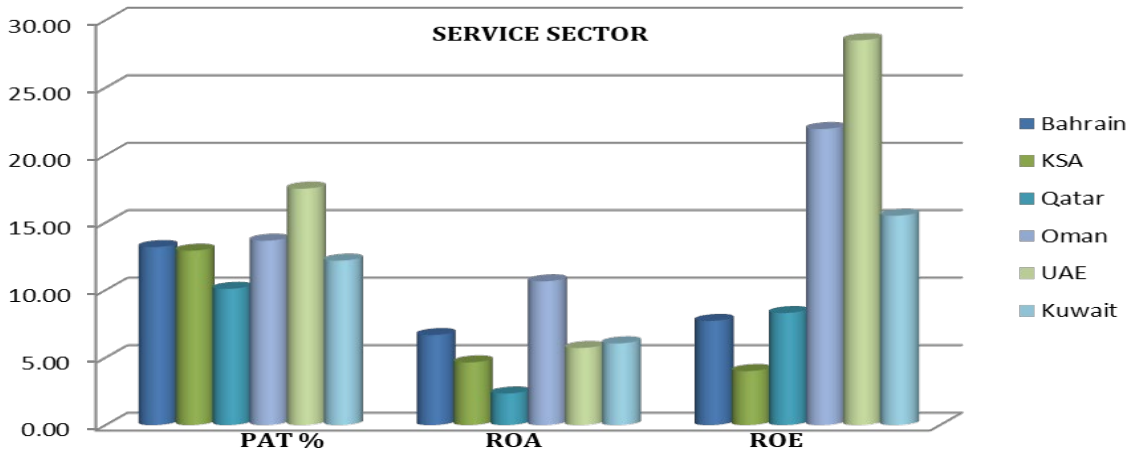
**Figure 1**
**Profitability of Manufacturing Sector in GCC Countries**




Source: Companies' Annual Reports.

In Figure 1, Qatar has a distinctive edge among the GCC countries in terms of PAT percentage, whereas the other countries have close situations to each other in terms of PAT. However, if we look at ROA and ROE, it is not showing much deviation among the GCC countries except in the case of Qatar and Oman as they have a slight edge relative to other participants of the GCC comparatively. In contrast with the manufacturing sector, we can compare the service sector in the GCC as a joint effect which we can see in Figure 2 below.

**Figure 2**
**Profitability of Services Sector in GCC Countries**




Source: Companies' Annual Reports.

Figure 2 shows that the UAE has slightly above average edge in terms of PAT, but in ROE it reflects a distinctive edge over other GCC countries and in both parameters, Oman has a close position with the UAE. In terms of ROA, Oman has a leading position comparatively with others in the GCC. Qatar stands at the lowest point in terms of ROA and PAT, whereas in terms of ROE, KSA reflects the least position.

We believe that this study contributes to the scarce literature on the GCC countries over the profitability of firms in several ways. First, this is one of the very few studies investigating the profitability of firms in the manufacturing and services sectors separately. Second, most of the previous studies ignored the oil-exporting economies in their empirical analysis. This study is based on purely oil-exporting countries. Third, to the best of our knowledge, this is the first comprehensive panel data analysis of profitability in the manufacturing and services sector of the GCC countries, addressing both internal (firm-specific) and external (economy-specific) factors. Finally, the study compares the potential of profitability in the manufacturing and services sectors of the GCC countries.

The findings of this study will be helpful for the policymakers who want to create a well-established environment for the operation and growth of business firms. To achieve the objectives of this study the paper is organized into five sections. Following the introduction, Section 2 discusses the theoretical and empirical literature, and Section 3 presents the modeling framework. Section 4 discusses the model estimation results and potential of profitability in the manufacturing and services sectors of the GCC countries. Section 5 concludes the study, discussing the policy implications, and setting directions for further research.

## LITERATURE REVIEW

We present herein the review of studies that focused only on the micro (internal) factors; then those studies will be presented that also focused on the macro (external) factors of firm profitability. According to the theoretical perspective, the factors that can be used to analyze the firm profitability can be explained in three different classes: firm's characteristics, market-related and industry-related factors. Researchers apply these factors in different dimensions to analyze the firm's profitability. Structure conduct performance (SCP) theory is a school of thought in profitability generation that dominated until the 1980s (Margaret, 2004). This approach believes that exogenous market factors such as the size of distribution in industry guiding the endogenous variable and have a positive impact on the firm's profitability. In the 1970s, market share-based schools of thought in Chicago criticized that the profitability behaves the other way around as claimed by SCP theory. They claimed that efficient firms grow and capture a large share of the market, whereas weak firms may shrink and lose their share until they exit from the market.

The conventional or traditional approach analyzes the profitability based on the industry characteristics but a recent approach emphasis the importance of the variables at a firm-level

which is also named as a resource-based view (RBV). This theory suggests that the firm size and growth have a positive relationship with profitability in large firms due to the economies of scale as it provides a competitive advantage (Yazdanfar, 2013).

The profitability of Greek non-financial firms listed in the Athens stock exchange in the period of 1995 to 2003 (Ioannis, Aristeidis, & Theodore, 2009). The study covering 119 firms with firm size, growth rate in sales, growth rate in investments, and leverage as factors affecting profitability. The panel data analysis was used for the study with the pre- and post-EMU (European Monetary Union) period. Results reflect that sales, growth, firm size, and investment growth have a positive significant effect on profitability, and leverage has a negative impact.

The banks' profitability in terms of ROA and ROE on a sample of a total of 1042 banks mostly focused on Austria over 15 years covering from 1995 to 2009 (Fabio & Walter, 2010). The author used panel data regression analysis by considering economic growth, GDP, foreign lending, change of ownership, and interest rate as macroeconomic factors. The results showed that all three macroeconomic variables such as economic growth, GDP, and interest rate have positive significant effects on banks' profitability, whereas a change in ownership structure and foreign lending does not have a significant impact on profitability.

The profitability of 22 public and private sector commercial banks for the period covering from 2006 to 2009 (Khizer, Muhammed, & Ahmed, 2011). The study uses descriptive correlation regression analysis with a generalized method of movement by considering asset management, GDP, credit risk, and economic growth as macroeconomic determinants of firm profitability. To deal with the problems of multicollinearity and auto-correlation they used Pearson correlation and Durbin Watson tests. The results reflect that asset management, credit risk, and economic growth have a positive and significant relationship with profitability; on the other hand, GDP has a negative effect on profitability.

A study also tested the firm leverage, liquidity ratio, size, and tangibility (fixed asset ratio over total asset) as the determinants for profitability by using the panel data analysis from a sample of 55 manufacturing companies listed in Colombo stock exchange, with over 550 observations covering the period from 2003 to 2012 (Tharmalingam, 2014). The result shows that the firm size and tangibility have a significantly positive relationship and on the other part liquidity and leverage ratio shows an insignificant relationship on firm profitability.

The study analyzes the firms' profitability by considering ROA and ROE as accounting profit indicators (Mark & Chaipoopirutana, 2014). The research used a multiple regression model by using a sample of 39 technology-based companies in Thailand which comprises 11 from electronic sectors while 28 from the Information and communication sector with the period covering from 2003 to 2012. The study considers both accounting factors at the micro-level such as assets base, capital, debt, and liquidity, and macro-economic factors like GDP and inflation into consideration. The findings showed that Debt and GDP both have a significant

impact on debt that reflects negatively, and the GDP reflects a positive relationship with profitability.

Another study examined the factors affecting commercial banks' profitability in Namibia for the period 2001 to 2014 (Sheefeni, 2015). The author used Vector Autoregressive (VAR) analysis on data by using Interest rate, Inflation rate, and GDP as macroeconomic determinants for profitability. The study also employed techniques of unit root, cointegration, and impulse response functions to justify the research model. The results show that GDP, interest rate, and inflation rate do not have a major influence on commercial banks' profitability.

This research also applies the least-square model on panel data analysis by using the sample of 17 industrial sector companies listed in the Muscat securities market covering the period from 2006 to 2013 by considering firm size, growth rate, fixed assets ratio, working capital, and financial leverage as profitability determinants (Al-Jafari & Al-Salman, 2015). The findings show a significantly positive relationship between firm size, growth rate and working capital on firm profitability whereas financial leverage has a negative relationship.

The determinants of profitability were derived from 16 firms in the power and energy sector from Pakistan (Zeeshan, Zahid, Faruukh, Nasir, & Ullah, 2016). The author used panel data analysis with a random effect model for a period from 2001 to 2012 including firm size, age, productivity, growth, and leverage as the determinants of profitability. The results show that firm size and productivity are the strongest determinants and have a positive impact on company profitability, on the other hand, firm age and leverage showed a negative impact. The author also mentioned that in the period of crises where productivity showed a low scale but profitability experiencing the increase curve.

The bank profitability was computed in terms of ROA and ROE by considering the bank-level factors such as bank characteristics, industry structure, bank capital, bank productivity, credit risk, and operating efficiency—as well as macroeconomic determinants like inflation, government yield, cyclical output, and economic growth rate (Anthony, 2017). The study used panel data analysis with a sample of 16 global banks from eight different countries covering the period from 1980 to 2015 with 576 observations approximately. The result showed that bank capital and productivity have a positive significant relationship with profitability, whereas credit risk and operating efficiency impact the profitability on the reduction side and macroeconomic indicators such as inflation and higher economic growth rate spur the firm profitability.

The key determinants of profitability also tested on a sample of 173 Indian listed companies of the manufacturing sector in India under the précises and post crises period by using the Panel generalized least square method and Panel vector auto-regression model covering from 2000 to 2015 (Swagatika & Ajaya, 2017). The author used ROA and NP as accounting factors with firm size and liquidity. The research is also based on macro-economic

factors like exchange rate, interest rate, and leverage. The investigation reflects that liquidity and firm size shows a positive impact on profitability which means that the companies do not have enough liquid resources to invest in other class which can make it positive by making the efficient policies and strategies for effective use of liquid resources. It also concluded that the exchange rate plays a significantly major role in the pre-crises period whereas, the interest rate has a major role in the post-crisis period.

The main determinants of profitability in 5 Indian companies from the telecom sector listed in the National stock exchange covering the period from 2001 to 2017 (Tasneem, Mohamed, & Jatin, 2018). The study used regression analysis with firm size, growth, tangibility, leverage, and liquidity as the determinants. The results based on panel data analysis and showed that firm size and growth have a direct relationship whereas leverage has an inverse relationship. The author also suggests that tangibility has an indirect insignificant impact on profitability, but growth is an indispensable factor that ensures profitability.

One of the other studies the determinants of profitability on a sample of 12 out of 21 manufacturing firms in Nigeria listed in the Nigerian stock exchange from 2011 to 2015 by using firm size, leverage, productivity, and capital base as main determinants (Ifeduni & Charles, 2018). The author used both fixed and random effects techniques and the results based on panel data regression analysis showed that firm size, productivity, and capital base are a more positive significant impact on profitability which representing in terms of PAT, ROA, and ROE.

The researchers also used the multivariate regression analysis on five manufacturing companies listed in the Ghana stock exchange covering from 2005 to 2015 (Kawdwo, 2018). The author tested leverage, liquidity, firm size, tangibility, interest rate, and some other macro-economic factors as profitability determinants. The results showed that liquidity and firm size have a significantly positive impact on profitability. However, leverage and interest rates have a negative relationship with profitability.

The researchers also examined a sample of 20 banks listed in the Pakistan Stock Exchange covering the period of 14 years starting from 2003 to 2016 by considering interest rate, money supply business risk, credit risk, capital adequacy, and industrial production as macroeconomic determinants of firm profitability (Akram, 2018). The study uses panel data analysis with the ordinary least square (OLS) regression model. Evidence provided by the results showed that industrial production, business risk, credit risk, and capital adequacy have a significantly positive impact on profitability. While the other factors have a negative impact on firm profitability.

A study reveals the impact of macroeconomic variables on a firm's profitability by taking a sample of 22 banks in Azerbaijan for the period covering from the 1st quarter of 2012 to the 1st quarter of 2017. The study used panel data analysis by considering inflation expectation,

oil prices, deposits, liquidity risk, exchange rate, bank size, gearing, and GDP as macroeconomic determinants (Hasanov, Bayramli, & Al-Musehel, 2018).

The firm's profitability in terms of ROA, ROE, and net interest margin (NIM) for more than 60 banks from the Indian banking environment covering the period from 2008 to 2017 (Eissa, Tabish, Farhan, Feroz, & Stephanos, 2019). The study uses panel data analysis by considering bank size, asset management quality, capital adequacy, liquidity, operating efficiency, number of branches, deposit, and leverage areas bank-specific factors on profitability. The study also uses macroeconomic factors such as GDP, inflation rate, and exchange rate in the Indian economy. The results reflect that except for the number of branch locations all bank-specific factors have a positive significant impact on portability and all macroeconomic factors also have a significant impact on profitability but a negative side.

**Methodological Framework**

Model to explore the determinants of profitability in the manufacturing sector of GCC countries.

$$PAT_{it} = \propto_0 + \propto_1 SALES_{it} + \propto_2 OPE_{it} + \propto_3 CA_{it} + \propto_4 FA_{it} + \propto_5 CL_{it} + \propto_6 CAB_{it} + \propto_7 EXR_{it} + \propto_8 FDI_{it} + \propto_9 INF_{it} + \propto_{10} CRPVT_{it} + \mu_{it} \quad (3.1)$$

Model to explore the determinants of profitability in the services sector of GCC countries.

$$PAT_{it} = \beta_0 + \beta_1 SALES_{it} + \beta_2 OPE_{it} + \beta_3 CA_{it} + \beta_4 CL_{it} + \beta_5 LTL_{it} + \beta_6 EXP_{it} + \beta_7 IMP_{it} + \beta_8 WINF_{it} + \beta_9 LFPR_{it} + \beta_{10} CRPVT_{it} + \beta_{11} ED_{it} + \omega_{it} \quad (3.2)$$

Here, PAT is profit after tax of firms in the manufacturing or service sectors, while the description of explanatory variables is given in Appendix A. $\propto_0$ and $\beta_0$ are the constant terms, $\propto_1$ to $\propto_{10}$ and $\beta_1$ to $\beta_{11}$ are the parameters which need to be estimated. The sign of coefficients will determine the positive or negative effect of the variables used in the model. The $\mu_{it}$ and $\omega_{it}$ are the error term in each model, respectively. They are assumed to be independently and normally distributed. The data is collected for the period 2013 to 2017 from the GCC countries (Bahrain, Saudi Arabia, Qatar, Oman, the United Arab Emirates, and Kuwait) for 56 firms in manufacturing sector and 51 firms in service sector. This is a balanced panel data with 280 observations of manufacturing sector and 255 observations in the service sector data. The data for internal factors were obtained from the financial statement and financial reports of companies which are available from their websites and some also from the country relevant stock exchange websites, while the data of external factors (macro) were obtained from the regional economic outlook of International Monetary Fund, World Development Indicators of World Bank, and International Financial Statistics of International Monetary Fund.

### Estimation of Results: Determinants of Accounting Profit

The first step is to test the unit root in the variable. Since the period of the study (2013–2017) is very short, we will not apply the panel unit root test. It is assumed that all variables are stationary. The next step in the panel data regression calculation is to decide whether to use a fixed-effect model or a random-effect model. The Hausman specification test is used for the selection of a fixed or a random effect model. The null hypothesis of the Hausman test is that the random effect model is appropriate.

**Table 1**
**Hausman Test Results**

| Test Summary | Chi-Square Statistics | Degree of Freedom | Probability |
|---|---|---|---|
| For Manufacturing Sector Cross-Section random | 167.468 | 10 | 0.000 |
| For Services Sector Cross-Section random | 64.074 | 11 | 0.000 |

Source: Authors' estimation

In Table 1 the result of the Hausman test shows that the null hypothesis should be rejected for the model of the manufacturing and services sectors. Thus, the fixed-effect model is appropriate for the calculation of both sectors' models. The calculation results of the fixed-effect model for the manufacturing sector are shown in Table 2.

**Table 2**
**Micro and Macroeconomic Determinants of Profitability in the Manufacturing Sector in GCC Countries**

| Variable | Coefficient | Std. Error | t-Stat. | Prob. |
|---|---|---|---|---|
| CONSTANT | -2.317 | 0.833 | -2.782 | 0.006 |
| SALES | 0.118 | 0.014 | 8.345 | 0.000 |
| OPE | 0.462 | 0.106 | 4.341 | 0.000 |
| CA | -0.039 | 0.010 | -3.787 | 0.000 |
| FA | -0.053 | 0.009 | -6.617 | 0.000 |
| CL | -0.078 | 0.033 | -2.408 | 0.017 |
| CAB | 0.001 | 0.000 | 3.588 | 0.000 |
| EXR | 1.023 | 0.350 | 2.928 | 0.004 |
| FDI | -0.001 | 0.000 | -2.996 | 0.003 |
| INF | 0.002 | 0.001 | 1.925 | 0.056 |
| CRPVT | 0.001 | 0.000 | 2.009 | 0.046 |
| Adj.-$R^2$ | 0.952 | F-statistic | | 86.428 |
| DW Statistic | 1.992 | Probability (F-stat.) | | 0.000 |

Source: Authors' estimation

The calculation results in Table 2 show that a total of 10 internal and external factors explain 95 percent of the variation in profitability of the firms in the manufacturing sector. It is noticeably clear here that the effect of five internal (micro) factors is stronger than five external (macro) factors (Appendix B), on profitability. Among internal (micro) factors, the greatest effect is of OPE, which has a significant positive effect on profitability. The effects of CA, FA, and CL are negative and statistically significant. The SALES variable has a significant positive effect on the profitability of firms in the manufacturing sector. Among external (macro) factors (Appendix B), the EXR has the strongest positive effect on the profitability of the firms in the manufacturing sector. This indicates that a depreciation of the domestic currency against the dollar will increase the profitability of the firms in the manufacturing sector. The effect of FDI is negative and CRPVT and INF are positive on the profitability of the firms in the manufacturing sector. The CAB has a significant positive effect on PAT. This shows that improvement in the current account balance will increase the profitability of the firms in the manufacturing sector in the GCC countries.

The result of the model shows that it is a good fit model as the adjusted R-square is very high (0.95). The model is overall significant as reflected by the value of the F-Statistics (86.428). The model does not have a problem with autocorrelation as the value of Durbin Watson statistics is 1.992. The model can be used for value predictions that closely reflect the actual values.

The results in Table 3 show that five internal (micro) and six external (macro) factors (Appendix B) explain 97 percent variation in the profitability of firms in the services sector. Among internal factors, the effect of SALES is positive and highest, whereas CA has the lowest effect on the profitability of firms in the service sector. The operating expense (OPE) effect along-with current liability (CL) has a significant negative effect on firms' profitability while long-term liabilities (LTL) have a significant positive effect. Among macro-economic factors, export (EXP), world inflation (WINF), and credit to the private sector have a significant positive effect, while imports (IMP) have a significant negative effect on the profitability of firms in service sector. It is found that the effect of labor force participation (LFPR) and external debts (ED) has an insignificant effect on the profitability of firms in the services sector. The explanatory variable power of the model as reflected by an adjusted-R square (0.97) is very high and the value of F-statistics (140.354) shows that the model is overall significant. The value of Durbin Watson statistics (1.809) shows that the model is free from the autocorrelation problem.

**Table 3**
**Micro and Macroeconomic Determinants of Profitability in the Services Sector in GCC Countries**

| Variable | Coefficient | Std. Error | t-Stat. | Prob. |
|---|---|---|---|---|
| CONSTANT | -0.389 | 0.505 | -0.769 | 0.443 |
| SALES | 0.334 | 0.033 | 10.101 | 0.000 |
| OPE | -0.231 | 0.050 | -4.625 | 0.000 |
| CA | 0.008 | 0.004 | 1.951 | 0.053 |
| CL | -0.096 | 0.018 | -5.328 | 0.000 |
| LTL | 0.041 | 0.021 | 1.991 | 0.048 |
| EXP | 0.001 | 0.000 | 4.321 | 0.001 |
| IMP | -0.002 | 0.001 | -2.487 | 0.014 |
| WINF | 0.006 | 0.004 | 1.648 | 0.101 |
| LFPR | -0.010 | 0.007 | -1.411 | 0.160 |
| CRPVT | 0.002 | 0.001 | 1.610 | 0.109 |
| ED | -0.001 | 0.001 | -0.557 | 0.578 |
| Adj.-$R^2$ | 0.971 | F-statistic | | 140.354 |
| DW Statistic | 1.809 | Probability (F-stat.) | | 0.001 |

Source: Authors' estimation

**Table 4**
**Potential of Accounting Profit**

| Manufacturing Sector | | Services Sector | |
|---|---|---|---|
| *Country* | *Potential* | *Country* | *Potential* |
| Bahrain | 0.948 | Bahrain | 0.809 |
| Saudi Arabia | 1.075 | Saudi Arabia | 0.769 |
| Qatar | 1.089 | Qatar | 1.067 |
| Oman | 0.723 | Oman | 0.963 |
| UAE | 0.797 | UAE | 0.850 |
| Kuwait | 0.459 | Kuwait | 0.882 |

Source: Authors' estimation

Table 4 shows the value of profit potential, which is calculated as the ratio of actual profit to estimated profit (obtained from the regression model). If this ratio is greater than 1, it shows the actual profit is more than the estimated profit and the firm has exhausted all profit. If this ratio is less than 1, it means the actual profit is less than the estimated profit, then we expect (based on internal and external factors) that there is a potential for more profit. The value of this ratio is calculated from each firm in the manufacturing and services sectors and the average is shown in Table 4.4 for each country. Profit is almost exhausted in the manufacturing sector in Saudi Arabia and Qatar. There exists enough profit potential in the manufacturing sector of

Bahrain, Oman, the UAE, and Kuwait. The ratio for the service sector shows that Qatar has exhausted profit in this sector, whereas firms in other GCC countries can still increase their profit as there exists enough profit potential.

## FUTURE RESEARCH

At this stage, we can set some directions for further research. The current study can be performed on an extended sample of firms, and for a longer period. This study used a single equation model but in future studies, the researchers may use a simultaneous equation model for a greater understanding of the profitability of firms. Finally, there is a lack of research on the profitability of firms in the agricultural sectors. Future studies should also include the agricultural sector in their analysis of profitability.

## CONCLUSION

The study was initiated to comprehensively analyze the firms' specific internal (micro) and external (macro) factors that affect the profitability of firms in the manufacturing and services sectors of the GCC countries. The study used balanced panel data of 56 firms in manufacturing and 51 firms in services sector for the period 2013 to 2017. The calculation results of the fixed-effect model for manufacturing and services sectors identified core internal and external factors that explain more than 95 percent variation in the profitability of firms in the manufacturing and services sectors. The most important conclusion of the study is that the effect of internal factors is more on the profitability of firms than external factors. Despite this fact, the external (macro-economic) factors cannot be ignored by the management, while struggling to enhance their profit. The second, conclusion is that the manufacturing firms in Bahrain, Oman, the UAE, and Kuwait need to focus on the determinants of profitability, as there exists enough potential for higher profitability in these countries. The firms in the service sector of Bahrain, Saudi Arabia, Oman, the UAE, and Kuwait need to focus on the internal and external factors of profitability as there exists enough potential for higher profitability in these countries.

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## APPENDIX A

**Description of Variables: Internal (Micro) Factors**

| FACTORS | DESCRIPTION | EXPLANATION |
|---|---|---|
| **SALES** | *Sales* | Refer to a gross sales revenue of the company generated during the year for the concerned period in million USD. |
| **OE** | *Operating expenses* | It included mainly administrative, selling, distribution, and marketing expenses in a period of concern in million USD. |
| **CA** | *Current assets* | Includes the resources probably used and liquidate within a year or an operating cycle of the company in a million USD. |
| **CL** | *Current liability* | This refers to the obligation supposed to be settled within a year or operating cycle in million USD. |
| **LTL** | *Long term liability* | Refers to the obligation supposed to be settled in a period exceeding from a year or operating cycle time in million USD. |
| **FA** | *Fixed assets* | Includes the resources having useful life more than a year in million USD. |
| **ROA** | *Return on assets* | It is a financial ratio showing the percentage return of profit based on overall resources. |
| **ROE** | *Return on equity* | It is a financial ratio calculated by dividing the net income with the shareholder equity representing in percentage term |
| **PAT** | *Profit after tax* | It is a residual portion of profit after deducting the calculated tax amount in million USD. |
| **SSHER** | *Sales & shareholder equity* | It is a ratio between gross sales and the shareholder equity figure representing in percentage term. |

# APPENDIX B

**Description of Variables: External (Macro) Factors**

| | | |
|---|---|---|
| **EXP** | *Exports* | Export of goods and services in billion USD |
| **IMP** | *Imports* | Imports of goods and services in billion USD |
| **CAB** | *Current account balance* | It is a current account balance in terms of percentage of GDP. |
| **WINF** | *World inflation* | World inflation is the growth of GDP deflator of the United States. |
| **CRPVT** | *Credit to the private sector* | This is a bank credit to the private sector in the percentage of GDP. |
| **LFPR** | *Labor force participation rate* | It is a ratio of the adult population that is participating in the labor force. |
| **ED** | *External debt* | It is public and publicly granted external debt in billion USD |
| **INF** | *Inflation* | It is the inflation rate in percentage |
| **FDI** | *Foreign direct investment* | It is a net inward foreign investment in billion USD. |
| **EXR** | *Exchange rate* | It is the exchange rate of domestic currency with USD. |

# LINKING ENTREPRENEURIAL INTENTION AND OPPORTUNITY RECOGNITION: THE ROLE OF SELF-EFFICACY

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## ABSTRACT

*Opportunity recognition is at the heart of the entrepreneurial process. Without an opportunity being recognized as worth pursuing, there is unlikely to be any entrepreneurial activity. Prior research indicates that enterprising individuals intentionally recognize new opportunities, thus highlighting the importance of the relationship between entrepreneurial intention and opportunity recognition. Furthermore, entrepreneurial self-efficacy is seen as a moderator of this vital relationship and is examined in four different entrepreneurship functions: searching, planning, marshaling, and implementing. The research hypothesis is empirically tested using data collected from 309 men and women in the USA. The results underscore the moderating effect of self-efficacy in the searching and planning functions of entrepreneurship—thus strengthening the association between the two cornerstone concepts of entrepreneurial intention and opportunity recognition. Predictions were tested to show that the ability to generate ideas, competency in understanding markets, and capability to convert ideas into feasible and comprehensive business plans lead to opportunity recognition. This is predicated on individuals having high entrepreneurial intentions. These results further reveal that though self-efficacy is evident in the searching and planning functions of entrepreneurship, it is not apparent in the marshalling and implementing functions. Implications and directions for future research are also discussed in this study.*

Keywords: Self-efficacy, entrepreneurial intention, opportunity recognition, planning, searching

## INTRODUCTION

Entrepreneurship research has been fragmented and various constructs including entrepreneurial intention and opportunity recognition have been studied as components of the entrepreneurship process without a clear understanding of how the concepts relate to each other (Thomas & Mueller, 2000). While some researchers emphasized the role of entrepreneurial opportunities as central to the entrepreneurial process (e.g. Shane & Venkatraman, 2000), others contend that the entrepreneurial process is driven by the entrepreneur's intentions (e.g. Mishra & Zachary, 2015). Researchers have drawn attention to the fact that entrepreneurship is a

complex process starting with intentions and ending in venture creation with many components in between (Gielnik et al., 2014).

Although the relationship between intention and entrepreneurial behaviors in general has been empirically verified across studies (Ajzen et al., 2009; Krueger & Brazeal, 1994; Krueger et al., 2000), the nature of the link between entrepreneurial intentions and opportunity recognition is not clear. It is maintained that without intentions, opportunities are not recognized and business opportunities that individuals come across do not result in venture creation (Krueger, 2007; Qureshi & Mahdi, 2014). However, research to date suggests that although individuals may have entrepreneurial intentions, they do not always recognize the opportunities that exist (Jarvis, 2016). An important question remains; What factors affect the relationship between entrepreneurial intentions and the entrepreneur's recognition of opportunities?

Extant literature suggests that entrepreneurs gather information about possible outcomes of exploiting entrepreneurial opportunities. Entrepreneurs conduct feasibility analyses and evaluate their chances of success. Their intentions turn into opportunity recognition when they see potential for success (Shamsudeen, Keat, & Hassan, 2017). In response to calls to incorporate more psychological perspectives into entrepreneurship research (Baron, 2008; Jarvis, 2016; Shook et al., 2003), we examine the role of self-efficacy, as "a psychological state generally defined as possessing self-confidence in performing a specific task" (Mueller & Dato-On, 2007, p. 4), as a moderator of the relationship between entrepreneurial intention and opportunity recognition.

Entrepreneurial self-efficacy represents an entrepreneur's confidence in his or her ability to successfully perform entrepreneurial roles or tasks, reflects perceived competence of the entrepreneur (Chell, 2013; Krueger & Dickson, 1994) and the perceived feasibility of the opportunity (Douglas, 2013). Entrepreneurial self-efficacy is expected to affect whether the individual's entrepreneurial intentions lead to recognition of opportunities.

In this study, it is proposed that self-efficacy in the searching, planning, marshaling, and implementing functions of entrepreneurship moderate the relationship between entrepreneurial intention and opportunity recognition. We expect individuals who have entrepreneurial intentions and believe in their abilities to successfully perform various functions of entrepreneurship to be more likely to recognize entrepreneurial opportunities. We test our hypotheses with a sample from the United States collected using Amazon Mechanical Turk (MTurk). Research shows that MTurk is a powerful tool when the right procedures and checks are followed as in this research (Hunt & Scheetz, 2019). Our results provide partial support for the moderating effect and suggest that when individuals have high self-efficacy in search and plan functions of entrepreneurship, their entrepreneurial intentions are more likely to result in opportunity recognition.

Two foundational concepts of entrepreneurship are examined: entrepreneurial intention and opportunity recognition. In doing so, we seek to advance the scholarly understanding of opportunity recognition and entrepreneurial intention and examine entrepreneurial self-efficacy as a moderator of this relationship (Jarvis, 2015). This study also responds to calls to incorporate more psychological perspectives into entrepreneurship research (Baron, 2008;

Jarvis, 2015) and informs educators and policy makers about how to encourage entrepreneurial activity.

## THEORETICAL BACKGROUND

### Entrepreneurial Intention and Opportunity recognition

The quest to understand the relationship between entrepreneurial intention and the perception of opportunities continues. Entrepreneurial intention has been recognized as a crucial precedent to pursuing opportunities for venture creation in entrepreneurship research (Qureshi & Mahdi, 2014). Intention is considered the best predictor of behavior in general and entrepreneurial behavior in particular (Ajzen, 1991, 2001; Fishbein & Ajzen, 1972). Intention is a state of mind that directs a person's attention towards specific objectives in order to achieve desired end states. Intentions sustain an individual's efforts despite obstacles (McClelland, 1985). Entrepreneurial intention is a necessary first step in the process of entrepreneurship and venture creation (Fayolle et al., 2006; Kolvereid, 1996; Lee & Wong, 2004). The conscious and voluntary decision to engage in entrepreneurship, the direction that the business takes, and growth aspirations for the business, depend on the entrepreneur's intentions (Bird, 1988; Krueger et al., 2000). Krueger (2007) argues that due to a lack of suitable intentions, not all business opportunities which an individual comes across are converted into new ventures. To quote Qureshi & Mahdi (2014), when opportunities are not converted into new ventures, it is because "the entrepreneur never intended to do the business initially" (p. 148).

According to Keh, Foo, and Lim (2002, p. 125), opportunity refers to "a situation that the decision-makers deem personally desirable and feasible" for profitably bringing a new offering to the market. Understanding how enterprising individuals perceive and evaluate whether opportunities are credible or not is at the heart of the research enterprise in entrepreneurship (Krueger, 2000). A sizable body of research now recognizes that entrepreneurs differ from others in their ability to recognize and evaluate opportunities where others fail to do so (Allinson, Chell, & Hayes, 2000; Douglas & Shepherd, 2000; Kaish & Gilad, 1991; Kirzner, 1973). In effect, entrepreneurs evaluate the various alternatives available to them and make decisions about the costs and benefits of achieving the outcomes associated with each alternative (Haynie, Shepherd, & McMullen, 2009).

The core process of entrepreneurship starts with an intention, when the "entrepreneur's available means are expected to produce effects that are aligned with initial aspirations" (Arend et al., 2015, p. 631). The decision to pursue a business opportunity for venture creation is neither coerced nor random, but an outcome of individuals' intentions and consequent actions (Shook, Priem, & McGee, 2003). While individuals may have intentions to become entrepreneurs, some of them never pursue entrepreneurship. Therefore, intention alone is not a sufficient factor in the pursuit of entrepreneurship.

Whether intentions turn into positive evaluation of opportunities is dependent on the entrepreneur's resources, means, and perceptions of possibility of success (Mishra & Zachary, 2015). A reason why entrepreneurs fail to recognize opportunities (although they may have the

intention) may be that the situation is not perceived as feasible. Entrepreneurs focus on selecting the result that is achievable with the available means and exploit the contingencies accordingly (Fisher, 2012; Sarasvathy, 2001). From this perspective, an important factor that facilitates intention to turn recognitions into opportunity is the entrepreneur's self-efficacy in entrepreneurship.

Self-efficacy postulates that intentions of individuals are strongly influenced by their beliefs regarding whether they can effectively complete a given task (Bandura, 1977). In fact, self-efficacy impacts the level of effort in an activity, the choice of goal difficulty, and problem-solving (Chen, Greene, & Crick, 1998). High self-efficacy leads to higher motivation and perseverance in overcoming obstacles (Bandura & Locke, 2003). Several researchers have proposed that self-efficacy plays an important role in motivating individuals to engage in the entrepreneurship process (Boyd & Vozikis, 1994; Scherer et al., 1989; Zhao et al., 2005). One's intention to start a venture is formed, in part, by his or her perception about the outcome anticipated regarding whether the venture will succeed or fail. Individuals are not likely to perceive opportunities as positive if they believe there is a high probably of failure—even though they may have entrepreneurial intentions (Boyd & Vozikis, 1994).

The concept of self-efficacy indicates feasibility. It is derived from Social Learning Theory and refers to a person's belief in his or her capability to perform a particular task (Teece, 2014, p. 328). Entrepreneurial self-efficacy is defined as "a useful measure of the strength of an individual's belief that he or she is capable of successfully performing the tasks of an entrepreneur" (Mueller & Data-on, 2008, p. 8). Therefore, entrepreneurial self-efficacy captures the sense of capacity regarding the achievement of entrepreneurial activities (Linan & Chen, 2009).

Individuals with high self-efficacy in a specific area possesses self-confidence in performing the related tasks (Mueller & Dato-on, 2008, p. 4). Self-efficacy affects an individual's beliefs about whether specific goals are attainable or not (Bandura, 1977; Gist & Mitchell, 1992). If an individual's self-efficacy in a specific field is low, her or his perceived capability will be low, and the individual will not act (Boyd & Vozikis, 1994). When entrepreneurs perceive that they are competent in entrepreneurial activities and capable of achieving results, they recognize opportunities as feasible (Mishra & Zachary, 2015). We expect that entrepreneurs who have self-efficacy in entrepreneurial functions, will act upon their aspirations and their intentions will result in opportunity recognition. Therefore, entrepreneurial intention leads to opportunity recognition when entrepreneurial self-efficacy is high. This leads to the following hypothesis:

> ***H1****: Entrepreneurial self-efficacy moderates the relationship between entrepreneurial intention and opportunity recognition.*
>
> ***H1a****: When self-efficacy in the planning function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.*
>
> ***H1b****: When self-efficacy in the search function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.*

***H1c**: When self-efficacy in the marshaling function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.*

***H1d**: When self-efficacy in the implementing function of entrepreneurship is high, there is a significant positive relationship between entrepreneurial intention and opportunity recognition.*

## METHODOLOGY

### Sample

The primary procedure for collecting data for this study was an online survey. We recruited the sample from Amazon Mechanical Turk (MTurk), a paid web service that offers a large online workforce to complete human intelligence tasks (HITs) (Stewart et al., 2015). MTurk reports having 500,000 registered workers (Stewart et al., 2015) and claims to provide a sample representative of the population at low cost (Behrend et al., 2011; Huber, & Lenz, 2012; Buhrmester et al., 2011). Recent studies have demonstrated the benefits of using Amazon M-Turk as a reliable source of data for experimental research (Crump et al., 2013; Stewart et al., 2015).

Amazon allows survey participation to be restricted to people from a specific country, so researchers can maintain a homogeneous sample. We invited only US-based individuals to participate in this research study. Amazon M Turk allows for rejection of work that does not meet expected standards or requirements. We required the workers to have a minimum of 98% approval rating to eliminate respondents who have not shown good performance in the past. We considered responses from only those participants who completed the entire survey, met our time controls, and correctly answered our manipulation check question. The respondents were given 15 minutes to complete the survey.

Of the 309 respondents who completed the survey satisfactorily, about 45% were male and average age was 35 years. The average work experience for our participants was about 13.4 years, with 31% working in the public sector, 34% in the private sector, 17% having self-owned businesses, and with 18% unemployed. Among the respondents, 63% had an associate degree or higher, 75% percent was Caucasian, and 54% resided in the Eastern Time Zone and 23% in the Central Time Zone.

### Procedure and Measures

Demographic characteristics including gender, age, education, and work experience may have an impact on opportunity recognition, so they were included as control variables in the study (Gupta, Goktan, & Gunay, 2014; Keh, Fo, & Lim, 2002; Huggins, Prokop & Thompson, 2016). Other independent variables included were entrepreneurial intentions and entrepreneurial self-efficacy. The dependent variable was opportunity recognition, which was measured using a scenario-based approach. All scales are discussed below and presented in Appendix 1.

*Entrepreneurial intention* was measured using a five-item, five-point Likert scale adopted from Liñán and Chen (2009) who developed an entrepreneurial intention questionnaire.

This instrument was based on Ajzen's Theory of Planned Behavior and analyzed its psychometric properties by testing it on samples from Spain and Taiwan. Their study confirmed the validity of the entrepreneurial intention scale across different groups. The scale had five items and responses were on a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. Higher scores on the scale items indicated higher entrepreneurial intentions. The scale had good reliability in our sample (Alpha=0.97).

*Entrepreneurial self-efficacy* measure was adopted from Mueller and Dato-on (2008) who adopted 20 out of the 60 items in the Sequeira et al.'s original self-efficacy scale (2005). Following Mueller and Goic (2003), they assigned each one of the 20 items to one of four categories of entrepreneurial tasks including searching, planning, marshaling, and implementing. Searching relates to idea generation and searching for opportunities, planning pertains to the development of a business plan, marshaling refers to the gathering of resources and implementing involves managing the business via directing and decision-making.

Altogether, they measure self-efficacy in various functions of entrepreneurship. Mueller and Dato-on (2008) reported the scale's reliability for searching, planning, marshaling, and implementing dimensions of entrepreneurial self-efficacy to be $\alpha = .82$, $\alpha = .85$, $\alpha = .84$, $\alpha = .82$ respectively. Our findings were similar for the respective dimensions; $\alpha = .87$, $\alpha = .91$, $\alpha = .89$, $\alpha = .84$. Entrepreneurial self-efficacy was measured on a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree', with higher scores indicating higher entrepreneurial self-efficacy.

*Opportunity recognition.* Respondents were given the following business scenario adopted from Highhouse et al. (2002):

> *Imagine you are on the Board of Directors of a large manufacturing company. You are one of the finalists for a government order that would ensure business throughout the decade. Such a contract would discourage potential competitors from entering your unique product area. The government order would begin soon.*

This scenario illustrates a strategic issue and have been shown to clearly represent an opportunity. Participants were asked to provide a general evaluation of this business opportunity using a four-item, five-point Likert scale ranging from 'strongly disagree' to 'strongly agree' (see Appendix 1: $\alpha = .88$). The average of the four items was calculated, with higher scores indicating more favorable evaluation of the opportunity, compared to lower scores.

## ANALYSIS AND RESULTS

We started with basic data cleaning to avoid problems in later analyses. Less than 3 percent of the observations had missing data, so no data points were removed. The data was visually inspected using histograms and scatter plots to test for normal distribution. As an additional check, numeric tests for kurtosis and skewness were conducted. The skewness measures ranged from -1.429 to 0.976, kurtosis ranged from -1.82 to 1.73 and were found to be within acceptable limits (Huck & Cormier, 1996). Variance Inflation Factor (VIF) values ranged from 1.00 to 6.16, which were well below the upper limit of 10, so that multicollinearity was not a problem in the data (Hair et al., 1998).

Table 1 presents the descriptive statistics including the means and standard deviations for all measures as well as the correlation matrix. The correlation matrix provides bivariate correlations (Pearson product-moment correlations) between all-control, independent, and dependent variables in the study.

**Table 1**
**Correlation Table (N= 302)**

| | Mean | St. Dev. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gender Male 1, Female 0 (1) | .45 | .498 | 1 | | | | | | | | | |
| Age (2) | 34.77 | 12.35 | -.131* | 1 | | | | | | | | |
| Education (3) | 2.27 | 1.143 | .080 | .133* | 1 | | | | | | | |
| Work Experience (4) | 13.38 | 11.189 | -.082 | .907** | .089 | 1 | | | | | | |
| Intention (5) | 2.974 | 1.266 | .080 | -.115* | .018 | -.062 | 1 | | | | | |
| SE_Search (6) | 3.46 | .902 | .017 | -.027 | -.019 | .011 | .379** | 1 | | | | |
| SE_Plan (7) | 3.50 | 1.114 | .026 | .040 | -.015 | .083 | .259** | .528** | 1 | | | |
| SE_Marshal (8) | 3.16 | 1.00 | .085 | -.192** | -.025 | -.136* | .318** | .649** | .484** | 1 | | |
| SE_Implement (9) | 4.134 | .95 | -.053 | .089 | .002 | .126* | .099 | .546** | .475** | .510** | 1 | |
| Opportunity recognition (10) | 4.058 | .760 | -.050 | .086 | .064 | .085 | .090 | -.032 | -.047 | -.074 | .073 | 1 |

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

We tested our predictions using hierarchical regression, which makes it possible to enter one predictor at a time to see how each additional variable contributes to explaining the variance. Control variables were added as the first step (Model 1), followed by the independent variable of entrepreneurial intention in the second step (Model 2), the moderator is entered in the third step (Model 3) and the interaction term is added last (Model 4).

H1 predicted that self-efficacy will moderate the relationship between entrepreneurial intentions and opportunity recognition. Results revealed a significant interaction, and the hypothesis was supported ($p < .05$). (See Table 2). Figures 1-4 in Appendix 2 depict the interaction effects for H1a, H1b, H1c, and H1d.

**Table 2**
**Self-Efficacy as the Moderator of the Relationship Between Intention and Opportunity Recognition (N=302)**

| Variables | Model 1 (controls only) | Model 2 (intention) | Model3 (moderator) | Model 4 (interaction) |
|---|---|---|---|---|
| **Control Variable** | | | | |
| Gender (1 male, 0 female) | -.087 | -.096 | -.072 | -.059 |
| Age | .003 | .005 | .004 | .005 |
| Education | .026 | .026 | .022 | .025 |
| Work Experience | .002 | .001 | .000 | -.001 |
| **Independent Variables (centered)** | | | | |
| Intention | | .059+ | .100** | .090* |
| Self-efficacy searching | | | -.068 | -.045 |
| Self-efficacy planning | | | -.056 | -.059 |
| Self-efficacy marshalling | | | -.095 | -.104+ |
| Self-efficacy implementing | | | .154** | .122* |
| Interaction (Intention X Search) | | | | .127* |
| Interaction (Intention X Plan) | | | | .076* |
| Interaction (Intention X Marshall) | | | | .014 |
| Interaction (Intention X Implement) | | | | -.019 |
| F | .96 | 1.329 | 1.877* | 4.186*** |
| $R^2$ | .013 | .022 | .055 | .161 |
| Adjusted $R^2$ | -.001 | .006 | .026 | .122 |
| Change in $R^2$ | .013 | .009 | .033 | .105 |
| Number of Observations | 293 | 292 | 288 | 284 |

Unstandardized coefficients are shown
Significant levels: +p<.1, *p<.05, **p<.01, ***p<.001

## CONCLUSION

In this study, we examined how self-efficacy in four different functions of entrepreneurship affect the relationship between entrepreneurial intentions and opportunity recognition. We expected individuals who had entrepreneurial intentions and believed in their abilities to successfully perform entrepreneurial functions to be more likely to recognize entrepreneurial opportunities. Of the four dimensions of entrepreneurial self-efficacy, we found support for the moderating effect of self-efficacy in the search and planning functions of entrepreneurship. Specifically, those who had the intention to start a business were more likely to recognize opportunities if they believed in their abilities to generate ideas, products and services and if they felt competent in their understanding of the markets (i.e. search). Similarly, those entrepreneurs who had self-efficacy in planning, and believed in their ability to develop comprehensive business plans (and their ability to convert ideas into feasible plans) were more likely to recognize opportunities.

Our results did not provide support for the moderating role of marshaling and implementation dimensions of self-efficacy on the relationship between entrepreneurial intention and opportunity recognition. Marshaling refers to the entrepreneur's ability to gather the necessary resources including capital, labor, customers, and suppliers—whereas implementation refers to the entrepreneur's ability in managing and directing organizational activities. It is possible that self-efficacy in marshaling and implementation functions of entrepreneurship affect later stages of the entrepreneurial process.

Gielnik et al. (2014, p. 755) claim that "the road from intentions to actions and new venture creation is long" drawing attention to how complicated the process of entrepreneurship is, and the various components involved therein. Opportunity recognition is an early activity in the entrepreneurial process. It is possible that the entrepreneurial intention and opportunity recognition relationship may be followed by the opportunity recognition and venture creation relationship. It is also possible that this second step from opportunity recognition to venture creation is moderated by self-efficacy in marshaling and implementation. Recruiting, supervising, and motivating employees are managerial functions which take place once the venture is created. Therefore, self-efficacy in these functions is likely to motivate individuals who recognize opportunities to act on them and create the venture. Future studies should examine the role of entrepreneurial self-efficacy in different phases of the entrepreneurial process.

Research to-date suggests that education enhances entrepreneurial activity through increasing self-efficacy in entrepreneurship, even in non-business fields such as nursing (Jahani, Babazadeh, Haghighi, & Cheraghian, 2018). Our results support the role of self-efficacy in increasing opportunity recognition and informs educators and policy makers that entrepreneurship can be enhanced through education. We find the positive effect of confidence in recognizing the need for a product or a service, and confidence in one's ability to understand the financial aspects of starting a business, on opportunity recognition. Therefore, entrepreneurship education should equip students with the tools to feel competent in entrepreneurship and increase their self-efficacy.

This study is not without its limitations. Data was collected in the United States and, therefore, the generalizability of our results is limited. Future studies should examine the role of entrepreneurial self-efficacy in the relationship between entrepreneurial intention and opportunity recognition, as well as the relationship between opportunity recognition and venture creation, both in the United States, and in other countries. In addition, other psychological variables, such as fear of failure, should be examined as moderators to yield a more holistic picture of entrepreneurial self-efficacy and the related concepts of entrepreneurial intention and opportunity recognition.

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# APPENDIX 1

**Entrepreneurial Intention Scale Items**

1. I am ready to do anything to be an entrepreneur
2. My professional goal is to become an entrepreneur
3. I will make every effort to start and run my own firm
4. I am determined to create a firm in the future
5. I have very seriously thought of starting a firm
6. I have the firm intention to start a firm some day

**Entrepreneurial Self-Efficacy Scale Items**

*Searching*:

1. Identify the need for a new product or service
2. Recognize a business opportunity before others do
3. Invent a new product or service
4. Develop ways to improve a product or service
5. Investigate the market for a new product or service

*Planning*:

1. Organize and maintain the financial records of my business
2. Accurately estimate the necessary revenues and costs associated with my business
3. Prepare projected (pro-forma) financial statements such as balance sheets, income statements and cash flows for a new business
4. Accurately estimate the amount of start-up funds and working capital necessary to start my business

*Marshalling*:

1. Persuade professional investors (e.g. venture capitalists) to invest in my business
2. Find individuals with the necessary capital to fund my business
3. Gain the confidence and trust of people who do not know me very well
4. Persuade formal leading institutions (e.g. banks) to loan money to my business
5. Persuade friends or family members to invest in my business

*Implementing*:

1. Supervise employees
2. Recruit and hire employees
3. Inspire, encourage and motivate my employees
4. Manage the business without guidance or advice from others
5. 

**Opportunity Recognition Scenario Questions**

1. This situation is likely to result in a successful outcome.
2. This situation represents an opportunity.
3. This situation is positive.
4. You may gain in this situation and are unlikely to lose

## APPENDIX 2

**Figure 1**
**H1a**

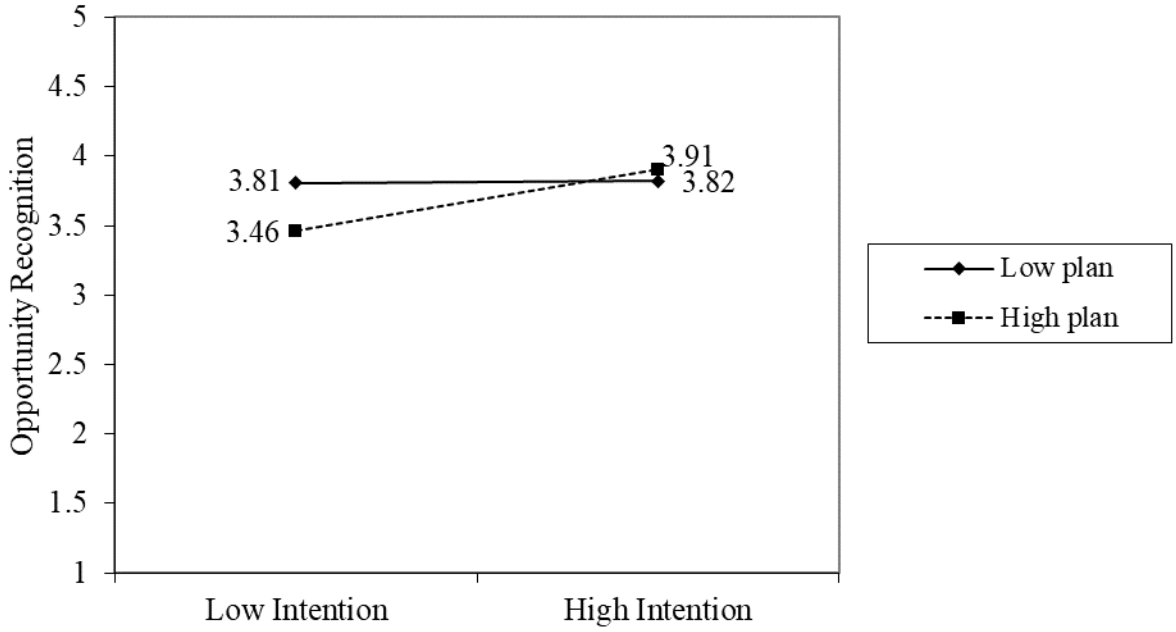



**Figure 2**
**H1b**

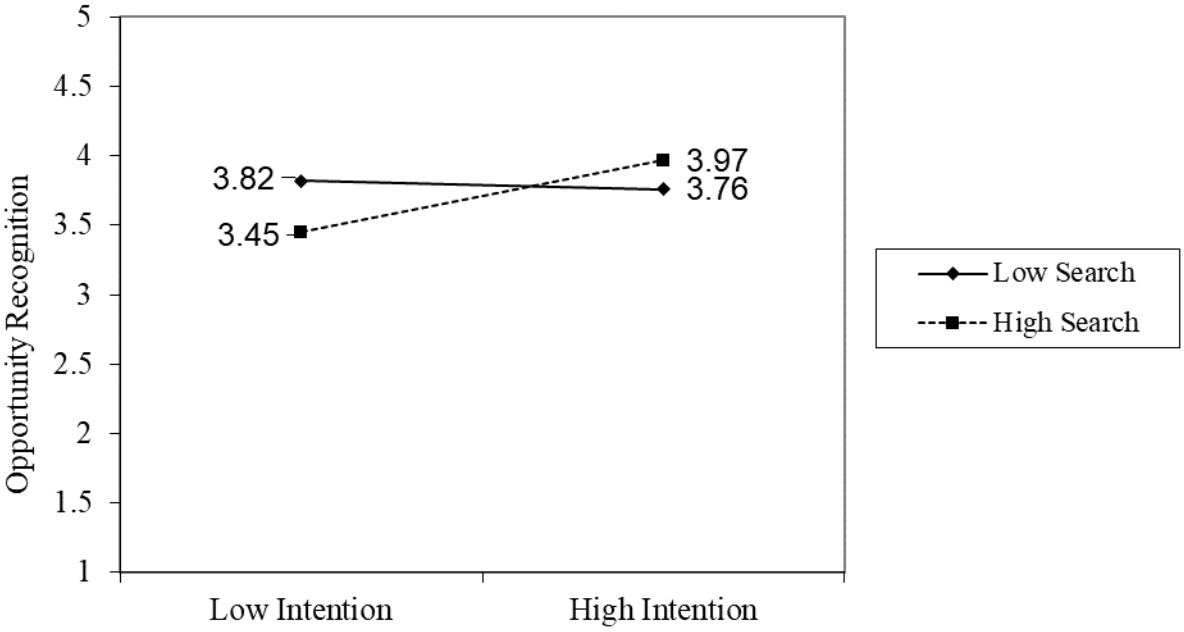


**Figure 3**
**H1c**

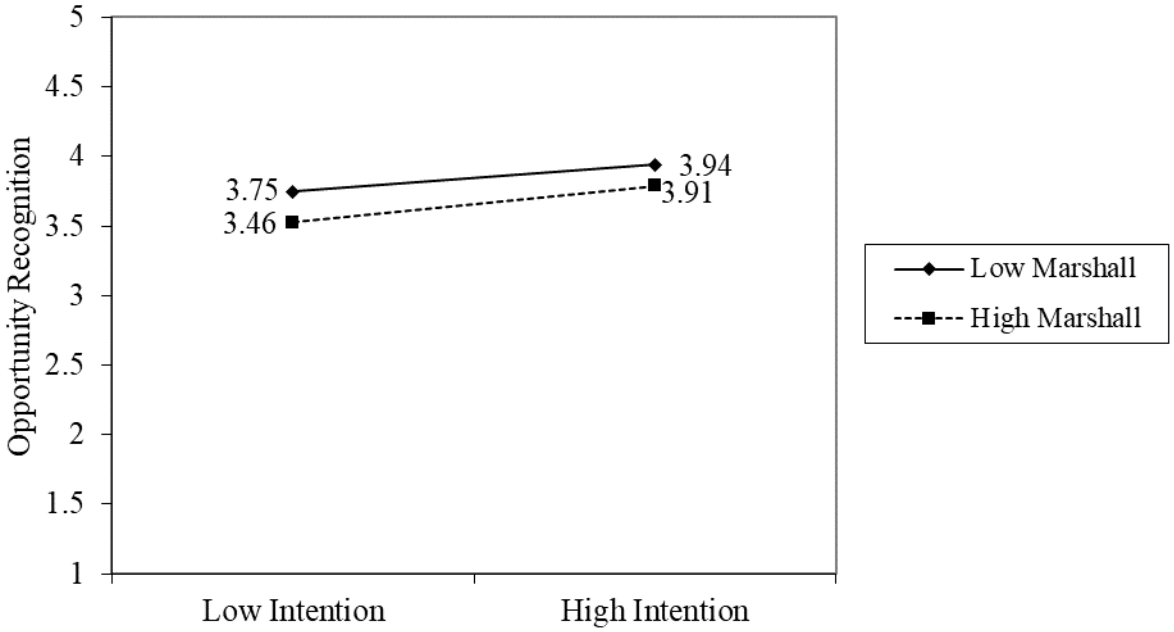
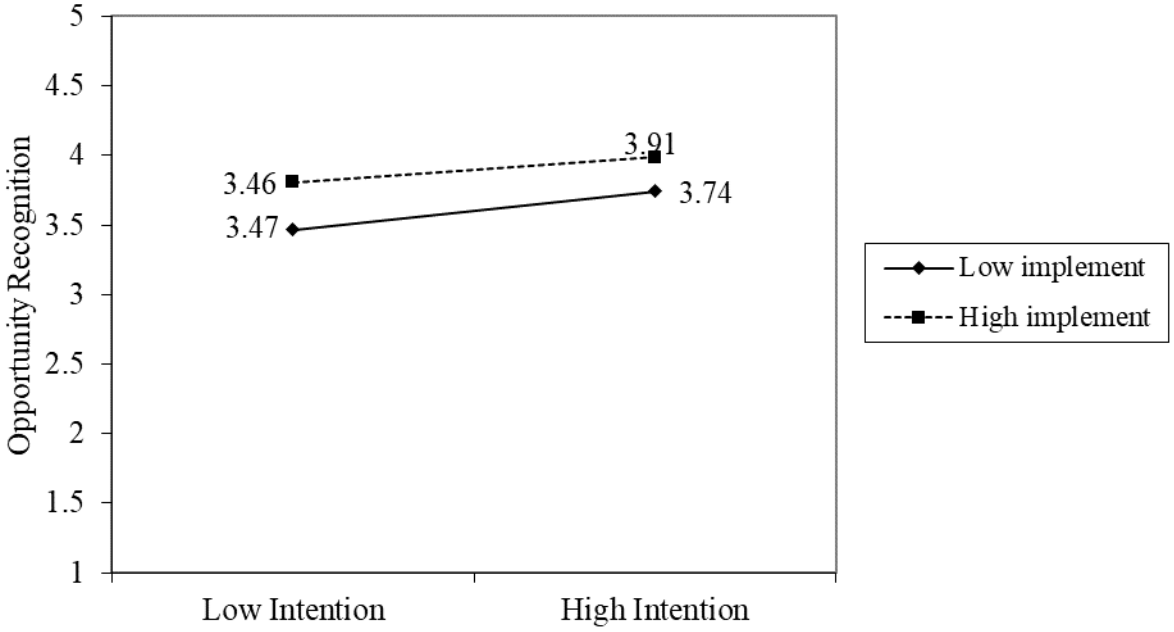



**Figure 4**
**H1d**



# THE LEGITIMIZATION OF CORPORATE ENTREPRENEURSHIP

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## ABSTRACT

*This paper explores and analyzes the legitimacy of corporate entrepreneurship as a form of entrepreneurship. The study begins with defining entrepreneurship and identifying the commonalities among the definitions of entrepreneurship. By using these commonalities, a synthesized definition of entrepreneurship is presented. The developed definition then creates a checklist for the requirements of entrepreneurship. The paper then defines corporate entrepreneurship by starting with the origin of this term. An analysis of the aspects of the various definitions of corporate entrepreneurship will lead to a developed definition of corporate entrepreneurship. The practice, forms, and models of corporate entrepreneurship are analyzed by applying the definition and tenets of entrepreneurship. This meta-analysis suggests that corporate entrepreneurship meets the requirements of entrepreneurship to legitimize its place as true entrepreneurship.*

Keywords: Intrapreneur, corporate entrepreneurship, entrepreneurship

## INTRODUCTION

Corporate entrepreneurship has evolved into a viable means for organizational competitive advantage, sustainability, and growth. Researchers have noted that corporate entrepreneurship can be used by companies to transform them into industry leaders, as well as create value for the organization through innovation and exploitation of opportunities (Covin & Miles, 1999). However, there is much controversy centered on the idea of corporate entrepreneurship itself as to whether it is a true form of entrepreneurship. Although the role of corporate entrepreneurship has proven to be successful for fostering growth and sustaining organizations that implement its principles, its legitimacy as true entrepreneurship is questionable to some (Bouchard & Fayolle, 2001). A true Kirzner or Schumpeterian style of entrepreneur would more than likely quickly deny the claim of corporate entrepreneurship as a legitimate form of entrepreneurship. However, if one delved into the various definitions of corporate entrepreneurship, it may be apparent that it squares with the principles of entrepreneurship. However, it may not be apparent to some. The meta-analysis presented in this paper will examine the various definitions of entrepreneurship established by researchers. It

will then use these definitions to craft a definition to use for the analysis of corporate entrepreneurship.

To begin this discussion and analysis of corporate entrepreneurship as a true form of entrepreneurship, it is necessary to start with the definition of entrepreneurship. The definitions of entrepreneurship are indeed wide ranged. They can be as simple as "entrepreneurship is about taking risks" (Drucker, 1970), or as in-depth as the one provided by Hisrich (1990). In fact, Hisrich (1990) recognized risk as an underlying tenet in the definition of entrepreneurship, but he also included therein creative thinking and the ability to exploit resources. This paper will discuss the various definitions of entrepreneurship to establish a justifiable basis of the key principles used to institute its true meaning.

Many researchers associate the term entrepreneurship to mean a start-up business or a new idea; or, one started from scratch, that is, something that did not exist before. Therefore, the idea of corporate entrepreneurship may seem imperfect or impossible at first glance. However, what if those very thoughts and ideas and creative nature that launched the successful business from the beginning is the same mindset needed to sustain the business? Then, would corporate entrepreneurship qualify as entrepreneurship? If corporate entrepreneurship does not meet the tenets of entrepreneurship, it may simply be sustained as the idea of a department within a business, such as internal research and development.

The purpose of this paper is to propose a viable answer to the question of whether corporate entrepreneurship fits in the definition of entrepreneurship as a legitimate form, based on the definitions provided by researchers. The legitimacy of corporate entrepreneurship then further determines whether it is more than a department within a company, such as research and development. The paper will first provide a synthesized definition of entrepreneurship based on the various historical definitions of entrepreneurship. Based on this definition, a checklist of principles required for entrepreneurship will be developed. An explanation of corporate entrepreneurship will be provided, which will include the tenets and principles of corporate entrepreneurship. These principles will then be analyzed against the checklist of principles for entrepreneurship to provide a thorough analysis of whether corporate entrepreneurship meets the requirements of entrepreneurship and falls within its umbrella.

## DEFINITIONS OF ENTREPRENEURSHIP: A CONCEPTUAL BACKGROUND

Scholars have failed to agree on a universal definition of the concept of entrepreneurship. Many researchers have added to the definition of entrepreneurship over the years while providing their own interpretation of the definition. Mondal & Jimenez (2015) provided a historical overview of the origin of entrepreneurship, which was first discussed in economic literature, beginning with Richard Cantillon (1680-1734). Vaggi & Groenewegen (2003) discussed the work of Cantillon who distinguished entrepreneurship as self-employment. The focus of his definition of entrepreneurship is the distinction between the

laborer and the self-employer, who is referred to as the farmer. Schumpeter (1954) pointed out Cantillon's reference to the farmer as the self-employer who pays the income to laborers; however, the price the farmer receives is uncertain. Cantillon's definition seemed to allude to the risk of the uncertainty surrounding the price of the goods that were produced (Higgs, 1891). Jean Baptiste-Say (1821) built on Cantillon's explanation of entrepreneurship; however, he did not incorporate the risk factor. Say (1821) focused on the production and movement of resources from less productive to more productive areas. His view of entrepreneurship alluded to the creation of value through the identification of opportunities and the exploitation of resources.

John Stuart Mill furthered the idea of entrepreneurship by including risk as a principle and added the concept of management of the business (Mill, 1848). Furthermore, Mill (1848) made the distinction between an entrepreneur and others in business by emphasizing the requirement that an entrepreneur must assume risk. According to Mill's (1848) meaning, an entrepreneur must assume the risk and management of the business. The management of the business included the production of profit and risk. This means that to produce a profit, there must be some risk involved.

Subsequently, Knight (1921) added to the requirement of uncertainty and risk-taking. He identified risk-taking as a key characteristic of entrepreneurship. Knight (1921) built on the meaning of entrepreneurship provided by Cantillion in Higgs (1891) and Say (1821) where they both discussed the uncertainty of production. Knight (1921) uses the theories of these two economists (Cantillion, 1891; Say, 1821) to emphasize the fact that profit is the reward an entrepreneur receives in the future for taking on the risk of uncertainty. In his work, Knight (1921) further defines risk and uncertainty in terms of gaining profit.

On the other end of the spectrum of scholars who defined entrepreneurship was Schumpeter (1942), who emphasized innovation and entrepreneurship as essential factors of capitalism. In early research, scholars often used capitalism synonymously with entrepreneurship (Mondal & Jimenez, 2015). In his work, Schumpeter (1942) made a distinction between capitalism and entrepreneurship with a central focus on innovation through creative destruction. Schumpeter (1934, 1942) placed no significance on the idea of uncertainty or risk; however, he focused on the discovery of new products and markets through the exploitation of resources. The theory of "creative destruction" is the idea that the creation of new products results in the destruction of currently existing products—thus the importance of innovation and creation. Mondal and Jimenez (2015) utilize the definition provided in Schumpeter (1965) to summarize a concise definition of entrepreneurship. The definition provides that entrepreneurship is centered on the exploitation of opportunity through innovation (Schumpeter, 1965).

Another Australian economist, Kirzner (1973) presented a different perspective than Schumpter (1942) of the definition of entrepreneurship. Kizner (1973) defined entrepreneurship

as the process of discovery of unidentified opportunities. Similarly to Schumpter (1942), Kirzner (1973) mentions the opportunity factor. However, Kirzern (1973) focuses on the process of discovering the opportunity that no others have discovered. According to Kirzner (1973), entrepreneurship is the means by which the discovery process takes place as an equilibrating force (Kirzner, 1973), which differs from Schumpter (1942). Kirzner's (1973) idea of entrepreneurship initiates a change through the discovery of opportunities, which pushes the market toward equilibrium—whereas, Schumpter (1942) disrupts the equilibrium through creative destruction. Essential to Kirzner's (1973) idea of entrepreneurship is alertness. That is, the entrepreneur must have the alertness to recognize the opportunity in order to exploit it to make a profit.

Over time, other scholars have continued to add to the meaning of entrepreneurship and the entrepreneur. Leibenstein (1968) offers a detailed explanation of the characteristics of an entrepreneur to include one or more of the following abilities: (1) to connect buyers and sellers in different markets; (2) to fill gaps within a market; (3) to transform organizational structures; and, (4) to utilize resources for production and sell a product. Similar to Leibenstein (1968), Hisrich (1990) uses the entrepreneur to define entrepreneurship. Hisrich (1990) defined the entrepreneur as someone who possesses initiative and critical thinking and has the ability to organize mechanisms within society to exploit resources to turn them into practical account while accepting risk and failure.

Hisrich's (1990) definition aligns with several of the themes within that have been identified by researchers across time. Bolton and Thompson (2000) added diverse aspects to the definition of an entrepreneur by stating that an entrepreneur habitually creates and innovates, while exploiting recognized opportunities. In totality, Gunter (2012) provides a comprehensive definition that appears to include the majority of the themes that have been discussed througout history. Gunter (2012) describes an entpreneur as an individual who is able to recognize opportunities that most do not recognize, even in times of uncertainty, and create ventures that generate profit by exploiting opportunities.

Scholars continue to search for the true meaning of entrepreneurship; therfore, the definition is continouously evolving. More recent definitions of entrepreneurship include those from researchers such as Barot (2015), Terentyeva and Korneyko (2017), Hrinchenko (2018), and, Hessels and Naude (2019). Barot (2015, p. 163) simplifies entrepreneurship into five factors: (1) Introduction of new product; (2) introduction of a new method of production; (3) opening of a new market; (4) the conquest of a new source of supply; and, (5) carrying out a new organization of industry". Terentyeva and Korneyko (2017) align with Knight (1921) where risk is identified as a pertinent tenet of entrepreneurship, describing entrepreneurship as "as a special risky, initiative activity aimed at creating new deviations from the equilibrium" (p. 37). Hrinchenko (2018) describes entrepreneurship as an economic activity that produces profit by introducing new products and methods. Hessels and Naude (2019) provide a synthesized definition of entrepreneurship from an economic development perspective. They define

entrepreneurship as "the resource, process and state of being through which individuals with ability and agency utilize positive opportunities in the market for generating individual and/or social value" (Hessels & Naude, 2019, p. 397).

**Common Themes in the Definitions of Entrepreneurship**

By providing a general overview of a wide array of definitions and meanings of entrepreneurship and entrepreneurs, it is compelling to identify common themes that most scholars have agreed upon. With these common themes, it flows naturally to create a synthesized definition of entrepreneurship. This definition can answer the question of whether corporate entrepreneurship is a legitimate form of entrepreneurship. The following common themes have been identified by reviewing researchers starting with Cantillion and ending with Gunter (2012). The common themes or principles, which are identified in Table 1 are as follows: uncertainty or risk; production or innovation; utilization and/or exploitation of resources; and, identification and exploitation of opportunities.

Identification of the common themes amongst the definitions leads to the synthesized definition of entrepreneurship that will be used in this paper. It is imperative that the definition developed in this paper includes all of the repetitive themes identified in Table 1. Therefore, *entrepreneurship is the utilization and exploitation of resources that will allow an individual to take advantage of unidentified opportunities and exploit those opportunities to produce a profit in times of uncertainty while taking risks.* This definition provides an opportunity to identify key principles or tenets of entrepreneurship. Moreover, a checklist can be developed for the requirements of entrepreneurship (Table 2).

The checklist was objectively created using the various definitions provided within this research paper. It allows for the evaluation of corporate entrepreneurship against each significant requirement of entrepreneurship. In Table 2, the requirements have been identified based on the researchers who have emphasized or alluded to similar aspects of the definition of entrepreneurship. The themes that were repeated at least four or more times amongst the fifteen definitions provided were identified as requirements or principles of entrepreneurship. It is presumed that if the practice of corporate entrepreneurship can satisfy these requirements, then it can be legitimized. Therefore, it is necessary to explain each principle to provide an understanding as to how corporate entrepreneurship may satisfy the principles.

## Table 1
**Identification of Common Themes in Definitions of Entrepreneurship**

| Entrepreneurship: Themes and Authors |
|---|
| Risk of the uncertainty surrounding the price of the goods that were produced [Cantillon (1730)] |
| Production and the movement of resources from the less to the more productive area. The creation of value through the identification of opportunities and exploitation of resources [Say (1821)] |
| Must assume the risk and the production of profit [Mill (1848)] |
| Risk and uncertainty in terms of gaining profit and the uncertainty of production [Knight (1921)] |
| Centered on the exploitation of opportunity through innovation Creative Destruction [Schumpeter (1934)] |
| Process of discovery of unidentified opportunities and initiate change Alertness to recognize the opportunity in order to expoit it for profit [Kirzner (1973)] |
| Fill gaps within a market The ability to utilize resources for production and sell a product [Leibenstein (1968)] |
| Entrepreneurship is about Risk Innovation [Drucker (1970, 1985)] |
| Initiative and critical thinking to organize mechanisms to exploit resources to turn them into practical account, while accepting risk and failure [Hisrich (1990)] |
| Habitually creates and innovates while exploiting recognized opportunities [Bolton and Thompson (2000)] |
| To recognize opportunities, even in times of uncertainty, and creative ventures that generate profit by exploiting opportunities [Gunter (2012)] |
| Introduction of new product, introduction of a new method of production, and opening of a new market [Barot (2015)] |
| "A special risky, initiative activity aimed at creating new deviations from the equilibrium" [Terentyeva and Korneyko (2017, p. 37)] |
| Economic activity that produces profit by introducing new products and methods [Hrinchenko (2018)] |
| "The resource, process and state of being through which individuals with ability and agency utilize positive opportunities in the market for generating individual and/or social value" [(Hessels and Naude (2019, p. 397)] |

## PRINCIPLES AND REQUIREMENTS OF ENTREPRENEURSHIP

**Table 2**
**Principles and Requirements of Entrepreneurship and Key Authors**

| Entrepreneurship Topics and Key Authors |
|---|
| *Innovation/Creation:*<br>Schumpeter (1942); Bolton and Thompson (2000); Drucker (1985); Barot (2015); Terentyeva and Korneyko (2017); Hrinchenko (2018) |
| *Utilization/ Exploitation of Resources:*<br>Say (1821); Leibenstein (1968); Hisrich (1990); Drucker (1985) |
| *Identification/ Exploitation of Opportunities:*<br>Say (1821); Schumpeter (1942, 1965); Leibenstein (1968); Kirzner (1973); Hisrich (1990); Bolton and Thompson (2000); Gunter(2012); Hessels and Naude ( 2019) |
| *Risk/Uncertainty:*<br>Cantillon (1680-1734); Mill (1848); Knight (1921); Hisrich (1990); Terentyeva and Korneyko (2017) |
| *Production for Profit or Gain:*<br>Mill (1848); Knight (1921); Kirzner (1973); Leibenstein (1968); Gunter (2012); Barot (2015); Hrinchenko (2018) |

### Innovation and Creation

Comparable to entrepreneurship, scholars have been unable to agree on the definition of innovation. However, many have presented consistent factors to define the term such as product creation, creativity, new ideas, and the ability to improve through change (McFadzean, O'Loughlin, & Shaw, 2005). Additionally, researchers identified innovation or the creation of "new things" within the definition of entrepreneurship. Based on the various definitions of innovation and entrepreneurship, innovation and/or creation is a requirement or a principle for entrepreneurship. Schumpeter (1942) placed an emphasis on the creation of "new things" that replace "old things" through the process of creative destruction. Drucker (1985) identified innovation as a key instrument of entrepreneurship. He emphasized that innovation is a tool that creates a resource (Drucker, 1985). Through innovation, an individual can add economic value to a resource. Essentially, Drucker (1985) implied that innovation must be present for entrepreneurship to exist. Therefore, according to Drucker (1985), innovation must exist within a corporate entrepreneurship framework for it to be considered to be true entrepreneurship.

### Utilization and Exploitation of Resources

Throughout the study of entrepreneurship, numerous scholars and economists have identified the utilization and or exploitation of resources as a key factor in entrepreneurship. Whether they used the exact terms "exploitation or utilization" is insignificant. These researchers used various terms such as marshaling resources, shifting resources, creating value with resources, or organizing mechanisms. No matter the terms used, various researchers have

identified the utilization and/or exploitation of resources as a principle of entrepreneurship. In the beginning stages of the study of entrepreneurship, Say (1821) initially identified the role of resources. He emphasized that an entrepreneur could create value by reallocating resources from areas that have not been productive to areas that will be more productive (Say, 1821). Therefore, Say's (1821) meaning on entrepreneurship focuses on the ability to move resources to an area that has been identified as an opportunity to produce.

The movement of resources aligns with the idea of the exploitation of resources that are available to the entrepreneur. Leibenstein (1968) focuses on the utilization of resources to create a product to sell. He mentions that an entrepreneur will assess, assemble, evaluate, and apply resources to produce a product that one can sell for profit. The emphasis here on resources further supports the significance of utilization and exploitation of resources as a requirement of entrepreneurship. Moreover, Hisrich (1990) focuses on the ability to organize resources that will allow the exploitation of those very resources to produce value. Hisrich (1990) further pointed out that economists viewed an entrepreneur as someone who can pull together various resources such as labor, materials, and other assets to increase their value. Researchers continued to show the significance of the requirement of the utilization and or exploitation of resources. Therefore, for corporate entrepreneurship to be a legitimate form of entrepreneurship, it must foster a framework for the utilization and/or exploitation of resources.

**Identification and Exploitation of Opportunities**

The majority of scholars participating in this research discussed the identification and exploitation of opportunities as a key to entrepreneurship. This is a striking indicator that the principle of identification and exploitation of opportunities is a requirement of entrepreneurship. Say (1821) discussed the identification and exploitation of opportunities. He stated that an entrepreneur identifies opportunities where it is possible to create value, thus entrepreneurship (Say, 1821). Though Schumpeter (1934, 1942) focused on innovation, Schumpeter (1965) honed on the important factor of opportunity exploitation. Leibenstein (1968) did not specifically discuss opportunity in those specific terms; however, he identified entrepreneurs as "gap-fillers". Gap-fillers can identify market deficiencies and produce to meet the needs of the deficiency (Leibenstein, 1968). The exploitation of opportunity is construed as where the market deficiency is identified and the product is created to meet this deficiency—in other words, it is both the identification and exploitation of opportunity (Leibenstein, 1968).

Alertness to discovery of opportunities is key to Kirzner's (1973) definition of entrepreneurship, likened to the identification of opportunities. The alertness Kirzner (1973) mentions focuses on the ability to identify opportunity. He furthers the definition by stating that the entrepreneur must also have the ability to exploit the opportunity (Kirzner, 1973). Bolton and Thompson (2000) accentuate in their definition that an entrepreneur must have the ability to perceive opportunities for value creation. Bolton and Thompson's (2000) definition is similar to Kirzner (1973) in that alertness is presumed to be able to perceive opportunities. Gunter

(2012) provides a comprehensive definition of entrepreneurship that does not exclude the recognition and pursuit of opportunities. Gunter (2012) specifically points out that the entrepreneur then exploits these opportunities. The inclusion of the identification and exploitation of opportunity within the definition of entrepreneurship provided from an array of authors presumes that it is a pertinent aspect of entrepreneurship. Therefore, corporate entrepreneurship must display an aspect of identification and exploitation at the organizational level to be legitimized.

**Risk and Uncertainty**

Risk and uncertainty are the most ambiguous requirements of entrepreneurship. In fact, many researchers did identify risk as a necessary element of entrepreneurship. Though significant, scholars have failed to simply define risk and identify the threshold of risk that must be assumed. To make this requirement plain, it is necessary to analyze what each study realized about the necessary presence of risk. Schumpeter (1954) recognized that Cantillon's explanation of entrepreneurship with the example of the farmer and laborer referenced the uncertainty of future profits for that farmer. Farmers had to pay the laborers, but at a risk because they do not know what their return of future profits would be.

As an early economist, Cantillon initially recognized the importance of risk assumption within the factors of entrepreneurship. Mill (1848) points out that risk accompanies profit of an entrepreneur, because the entrepreneur must assume risk to make profit. This implies that the profit-seeking production of an entrepreneur cannot exist with the presence of risk, which is essential to entrepreneurship. Similar to Mills (1948), Knight (1921) defines risk as the uncertainty of gaining profit. Most significant in Knight's (1921) discussion of risk is the fact that he states that the entrepreneur must be prepared to bear all risk. Moreover, Hisrich (1990) identifies risk as failure. This means that the entrepreneur, while innovating, must understand that failure accompanies innovation. This provides a different scope into risk outside of the obvious risk of loss. Hisrich and Peters (1989) provided an inclusive list of risk that an entrepreneur may assume, and it extends beyond financial risk or loss of profit. An entrepreneur assumes financial, psychological, and social risk (Hisrich & Peters, 1989). This presumes that the risk is not limited to financial, which broadens the requirement that an entrepreneur must assume risk. The overwhelming discussion of risk amongst researchers proposes that risk is a principle and factor that must be present in entrepreneurship. Thus, a corporate entrepreneurship framework must assume some risk. At first glance, it may seem that this requirement may pose a barrier to overcome; however, if a corporate entrepreneurship framework includes some form of risk, it may, in fact, meet this requirement.

**Production for Profit or Gain**

Early economists used the terms "capitalism" and "entrepreneurship" synonymously (Mondal & Jimenez, 2015). The profit-loss system is essential to the ideal of capitalism (Schumpeter, 1942); therefore, it is obvious that profit is a vital requirement or principle of

entrepreneurship. In the Mills (1848) definition, an emphasis is placed on the management of business for profit. Profit is the center of the definition provided by Mills (1848), which implies that all entrepreneurial activities must lead to a profit. This may present the question: if there is no profit, does it nullify the entrepreneurship? However, Mills (1848) presents the loss as the risk. Knight (1921) mentions profit as the reward for entrepreneurial activities, which implies that profit and/or reward is an essential factor. Furthermore, Kirzner's (1973) definition of entrepreneurship stresses the identification of profit opportunities and the ability to discover unnoticed profit opportunities. It seems that profit opportunities drive innovation (Kirzner, 1973). Additionally, in the comprehensive definition provided by Gunter (2012) it is mentioned that, through the exploitation of opportunities and creation of ventures, profit is generated. This alludes to the fact that profit is just as significant as the exploitation of resources and opportunity because it drives the exploitation. The fact that scholars continuously identify profit as a factor of entrepreneurship solidifies the final principle and requirement of entrepreneurship. Therefore, any corporate entrepreneurship framework must present a profit-seeking factor.

## THE CONCEPT OF CORPORATE ENTREPRENEURSHIP

The concept, "corporate entrepreneurship" may seem like an oxymoron. It is common to relate the term "entrepreneurship" to the start of a new business, new product, or new market. Most refer to entrepreneurship as "start-ups" or as an idea from the beginning. Therefore, the idea of corporate entrepreneurship may seem like a contradiction to the very meaning of entrepreneurship. However, this paper has provided a broad definition of entrepreneurship, which makes it apparent that the meaning of the term entrepreneurship is broader than one may believe. Corporate entrepreneurship is a growing practice among businesses, because they see this practice as a viable means for growth and sustainability (Covin & Miles, 1999). Guth and Ginsberg (1990) noted that corporate entrepreneurship is a means for improving competitive advantage and sustainability. Companies can use corporate entrepreneurship to transform their organizations through innovation that creates value (Guth & Ginsberg, 1990). Recognition of corporate entrepreneurship has continued to gain traction due to the idea that it brings innovation to the corporate environment.

As with entrepreneurship, there is no set definition of corporate entrepreneurship; therefore, it is necessary to explore the many definitions of corporate entrepreneurship. Through the evaluation of various definitions, one definition will be established for the purpose of this paper. Initially Pinchot and Pinchot (1978) coined the term "intrapreneur", which was later developed by Pinchot (1985) into the term "intrapreneuring". Pinchot (1985) simply defined intrapreneuring as entrepreneurship turned inward. This implies that the definition encompasses all the principles of entrepreneurship within an organization. Pinchot (1985) further provided that an intrapreneur must risk something of value, which is inclusive within the definition of entrepreneurship. Pinchot (1985) summed up the definition by stating that an intrapreneur is a dreamer who is responsible for creating innovation within an organization.

As the term developed, researchers began to use the term "intrapreneuring" and "corporate entrepreneurship" synonymously. Schollhammer (1982) defined internal corporate entrepreneurship by stating that it includes not only new product development, but also new productions, product improvements, and the creation of new production procedures and methods. Churchill (1992) considered majority consensus on the definition of entrepreneurship to provide a definition of corporate entrepreneurship or intrapreneurship. According to Churchill (1992), corporate entrepreneurship is the process of identifying unnoticed opportunity to create value by exploiting that opportunity through innovation in a new or existing company.

Moreover, Covin and Miles (1999) also define corporate entrepreneurship as innovation and the objective of purposeful transformation of organizations, markets, and industry in order to sustain competitive advantage. Covin and Miles (1999) introduce four forms of corporate entrepreneurship: sustained regeneration, organizational rejuvenation, strategic renewal, and domain redefinition. Using these four forms, corporate entrepreneurship was defined as the ability of an organization to continuously introduce new markers or products to the organization's strategy while exploiting those new products and markets (Covin & Miles, 1999).

Subsequently, Sharma and Chrisman (1999) defined corporate entrepreneurship and did not deviate from the common theme of innovation within an organization. They emphasized corporate entrepreneurship as the process whereby an individual or groups of individuals within an organization create a new organization or become the catalyst to rejuvenate or innovate within that organization (Sharma & Chrisman, 1999). Corbett, Covin, O'Connor, and Tucci (2013) describe corporate entrepreneurship as the renewal of an organization by the utilization of innovation which helps sustain the organization's sustainability and competitiveness.

Additionally, Corbett et al. (2013), include Schumpeter's (1934) definition of innovation in their discussion to make it clear that corporate entrepreneurship involves corporate venturing, strategic renewal, and innovation. O'Connor and Rice (2013) added a vital tenet to the previous definitions of corporate entrepreneurship. They explain that corporate entrepreneurship involves innovation and new business creation; however, it also includes the ability to exploit opportunities when there is uncertainty. Sakhdari (2016) identifies innovation as a key tenet of entrepreneurship. Sakhdari (2016) expands innovation as a key principle of corporate entrepreneurship to include corporate venturing and strategic renewal. In more recent studies, Urbaniec & Żur (2020) define corporate entrepreneurship as "a set of distinct and multidimensional organizational phenomena, including the development of innovation, and is the driving force behind purposefully redefining organizations, markets or industries to foster competitive advantage" (p. 3).

## Common Themes in the Definitions of Corporate Entrepreneurship

To create an inclusive definition of corporate entrepreneurship, it is necessary to explicitly identify the common themes presented amongst researchers. This will enable a thorough analysis of the legitimacy of corporate entrepreneurship as a "true" form of entrepreneurship. Common themes were identified by tracking the repetition of key terms amongst the definitions of corporate entrepreneurship. The common themes presented involves innovation, creation of new ideas, exploitation of opportunities, and the utilization of resources to create value within an organization. The common themes discussed by researchers who define corporate entrepreneurship are identified in Table 3.

Now that the common themes within the definition of corporate entrepreneurship have been identified, it is necessary to create a comprehensive definition. The definition that encompasses the common themes of the definition of corporate entrepreneurship will allow for the comparison of corporate entrepreneurship and entrepreneurship. The comparison will lead to an analysis and answer to whether corporate entrepreneurship is a legitimate form of entrepreneurship. Pinchot (1985) provided a simple definition of corporate entrepreneurship, which allow for this paper to use the definition of entrepreneurship that has been identified to add the term "within an organization". However, this would fail to capture the details of the tenets of corporate entrepreneurship. Therefore, corporate entrepreneurship can be defined as *the creation of value using the development of new ideas or improvements by exploiting unnoticed opportunities through innovation within a new or existing organization, while assuming the risk of uncertainty.*

**Table 3**
**Common Themes in Definitions of Corporate Entrepreneurship**

| |
|---|
| Entrepreneurship turned inward<br>Intrapreneur must risk something of value<br>Dreamers who take responsibility for creating an innovation of any kind within an organization [Pinchot & Pinchot (1978); Pinchot (1985)] |
| Includes new product development, new productions, product improvements and the creation of new production procedures and methods [Schollhammer (1982)] |
| Process of identifying unnoticed opportunity to create value by exploiting that opportunity through innovation in a new or existing company [Churchill (1992)] |
| Innovation and the objective of purposeful transformation of organizations, markets, and industry to sustain competitive advantage [Covin & Miles (1999)] |
| The process where an individual or groups of individuals within an organization create a new organization or become catalysts to rejuvenate or innovate with that organization [Sharma & Chrisman (1999)] |
| Renewal of an organization by the utilization of innovation which helps sustain the organizations sustainability and competitiveness<br>Involves corporate venturing, strategic renewal, and innovation [Corbett et al. (2013)] |

| |
|---|
| Involves innovation and new business creation; however, it also includes the ability to exploit opportunities when there is uncertainty [O'Conner & Rice (2013)] |
| Innovation as a key principle of corporate entrepreneurship to include corporate venturing and strategic renewal [Sakhdari (2016)] |
| "The development of innovation, and is the driving force behind purposefully redefining organizations, markets or industries to foster competitive advantage". [Urbaniec & Żur (2020, p.3)] |

## Types and Models of Corporate Entrepreneurship

It is essential to discuss the types of corporate entrepreneurship and the models to provide an analysis of the requirements of entrepreneurship as applied to corporate entrepreneurship. The implementation of corporate entrepreneurship can be carried out in many ways, which is why it is important to understand the differences. This may change the analysis of its place in entrepreneurship. Bouchard and Fayolle (2001) discussed the four types of corporate entrepreneurship as corporate venture, intrapreneuring, organizational transformation, and industry-rule breaking. The four types of corporate entrepreneurship are not exclusive of each other. At times, the types may overlap as corporate entrepreneurship is placed into practice (Bouchard & Fayolle, 2001).

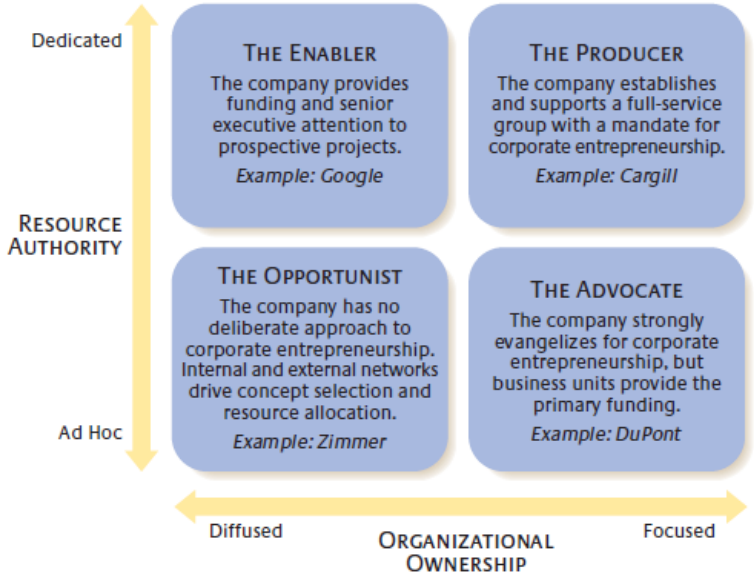
Corporate venturing entails starting a business within an existing organization. This process involves developing a business from a current practice or competency of the existing company (Bouchard & Fayolle, 2001). Within an organization, ventures coincide with innovation. It involves creating a new business from the old, while nurturing that business to become profitable. The new business is a representative new opportunity. As defined by Pinchot (1985), intrapreneuring is entrepreneurship within an organization. It is using the mindset of an entrepreneur within an existing business. Companies implement intrapreneuring by encouraging every employee to act like entrepreneurs at work.

More specifically, companies identify a group of leaders to act as intrapreneurs. These intrapreneurs are tasked with leading the business to sustainable growth opportunities through innovation within the business (Bouchard & Fayolle, 2001). They are deemed to lead the charge of innovation throughout the existing business. Organizational transformation is another form of corporate entrepreneurship. Bouchard & Fayolle (2001) noted that organizational transformation fits within the Schumpeter (1934) definition of entrepreneurship when the transformation involves innovation through reallocation or exploitation of resources that creates value. Industry rule-bending is the last type of corporate entrepreneurship.

Like organizational transformation, this form focuses on transforming the rules of the competitive environment (Bouchard & Fayolle, 2001). Industry rule-bending changes the rules that the industry typically follows by creating a new idea or innovation. This innovation changes the way competition practices its business (Bouchard & Fayolle, 2001).

Wolcott and Lippitz (2007) studied the way in which companies implement corporate entrepreneurship. They made it clear that all companies do not practice corporate entrepreneurship in the same manner. Therefore, they evaluated the different approaches of various companies and found it necessary to divide the practice into two dimensions (Wolcott & Lippitz, 2007). The first dimension that they identified is the level of organizational ownership of the innovation or new idea. This dimension relates to the level of responsibility and accountability for the new creation or innovation (Wolcott & Lippitz, 2007). The next dimension is resource authority, which refers to the level or number of resources allocated to corporate entrepreneurship or new creations (Wolcott & Lippitz, 2007). The level of resources allocated in turn refers to the level of funding or budget required to support innovation. Wolcott and Lippitz (2007) used these dimensions to create a matrix with four models of corporate entrepreneurship. The models presented by Wolcott and Lippitz (2007) are the opportunist, the enabler, the advocate, and the producer. See Figure 1 below where each model presents a different way of encouraging or promoting corporate entrepreneurship.

**Figure 1**
**The Wolcott and Lippitz Matrix of the Four Models of Corporate Entrepreneurship**




Source: Wolcott & Lippitz (2007).

The opportunist model describes the organization that really does not have a model. All companies begin with this stage of corporate entrepreneurship (Wolcott & Lippitz, 2007) because they are unaware of which direction to turn. Within this model, the organization does not make a true investment of resources. The employee with the innovative resource will get the support of a "product champion" (Wolcott & Lippitz, 2007). The product champion pushes forward the new ideal—however, oftentimes pushing against the bureaucracy of the organization. The next model in the matrix is the "enabler" model. The enabler is when the organization starts the process of corporate entrepreneurship with the people they hire. With this

model, the organization makes an effort to hire entrepreneurially-minded people. The organizational culture encourages all employees to explore and promote their new ideas (Wolcott & Lippitz, 2007). Under this model, the organization is willing to dedicate resources to the process; however, there is no formal organizational ownership of the new innovation (Wolcott & Lippitz, 2007). Google is an example of this model. They enable teams to develop new ideas and opportunities on their own if it is a fit with the company's strategic framework (Wolcott & Lippitz, 2007). Once the enabler model is fully evolved, the organization sets parameters around this process including guidelines for decision-making, funding, recruitment, and retention of employees (Wolcott & Lippitz, 2007).

The third model is the "advocate" model. In this model, the organization assigns ownership to the innovation for the creation of new business (Wolcott & Lippitz, 2007). The organization will select a group of employees to manage this process by providing them with minimal budgets. The individual business units are responsible for their won budgets under this model. These groups work throughout all departments to encourage innovation and new ideas. In the advocate model, the corporation facilitates corporate entrepreneurship along with all departments within the organization (Wolcott & Lippitz, 2007). The last model presented by the matrix is the "producer" model. Under this model, the company establishes formal organizations within itself to facilitate the corporate entrepreneurship process (Wolcott & Lippitz, 2007). The company allocates significant funding and active control or influence over the funding. This model is similar to the enabler and advocate models where the organization encourages innovation through employees with collaboration and teamwork (Wolcott & Lippitz, 2007).

Because each organization does not implement or practice corporate entrepreneurship using a specific model, it is important to understand the practice of intrapreneuring. The practice of corporate entrepreneurship includes more than one model. This understanding assists in the analysis of the legitimization of corporate entrepreneurship against pure entrepreneurship. The models enable the analysis through the actual practice of corporate entrepreneurship. The type of model that a corporation adopts could affect its fit into the tenets of entrepreneurship, and is vital to the analysis.

## EVALUATION OF CORPORATE ENTREPRENEURSHIP AS A LEGITIMATE FORM OF ENTREPRENEURSHIP

To determine whether corporate entrepreneurship is a legitimate form of entrepreneurship, it is necessary to utilize the checklist developed in this paper. The checklist will allow for a step-by-step analysis of the ability of corporate entrepreneurship to compete the checklist. A Venn diagram was developed from checklist of corporate entrepreneurship and entrepreneurship common themes. Figure 2 below shows the overlap of common themes between corporate entrepreneurship and entrepreneurship. Majority of the characteristics of entrepreneurship and corporate entrepreneurship overlap. The overlapping themes drive the

analysis of whether corporate entrepreneurship meets the requirements of entrepreneurship. During this analysis, each requirement of entrepreneurship will be discussed while analyzing how corporate entrepreneurship meets each requirement. After the analysis, an objective determination will be made as to whether it meets the requirements.

### Innovation and Creation

Innovation and creation have proven to be major premises of entrepreneurship. From the research provided, it can be presumed that without innovation and creation, entrepreneurship cannot exist. Therefore, it is important to begin with this tenet. By starting with the synthesized definition developed in this paper, it is evident that corporate entrepreneurship meets the primary tenet. The definition synthesized here from several resources defines corporate entrepreneurship as the "creation of value using the development of new ideas…through innovation". The idea of innovation is not subtle in the various definitions of corporate entrepreneurship as identified in Table 3. Furthermore, each of the models presented by Wolcott and Lippitz (2007), which emphasize the practice of entrepreneurship, requires creation of new ideas, development, and innovation. The crux of corporate entrepreneurship is to push organizations into a new level of creation and innovation for sustenance of growth. Therefore, it is evident that the premise of innovation and creation is not lacking in corporate entrepreneurship. We may thus conclude that corporate entrepreneurship meets the requirement of incorporating innovation and creation.

### Utilization and Exploitation of Resources

The next identified requirement of entrepreneurship is utilization and exploitation of resources. The provided analysis of the definition of entrepreneurship shows that the majority of scholars identified utilization and exploitation of resources as requirements of entrepreneurship (Table 1). The utilization and exploitation of resources is not made obvious by analyzing the definitions of corporate entrepreneurship. The synthesized definition developed within this paper also does not mention the utilization and exploitation of resources. However, it can be implied by the terms "strategic renewal" (Corbett et al., 2013) and "organizational transformation" (Covin & Miles, 1999). Bouchard and Fayolle (2001) noted organizational transformation as a form of corporate entrepreneurship. In their discussion, they defined organizational transformation as the reallocation or exploitation of resources that creates value (Bouchard & Fayolle, 2001). Strategic renewal as mentioned by Corbett et al. (2013) is synonymous with organizational transformation whereby an organization realigns is strategy to remain competitive in the market. This presumes that although not blatantly mentioned by many researchers, utilization and exploitation of resources is a factor within corporate entrepreneurship. Furthermore, the Wolcott and Lippitz (2007) models allude to resources as a factor in corporate entrepreneurship, as resource allocation is a dimension in its model. Therefore, corporate entrepreneurship fosters the utilization and/or exploitation of resources to create new ideas or to initiate new developments.

### Identification and Exploitation of Opportunity

Identification and exploitation of opportunity is a clear tenet of entrepreneurship. The evaluation of definitions of entrepreneurship has shown its importance; therefore, corporate entrepreneurship must show some form of identification and exploitation of opportunity. At a first glance of Table 3, it is evident that identification and exploitation of opportunities are factors of corporate entrepreneurship. The definition developed included opportunities as a part of the definition, as "corporate entrepreneurship is the creation of value using the development of new ideas or improvements by exploiting unnoticed opportunities…" Exploiting resources was significant enough to include in the definition of corporate entrepreneurship. For organizations in search of sustainability and competitive advantage, identification, and exploitation of opportunities in the market are essential. In the definition of types of entrepreneurship, Bouchard and Fayolle (2001) explain that an intrapreneur is in search of growth opportunities. Wolcott and Lippitz (2007) mention that the enabler model of corporate entrepreneurship focuses on the development of new opportunities. Under this model, employees are encouraged to seek new opportunities in the market. This is key to the model presented by Wolcott and Lippitz (2007) and therefore key to the intrapreneur. This seems to be sufficient to demonstrate that corporate entrepreneurship entails the identification and exploitation of opportunities.

### Risk and Uncertainty

Risk and uncertainty have been essential to the definition of entrepreneurship as many scholars have stated. Whether described as risk or uncertainty, an element of risk must be present. It is the risk of the unknown about the future that is essential. The scholars who have included risk as a vital element in entrepreneurship have failed to determine the following: the level of risk that is required, the type of risk that is required, and the bearer of the risk defined. This leads to the presumption that there needs to be some sort of risk or uncertainty present surrounding the innovation or creation. Hisrich and Peters (1989) broadened the definition of risk to include more than financial risk. They included financial, psychological, and social risk as the types of risk an entrepreneur may assume (Hisrich & Peters, 1989). This allows for a broad analysis of whether risk is present in corporate entrepreneurship. The argument that the innovator or the creator must assume the risk can be supported in corporate entrepreneurship based on the definition of risk by Hisrich and Peters (1989). An innovator within an organization may take the risk of uncertainty.

Uncertainty for the individual does exist with the unknown, of the success of the idea or the risk of failure. It is evident that the corporation itself assumes the risk of the innovation created by the employee, because the corporation invests or takes responsibility for that creation, especially in the Wolcott and Lippitz (2007) advocate model. Depending on the level of involvement within the model, the corporation assumes a corresponding risk. At this point the corporation is like the farmer that Cantillon described in the example of risk assumption. The farmer is investing in the employee, who would be the laborer, without knowing the future

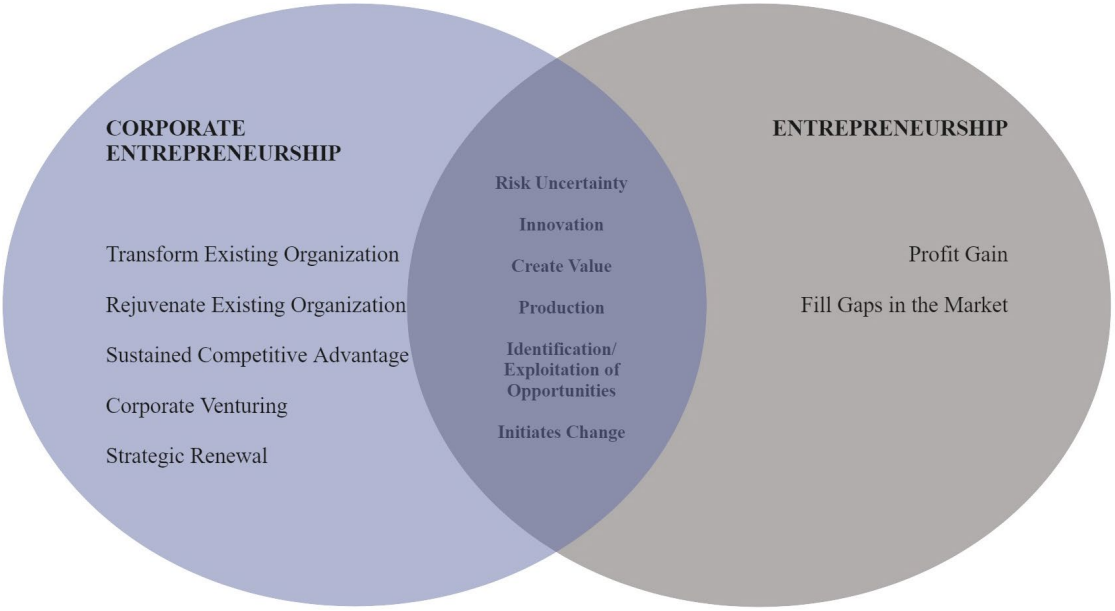
reward or profit. In corporate entrepreneurship, the company is investing in the idea of the employee without knowing the future reward, let alone profit.

The assumption of risk is not absent from corporate entrepreneurship. The organization assumes an increased risk by creating something new or venturing into unchartered territory (Bouchard & Fayolle, 2001). They are assuming the risk that the new venture will not work correctly or will cost too much or do what it was intended to do (Bouchard & Fayolle, 2001). The assumption of risk has an impact on whether or not an organization will pursue a new venture. Garrett, Mattingly, Hornsby, and Aghaey (2020) identify uncertainty and resources as the two factors that impact the decision-making of corporate entrepreneurs. The results of the of the Garrett et al. (2020) study show that there is a relationship between uncertainty and the decisions made by corporate entrepreneur. Garrett et al. (2020) explain that corporate entrepreneurs are less willing to assume high levels of uncertainty due to scrutiny. Although, the willingness to accept uncertainty differs between the entrepreneur and corporate entrepreneur, Garret et al. (2020) establish that uncertainty is present in corporate entrepreneurship as the corporate entrepreneur must balance resources with the level of uncertainty of a new venture. Whether employees assume psychological or social risk, or the company risks future profits or rewards, risk or uncertainty is present in corporate entrepreneurship.

**Production for Profit or Gain**

Production for profit or gain has been recognized as a significant factor in entrepreneurship. Many researchers included profit as a factor within its definition. However, the terms “profit” or “gain”, are not finite and many types of gains can be presumed from this tenet. It is obvious from Table 3 that profit is not explicitly listed as a requirement. However, it can be presumed from the definition that includes an organization’s quest for competitive advantage and sustainability. An organization cannot be sustained without profit. Therefore, it can be deduced that sustainability alludes to profit, gain, or reward from the innovation. The purpose of corporate entrepreneurship is to increase innovation within the organization. With innovation, it is presumed that reward is gained through the organization’s ability to keep up with the market. Therefore, profit, gain, and reward are present in a corporate entrepreneurship framework.

**Figure 2**
**Common Themes in Corporate Entrepreneurship and Entrepreneurship**




## CORPORATE ENTREPRENEURSHIP OR RESEARCH AND DEVELOPMENT?

When Pinchot and Pinchot (1978) initially introduced the idea of intrapreneuring, they addressed the controversy of whether it was just the research and development department involved. They emphasized that research and development were not enough to foster real, creative innovation within the organization. When corporate entrepreneurship is encouraged, it is promoted beyond one department. The idea of corporate entrepreneurship is a cultural change where companies often seek to hire those with an entrepreneurial mindset (Bouchard & Fayolle, 2001). Hiring individuals who think innovatively without bounds, provides an environment that encourages new ideas and out-of-the-box thinking. Pinchot and Pinchot (1978) mention the fact that the bureaucracy and red tape of an organization would hinder the creativity in the research and development departments. They further state that research and development can hardly be creative when faced with uncertainty. Research and development can be viewed as a rigid function of an organization and not free-flowing creative thinking, although new products come out of research and development. In contrast, corporate entrepreneurship removes this burden of the corporations, and fosters an environment that breeds innovative thinking and creativity.

## FUTURE RESEARCH

This research opens doors for further research into the idea of corporate entrepreneurship. This could lead to further exploration on the type of risk employees and

organizations assume by encouraging corporate entrepreneurship. The assessment of risk in corporate entrepreneurship needs to be identified to further support the proposition that corporate entrepreneurship is legitimate. Future research could also include the effect of corporate entrepreneurship in terms of whether the company gains more profit or incurs loss. In future, scholars may also determine whether corporate entrepreneurship programs increase the number of employees who leave the business to start their own endeavors by using resources initially provided by the organization. Because corporate entrepreneurship is a relatively new practice, future research could add value to business as organizations as they continue to strive for competitive advantage and sustainability through innovation and creativity.

## CONCLUSION

Corporate entrepreneurship, an oxymoron, is what would be assumed to be a fact by the term. However, after careful analysis of the various definitions of entrepreneurship, which led to a useful synthesized definition, this paper has shown that corporate entrepreneurship is more than an oxymoron. It has also proposed that corporate entrepreneurship meets the requirements of entrepreneurship, thus legitimizing its practice. The evaluation of the practice of corporate entrepreneurship using Bouchard and Fayolle's (2001) four types or corporate entrepreneurship and Wolcott and Lippitz's (2007) model of corporate entrepreneurship shows that when they are implemented, organizations and their employees practice entrepreneurship. The controversial requirement of risk has been thoroughly explained by broadening the definition based on Hisrich and Peters (1989). This broadened definition enabled the analysis to view the employee and the organization as risk-takers. Where many of the requirements of entrepreneurship were not easily aligned with the practice of corporate entrepreneurship, further analysis of the definitions of the terms shows that corporate entrepreneurship is indeed a legitimate form of entrepreneurship and more than a "research and development" department within an organization.

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# RELATIONSHIP BETWEEN BMCC STUDENTS' CLASS GRADES AND THEIR INTENTIONS

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## ABSTRACT

*The purpose of this research is to study if there is a relationship between BMC College students' class/grades and their intentions: (1) To become an entrepreneur, (b) To become a social entrepreneur, or (c) to work for someone else, after they have completed their education. Using certain tests, this study rejected the null hypothesis that there is no relationship, when all students are considered, between their overall class/grades and their intention for A, B, or C. However, when classified by gender and sub-class levels, the study provided different conclusions.*

Keywords: BMCC Students, social entrepreneurship, class, grades, intention

## INTRODUCTION

The primary purpose of this article is to examine the relationship between only one independent variable, namely, the 'class attained' by the students (such as, distinction, first class, second class, or pass class), and the dependent variable, their 'intention'. The Indian term 'class' is equivalent to the American term 'grades.' These words would be used interchangeably in this article. The overall purpose of this research is therefore to study what the students of Brihan Maharashtra College of Commerce (BMCC), Pune, India, intend to do upon completion of their college education, which may be identified as follows.

1. Option (a): Start a business (without any particular emphasis on it being a socially oriented business). Alternatively, to become an entrepreneur.
2. Option (b): Start a business with (with a particular emphasis on it being a socially oriented business). Alternatively, to become a social entrepreneur.
3. Option (c): Work for someone else.

This is a novel study due to the following reasons:

A. It analyzes the relationship between college students' class/grades and their

intentions for entrepreneurship, social entrepreneurship, or for working for someone else.

B. It analyzes three dependent relationships, rather than the conventional one or two.

## LITERATURE REVIEW

Several factors influence what students' may intend to do after they have completed their education. Some of these factors include (a) Gender, culture, and country. (b) Family and friends. (C) Age and experience. (D) Personality. (E) Education.

Dozens of research articles have been written on each one of these reasons and their relationship with the students' intention.

Since the focal point of this article is to study the relationship between students' class (grades), an educational variable, and their intention, the survey of literature for this article is limited to those studies that are related to the various educational variables that influence what students intend to do after they have completed their education. These studies, categorized by some broad similarities, are presented below.

Schumpeter (1934) defined entrepreneurship as the process of doing something that ordinarily would not have been done during business routine. Rumelt (1987) defined entrepreneurship as the creation of new businesses (Otache, 2019).

Thompson (2009) stated entrepreneurial intentions as "self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future" (Israr & Saleem, 2018).

Entrepreneurial intention is defined as the "intention of setting up one's business in the future" and it involves a process of prior planning and thinking (Van Gelderen et al., 2008; Schlaegel & Koenig 2014; Al Saiqal, Ryan, & Parcero, 2019).

Entrepreneurship education consists of "any pedagogical [program] or process of education for entrepreneurial attitudes and skills" (Fayolle, Gailly, & Lassas-Clerc, 2006b, p. 702; Bae, Qian, Miao, & Fiet, 2014).

Entrepreneurship education refers to the scope of curricular lectures or courses that primarily aim at sensitizing and qualifying students for an entrepreneurial career. (Walter, et al., 2011). EE means teaching people entrepreneurship (Otache, 2019).

### Education and Entrepreneurial Intentions

Several studies document how educational activity increases students' entrepreneurial intentions (Hmieleski & Corbett, 2006; Raposo et al., 2008; Ferri, et al., 2019)

Many studies show that skills and knowledge obtained from past educational experiences support individuals to develop a positive attitude towards venture creation (Miller et al., 20091; Morris et al., 2013; do Paço et al., 2011; Ferri, et al., 2019).

Moreover, based on the survey conducted on 50 entrepreneurs from diverse backgrounds in selected universities across the UAE, Kargwell, and Inguva (2012) found many entrepreneurs believe that education is a critical success factor in their business. (Saiqal, Ryan, & Parcero, 2019).

Several scholars have pointed out the significance of EE in EI. Some of these studies are presented below in a chronological order.

Dyer (1994), and Klapper and Jarniou (2006) assess how entrepreneurship education can provide access to role models who can make entrepreneurship seem more attractive. In this light, entrepreneurship education can be seen as a kind of 'socialization' effort, in that it attempts to make entrepreneurship attractive as a career path.

The primary objective of entrepreneurship education is to develop all essential entrepreneurial skills to meet entrepreneurial success (Lazear, 2004; Audretsch et al., 2016).

Klapper and Janiou (2006) conclude that, while enforced learning through entrepreneurial courses and seminars may initially be off-putting, such initiatives may have longer-term beneficial impacts on entrepreneurial intention.

It has been argued that students who take entrepreneurship courses are likely to think and behave entrepreneurially than those who do not (Fayolle et al., 2006; Otache, 2019).

According to Wilson and Marlino (2007), in terms of policy, their research findings suggest that providing access to entrepreneurship education is especially important in fueling the pipeline of aspiring women entrepreneurs, because of the strong role education plays in raising their levels of self-efficacy, and ultimately their interest in starting their own venture.

Entrepreneurship education can produce a range of desired out-comes, from increased entrepreneurial intentions to students becoming self-employed to students starting growth-oriented businesses (Dickson et al., 2008; Hamidi et al., 2008; Wilson et al., 2007; Ferri et al., 2019).

EE helps in shaping undergraduate students' entrepreneurial intentions and preparing them to establish their own business (Gerba, 2012b; Nabi & Holden, 2008; Petridou et al., 2009).

Several authors claim the importance of skills acquired during entrepreneurial educational courses or university programs to shape the intention to become an entrepreneur (Miller et al., 2009).

Lorz (2011; Chengalvala & Rentala, 2017) believes that entrepreneurship education is of crucial importance for facilitating entrepreneurship.

Of all the factors that affect entrepreneurial intentions, EE ranks among the first. EE is the process of teaching the students entrepreneurial competencies and skills that are required to recognise viable business opportunities and translate them into successful business ventures (Iacobucci & Micozzi, 2012; Otache, 2019).

Entrepreneurial education has been the center of attention and interest among researchers worldwide (Buli & Yesuf, 2015; Nader & Hamdy, 2019).

The entrepreneurial education has showed higher perceived entrepreneurial motivation among students taking such education, than the students without enterprise courses (Solesvik, 2013; Israr & Saleem, 2018).

Nader and Hamdy (2019) reported that entrepreneurship education should enhance students' intuitive and analytical styles emphasizing the importance of thinking style versatility to increase their entrepreneurial intentions.

Research conducted on youth attitudes show that many students (male and female alike) believe that careers in both areas, entrepreneurship, and engineering, can benefit from college education that offers diverse courses covering business expertise and technical skills (Dzombak, Rachel, et al., 2016).

Traditional entrepreneurial knowledge learning can no longer meet the dynamic environment's demand for entrepreneurial ability. Entrepreneurship education builds a multi-level social network and comprehensive learning management for the professional ability of entrepreneurs (Wei, Liu, & Sha, 2019).

**Entrepreneurial Education and Entrepreneurial Intention: Correlation**

Similarly, several researchers have concluded that there is a relationship between EE in EI. Some of such findings are presented below in a chronological order.

A study of college students in China revealed that entrepreneurial education has a significant and positive effect on their entrepreneurial intention but does not have a significant effect on entrepreneurial attitude.

According to a study by Klapper and Jarniou (2006), the entrepreneurship graduates were more entrepreneurial and had stronger entrepreneurial intentions, than the business graduates of other disciplines, in terms of both actual behavior and behavioral intention.

Studies by Basu and Virick (2008) and Davey et al., (2011) show a strong relationship between entrepreneurial education and entrepreneurial intentions.

A number of meta-analytical studies concluded that entrepreneurship education has a positive impact on students (Bae et al., 2014; Martin et al., 2013; Nader & Hamdy, 2019).

Likewise, Solesvik (2013) found that the students who participated in entrepreneurial education had higher perceived entrepreneurial motivation than the students who did not study entrepreneurial courses.

In their meta-analysis of entrepreneurship education outcomes, Martin, McNally, and Kay (2013) confirmed that entrepreneurship education is associated with higher levels of intention to become an entrepreneur.

Bae et al. (2014) found a significant but a small correlation between entrepreneurship education and entrepreneurial intentions. This correlation is also greater than that of business education and entrepreneurial intentions.

However, after controlling for pre-education entrepreneurial intentions, the authors noted that the relationship between entrepreneurship education and post-education entrepreneurial intentions was not significant (Bae et al., 2014).

In a study of engineering and non-engineering students, Law and Breznick (2017) concluded that the former has significantly higher levels of ‘attitude’, ‘learning motivation’, ‘self-efficacy’ and ‘entrepreneurship intention’, when compared to the latter. They further concluded that senior students have significantly higher innovativeness and entrepreneurship intention, when compared to the other students.

**Entrepreneurial Education and Entrepreneurial Intention: Lack of Correlation**

As presented below, a small number of studies did not support the widely recognized observation that EE helps EI.

Albeit and Oosterbeek, et al., (2010) and Ferri, et al., (2019) found that the impact of entrepreneurial education on entrepreneurial skills is insignificant or negative.

Walter et al. (2011) found no significant relationship between entrepreneurship support programs and self-employment intentions. Their research suggests that such offers have no direct, motivational effect on students.

Similarly, when measuring the effect of education, the results of this research did not support the hypothesis that education influences entrepreneurial intention, attitude, and perceived behavioral control (Al Saiqal, Ryan, & Parcero, 2019).

**Role of Educational Institutions**

According to Souitaris, Zer-binati, and Al-Laham (2007), universities are increasingly seen as critical institutions providing society with important learning and inspirational resources that can foster entrepreneurship. A sample of studies related to the significance of educational institutions in this area is presented below.

Mueller and Neck (2010) suggest that traditional entrepreneurship courses offer the foundational skill set for all entrepreneurial ventures regardless of type (Chengalvala & Rentala, 2017). Nian et al. (2010), cited in Chengalvala and Rentala, (2017) argue that an entrepreneurship education should not only provide theoretical knowledge but also be able to assist the students on establishing an entrepreneurship mind set through developing entrepreneurial skills, behaviours and attitudes.

Salamzadeh et al., (2013) and Chengalvala and Rentala (2017) found that many university students are aware of the concept of entrepreneurship. However, the understanding about entrepreneurship was found to be higher among students who have taken entrepreneurship as a course (Chengalvala & Rentala, 2017).

The universities should provide at an early stage, entrepreneurship education to students in order to increase their awareness about entrepreneurship (Chengalvala & Rentala, 2017). Israr and Saleem (2018) recommend that universities should expand the number of entrepreneurship courses/ trainings by all its faculties/departments.

This study suggest that universities and other relevant educational institutions should pay more attention to the combination of self-learning and external training in entrepreneurship, as well as the perception of entrepreneurial self-efficacy, to enrich the connotation of entrepreneurship education and improve its effectiveness (Liu, Lin, Zhao, & Zhao, 2019).

With so widely recognized role of universities in promoting entrepreneurship, it is not surprising to see that there are federally funded initiatives such as the Small Business Innovation Research (SBIR) Program and laws such as the Bayh-Dole Act of 1980 that encouraging universities to invest in infrastructure supportive of entrepreneurship (Walter, et al., 2011).

### Role of Class/Grades

An extensive survey of the literature that spawned over several years and numerous publications did not find any research that primarily studied the relationship between students' grades and their intention for entrepreneurship, social entrepreneurship, or working for someone else, except one somewhat similar study.

Israr and Saleem (2018) did this unique research. They made a study of what variables can motivate or hinder entrepreneurial intention among university students in Italy. Two of the 18 independent variables selected for their research were (1) students' high school education and (2) their high school grades.

Using multiple regression model, Israr and Saleem (2018) found that students with high school diploma grade ranging from 60 to 70 showed a stronger intention towards entrepreneurship, than those receiving grades from 91 to 100. Thus, a negative relationship was found between the university students' high school diploma grade and their entrepreneurial intention (Israr & Saleem, 2018).

Let us now present our one-of-a-kind research and its findings—that deals with the relationship between some college level students' college level grades and their intention.

## RESEARCH DESIGN

### Profile Of BMCC Students: Gender, Grade, and Intention

Table 1 presents a profile of the BMCC students based on their gender, grade, and intention.

Of the 242 male students, (242 = 100):

1. 32 (or 13.2%) had obtained distinction marks last semester;
2. 74 (or 30.6%) had obtained first class marks in their last semester;
3. 91 (37.6%) had obtained second class marks in their last semester;
4. 34 (or 14%) had received pass class marks in their last semester; and
5. 11 (or 14.5%) had no response to this question.
6. Of the 82 female students, (82 = 100), 26 (or 31.7%) had obtained distinction last semester;
7. 27 (or 32.9%) had obtained first class marks in their last semester;
8. 17 (20.7%) had obtained second class marks in their last semester;
9. 9 (or 11%) had received pass class marks in their last semester; and,
10. 3 (or 3.7%) had no response.

### Questionnaire Design

1. A questionnaire containing 72 questions was distributed among the BMCC students during 2014-2015. Three hundred thirty-eight students provided usable responses to the survey. Of these 338 students, 324 students provided usable responses to Q #15 of the questionnaire that asked about their intention, the dependent variable.
2. In Section 1, the questionnaire contained 14 independent variables (gender, age, father's employment, mother's employment, class attained, etc.), and 1 dependent variable (intention: a, b, or c, as above).
3. In Section 2, there were 19 variables dealing with the respondents' reason for their intention for 'entrepreneurship'.
4. In Section 3, there were 19 variables dealing with the respondents' reason for their intention for 'social entrepreneurship'.
5. In Section 4, the remaining 19 variables dealt with the respondents' reason for their intention for 'working for someone else'.

## HYPOTHESES

1. Null hypothesis One: There is no relationship between the students' class (distinction, first class, second class, or pass class) and their intention to become an entrepreneur, a social entrepreneur, or to work for someone else.
2. Alternate hypothesis One: There is a relationship between the students' class (distinction, first class, second class, or pass class) and their intention to become an entrepreneur, a social entrepreneur, or to work for someone else.
3. Null hypothesis Two: There is no relationship between the male students' class (distinction, first class, second class, or pass class) and their intention to become an entrepreneur, a social entrepreneur, or to work for someone else.
4. Alternate hypothesis Two: There is a relationship between the male students' class (distinction, first class, second class, or pass class) and their intention to become an entrepreneur, a social entrepreneur, or to work for someone else.
5. Null hypothesis Three: There is no relationship between the female students' class (distinction, first class, second class, or pass class) and their intention to become an entrepreneur, a social entrepreneur, or to work for someone else.
6. Alternate hypothesis Thee: There is a relationship between the male students' class (distinction, first class, second class, or pass class) and their intention to become an entrepreneur, a social entrepreneur, or to work for someone else.

## STATISTICAL TESTING OF HYPOTHESES

### Chi-Square to Test Relationship between Educational Variables and Intention

Since this research is studying the relationship between an educational variable (class/grades) and the students' intention, we first selected all the three education-related independent variables (namely, the year of education, the degree program, and the

class/grades) included in the questionnaire, for performing our first set of statistical tests on these data. The test is the Chi Square test.

The Chi-Square Test of Independence (also known as Chi-Square Test of Association) determines whether there is an association between categorical variables (i.e., whether the variables are independent or related). It is a nonparametric test (Kent State University, 2021). Results of these tests as presented in Table 2 show that the null hypothesis is rejected in each of the three cases at the 95% confidence level. In other words, each test rejected the null hypothesis that:

A. There is no relationship between the students' year of education and their intention: (a) for all students, (b) for male students, (c) for female students.
B. There is no relationship between the students' degree program and their intention: (a) for all students, (b) for male students, (c) for female students.
C. There is no relationship between the students' class/grades and their intention: (a) for all students, (b) for male students.

However, in the case of the female students, the null hypothesis that "there is no relationship between the students' class/grades and their intention" is accepted.

**MLR Test to Test Relationship between Class and Intentions**

This research then focused on its central purpose, namely, the relationship between the BMCC students' class/grades (the independent variable) and their intention, namely, for A, B, or C (the dependent variable). The Multinomial Logistic Regression (MLR) test was chosen for testing this relationship.

Multinomial Logistic Regression analysis is used when the dependent variable is nominal with more than two levels--as in the case of the current study that has three nominal dependent variables. Similar to multiple linear regression, the multinomial regression is a predictive analysis. (The Analysis Factor, 2021). The intercept, often labeled the constant, is the expected mean value of Y when all X=0. (The Analysis Factor, 2021).

**MLR Test Analysis**

Table 3 presents the Multinomial Logistic Regression (MLR) Test of the Relationship between BMCC's Students' Overall grades (the Independent Variables) and Students' Intention (A, B, or C, the Dependent Variables).

The MLR test results show that at the 95% confidence level, or the 5% significance level, the p-value of 0.001 is less than 0.05. Therefore, as per the MLR testing guidelines, this study rejects the null hypothesis that there is no relationship between students' overall grades and their intention (A, B, or C).

This study then tried to find out, using the MLR testing, if there is a relationship between the different sub-levels of class/grades obtained by students (distinction, first class, second class, and pass class) and their intention (A, B, or C). No such relationship could be established due to their uncertain p-values.

**MLR Parameter Estimates Analysis**

This study then went an important step further. It analyzed the parameter estimates of the relationship between the students' sub-classes/grades (the independent variables), and their intention (A, B, or C—the dependent variables). Doing it so allowed us to examine this relationship by sub-categorizing the overall grades into their different levels (distinction, first class, second class, and pass class).

An analysis of various parameter estimates presented in Table 4 (related to Table 3) helped us reach the following inferences:

1. The p value of the students achieving the First Class is 0.009, which is less than 0.05 (the 5% significance value). It also has a positive co-efficient of 1.12.
    a. Therefore, as per the MLR testing guidelines, we conclude that the students who scored first class are more likely to intend to become entrepreneurs as compared to becoming social entrepreneurs or working for someone else.

2. Similarly, for the Second Class students, with a p value of 0.027 and a positive co-efficient of 1.12, we conclude that they are more likely to intend to become entrepreneurs as compared to becoming social entrepreneurs or working for someone else.

3. Likewise, for the Distinction Class students, with a p value of 0.684, which is greater than 5%, we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

4. Similarly, for the Pass Class students, with an uncertain p-value, we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

**MLR Test Analysis of Male Students**

This study then dived a little deeper to examine the relationships between the independent and the dependent variables by dividing the total responses by gender. Tables 5-8 present our findings.

Tables 5 presents the Multinomial Logistic Regression (MLR) Test of the Relationship between BMCC's 'male' students' grades (the Independent Variables) and their intention (A, B,

or C, the Dependent Variable). The MLR test results show that at the 95% confidence level, or the 5% significance level, the p-value of 0.00 is less than 0.05.

Therefore, as per the MLR testing guidelines, this study rejects the null hypothesis that "there is no relationship between the male students' grades and their intention (for A, B, or C)". This study then tried to find, using the MLR testing, if there is a relationship between the various sub-levels of class/grades (distinction, first class, second class, and pass class) obtained by the 'male' students, and their intention (A, B, or C). No such relationship could be established due to their uncertain p-values.

**MLR Parameter Estimates Analysis of Male Students**

An analysis of various parameter estimates presented in Table 6 (related to Table 5) helped us reach the following inferences:

1. The p value of the students achieving the First Class is 0.005, which is less than 0.05 (the 5% significance value). It also has a positive co-efficient of 1.37.

   a. Therefore, as per the MLR testing guidelines, we conclude that the male students who scored first class are more likely to intend to become entrepreneurs as compared to becoming social entrepreneurs or working for someone else.

2. Similarly, for the Second-Class male students, with a p value of 0.024 and a positive co-efficient of 1.06, we conclude that they are more likely to intend to become entrepreneurs as compared to becoming social entrepreneurs or working for someone else.

3. Likewise, for the Distinction Class students, with a p value of 0.321, which is greater than 5%, we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

4. Similarly, for the Pass Class male students, with an uncertain p-value, we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

**MLR Test Analysis of Female Students**

Tables **7** presents the Multinomial Logistic Regression (MLR) Test of the Relationship between BMCC's Female Students' grades (the Independent Variables) and their intention (A, B, or C, the Dependent Variable).

The MLR test results show that at the 95% confidence level, or the 5% significance level, the p-value of 0.208, which is more than 0.05.

Therefore, as per the MLR testing guidelines, this study accepts the null hypothesis that "there is no relationship between the female students' overall grades and their intention (for A, B, or C)."

This study then tried to find, using the MLR testing, if there is a relationship between the various sub-levels of class/grades (distinction, first class, second class, and pass class) obtained by the female students, and their intention (A, B, or C). No such relationship could be established due to their uncertain p-values.

**MLR Parameter Estimates Analysis of Female Students**

An analysis of various parameter estimates presented in Table 8 (related to Table 7) helped us reach the following inferences:

1. The p value of the female students achieving the First Class is 0.757, which is more than 0.05 (the 5% significance value). Hence, we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

2. Similarly, for the Second-Class female students, with a p value of 0.708, which is greater than 0.05 (the 5% significance level), we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

3. Likewise, for the Distinction Class female students, with a p value of 0.757, which is greater than 5%, we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

4. Similarly, for the Pass Class female students, with an uncertain p-value, we cannot infer their intention to become entrepreneurs, social entrepreneurs, or to work for someone else.

**Intention of Women vs Men: Some Variables**

Both statistical tests, chi-square and MLR, rejected the null hypothesis for intention of male students. However, all these tests accepted the null hypothesis for intention in the case of the female students. There are several factors responsible for Indian women's seeming lack of interest, relative to their men counterpart, in entrepreneurship or social entrepreneurship.

In her widely acknowledged article, Kabeer (1999) noted that "ability to make choices" is a key element of women empowerment. This in turn, Kabeer argues, depends upon three variables: (1) Access to resources, (2) Agency, and (3) Achievements.

However, often women's access to resources is restricted due to social dogma that treats women's role as secondary to that of men. Culturally, men are considered superior to women.

(Carr, Chen, & Jhabvala 1996; Brahme, 1984; cited in Datta & Gailey, 2012.) Similarly, male-oriented controls can create employment barricades for women. It is difficult for women to start their own business, or even learn entrepreneurial skills, against the wishes of their father or husband. (Also see Sen, 1999; and Pollard, 2006; both cited in Datta & Gailey, 2012.)

Only women give birth. Naturally, they need to spend more time with children. They face challenges in joining social networks, raising funds, and receiving timely information. (Gaiha et al., 2001; Khandker, 1998; and Torri and Martinez, 2013.)

## SUMMARY RESULTS BY GENDER AND INTENTIONS

The statistical analysis of data as presented above can be summarized as below:

### Results for All Students, Male and Female Combined

1. Chi-square test rejects the null hypothesis for all students.
2. MLR test rejects the null hypothesis for all students.
3. MLR test could not reflect on the null hypothesis for all students, broken down by their different sub-levels of class/grades, due to their uncertain p-values.

### Results for Male Students

1. Chi-square test rejects the null hypothesis for male students.
2. MLR test rejects the null hypothesis for male students.
3. MLR test could not reflect on the null hypothesis for male students, broken down by their different sub-levels of class/grades, due to their uncertain p-values.

### Results for Female Students

1. Chi-square test accepts the null hypothesis for female students.
2. MLR test accept the null hypothesis for male students.
3. MLR test could not reflect on the null hypothesis for female students, broken down by their different sub-levels of class/grades, due to their uncertain p-values.

## LIMITATIONS OF THE RESEARCH

This study in an academic environment has the following limitations:

1. It is limited to study of intention of a particular college in India.
2. Its conclusions are based on a relatively small sample of 324 responses.

## SUGGESTIONS FOR FUTURE RESEARCH

We make the following suggestions for further research in this area:

1. We recommend this research to be expanded by using the different educational levels of students (independent variable), such as higher secondary school students, undergraduate students, and graduate students.
2. We recommend research into such relationships by using the different types of education (independent variable), such as students of arts, business management, economics, engineering, and health-sciences.
3. We also recommend the separation of dependent variables, such as intention for entrepreneurship, for social entrepreneurship, or for working for someone else.
4. We recommend research into why women in India continue to lag behind men in terms of their intention for entrepreneurship, for social entrepreneurship, or working for someone else.

## CONCLUSIONS

This research explored the possible relationship between BMC College students' class/grades and their intentions: (A) To become an entrepreneur, (B) To become a social entrepreneur, or (C) to work for someone else after they have completed their education.

This study rejected the null hypothesis that there is no relationship, when 'all students' are considered, between their overall class/grades and their intention for A, B, or C. However, when classified by their gender and sub-class levels, the study provided different conclusions.

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# APPENDIX

## Table 1
### Profile of BMCC Students by Gender, Class Obtained, and Intention

| Profile of students by Class obtained last semester, Gender, and Intention | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Male | | | | Female | | | | Total Male & Female | | | |
| | | | Start Own Business, Not Socially Oriented | Start Own Business (Socially Oriented) | Work for Others | Total | Start Own Business (Not Socially Oriented) | Start Own Business (Socially Oriented) | Work for Others | Total | Start Own Business (Not Socially Oriented) | Start Own Business (Socially Oriented) | Work for Others | Total |
| 1) | 2) | 3) | 4) | 5) | 6) | 7) | 8) | 9) | 10) | 11) | 12) | 13) | 14) | 15) |
| (Q12) Class obtained last semester | Distinction | Count | | | 5 | 2 | 2 | | | 6 | 1.0 | 3.0 | 4.0 | 8.0 |
| | | Expected Count | 6.7 | .4 | 1.0 | 2.0 | 2.0 | .8 | .2 | 6.0 | 8.7 | .1 | 0.2 | 8.0 |
| | | % within Class (Q12) obtained | 8.1% | 5.0% | 6.9% | 00.0% | 6.2% | 9.2% | 4.6% | 00.0 % | | | | |
| | | within Intention | .1% | 4.2% | 8.1% | 3.2% | 1.6% | 3.3% | 1.0% | 1.7% | 00.0% | 00.0% | 00.0% | 00.0 % |
| | | of Total | .7% | .3% | .2% | 3.2% | 4.6% | .1% | 1.0% | 1.7% | 9% | 6% | 5% | 00% |
| | FFirst Class | Count | 0 | | 9 | 4 | 2 | | | 7 | 2.0 | 1.0 | 8.0 | 01.0 |
| | | Expected Count | 8.5 | 0.1 | 5.4 | 4.0 | 2.5 | .9 | .5 | 7.0 | 1.0 | 5.0 | 4.9 | 01.0 |
| | | within (Q12) Class obtained last semester | 7.6% | .8% | 5.7% | 00.0% | 4.4% | 2.2% | 3.3% | 00.0 % | | | | |
| | | within Intention | 9.7% | 5.2% | 2.9% | 0.6% | 1.6% | 0.0% | 1.0% | 2.9% | 00.0% | 00.0% | 00.0% | 00.0 % |
| | | of Total | 0.7% | .1% | .9% | 0.6% | 4.6% | .3% | 1.0% | 2.9% | 1% | 5% | 5% | 00% |
| | Second Class | Count | 4 | | 8 | 1 | 0 | | | 7 | 4.0 | .0 | 5.0 | 08.0 |
| | | Expecte | 7.4 | 2.4 | 1.2 | 1.0 | .9 | .1 | .0 | 7.0 | 5.3 | 5.5 | 7.2 | 08.0 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | d count | | | | | | | | | | | |
| | | within (Q12) Class obtained last semester | 9.3% | .9% | 0.8% | 00.0% | 8.8% | .0% | 1.2% | 00.0% | | | |
| | | within Intention | 2.9% | 7.3% | 3.7% | 7.6% | 6.3% | .0% | 4.1% | 0.7% | 00.0% | 00.0% | 00.0% | 00.0% |
| | | of Total | 2.3% | .7% | 1.6% | 7.6% | 2.2% | .0% | .5% | 0.7% | 1% | 4% | 4% | 00% |
| | Pass Class | Count | 0 | | 5 | 4 | | | | | 3.0 | 2.0 | 8.0 | 3.0 |
| | | Expected Count | 7.7 | .6 | 1.7 | 4.0 | .2 | .6 | .2 | .0 | 1.9 | .3 | 4.8 | 3.0 |
| | | within (Q12) Class obtained last semester | 9.4% | 6.5% | 4.1% | 00.0% | 3.3% | 3.3% | 3.3% | 00.0% | | | | |
| | | within Intention | .9% | 7.3% | 8.1% | 4.0% | .9% | 0.0% | 0.3% | 1.0% | 00.0% | 00.0% | 00.0% | 00.0% |
| | | of Total | .1% | .7% | .2% | 4.0% | .7% | .7% | .7% | 1.0% | 1% | 5% | 5% | 00% |
| | No response | Count | | | | 1 | | | | | .0 | .0 | .0 | 4.0 |
| | | Expected Count | .7 | .5 | .8 | 1.0 | .4 | 5 | .1 | .0 | .1 | .0 | .8 | 4.0 |
| | | within (Q12) Class obtained last semester | 7.3% | 8.2% | 4.5% | 00.0% | 3.3% | 3.3% | 3.3% | 00.0% | | | | |
| | | within Intention | .4% | .1% | .2% | .5% | .6% | .7% | .4% | .7% | 00.0% | 00.0% | 00.0% | 00.0% |
| | | of Total | .2% | 8% | .5% | .5% | .2% | .2% | .2% | .7% | 1% | 5% | 5% | 00% |

## Table 2
**Results of Hypotheses Testing**

| Null Hypothesis | # of responses | Type of Test | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Decision |
|---|---|---|---|---|---|---|---|
| There is no relationship between a student's year of education and his/her intention towards any work (15 A, B or C) after studies | 324 | Pearson Chi-Square | 14.07 | 4 | 0.007 | 0.007 | Reject Null Hypothesis |
| There is no relationship between a male student's year of education and his/her intention towards any work (15 A, B or C) after studies | 242 | Pearson Chi-Square | 11.52 | 4 | 0.021 | 0.021 | Reject Null Hypothesis |
| There is no relationship between a female student's year of education and his/her intention towards any work (15 A, B or C) after studies | 81 | Pearson Chi-Square | 19.13 | 4 | 0.001 | 0.001 | Reject Null Hypothesis |
| There is no relationship between a student's degree program and his/her intention towards any work (15 A, B or C) after studies | 324 | Pearson Chi-Square | 16.87 | 6 | 0.01 | 0.01 | Reject Null Hypothesis |
| There is no relationship between a male student's degree program and his/her intention towards any work (15 A, B or C) after studies | 242 | Pearson Chi-Square | 14.82 | 6 | 0.022 | 0.021 | Reject Null Hypothesis |
| There is no relationship between a female student's degree program and his/her intention towards any work (15 A, B or C) after studies | 82 | Pearson Chi-Square | 18.72 | 6 | 0.005 | 0.004 | Reject Null Hypothesis |
| There is no relationship between a student's marks in last semester and his/her intention towards any work (15 A, B or C) after studies | 324 | Pearson Chi-Square | 24.1 | 6 | 0.001 | 0 | Reject Null Hypothesis |
| There is no relationship between a male student's marks in last semester and his/her intention towards any work (15 A, B or C) after studies | 231 | Pearson Chi-Square | 26.14 | 6 | 0 | 0 | Reject Null Hypothesis |
| There is no relationship between a female student's marks in last semester and his/her intention towards any work (15 A, B or C) after studies | 79 | Pearson Chi-Square | 5.708 | 6 | 0.457 | 0.474 | Accept Null Hypothesis |

## Table 3

**Multinomial Logistic Regression (MLR) Test of the Relationship Between BMCC All Students' Grades (The Independent Variables) and Students' Intention (A, B, or C, the Dependent Variable).**

| Likelihood Ratio Tests | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Null Hypothesis (All Students)** | **Intercept/Class Categories** | **Number of Valid Cases (n)** | **Effect** | **Model Fitting Criteria** | **Likelihood Ratio Tests** | | | **Decision** |
| There is no relationship between a student's marks in last semester and his/her intention towards any (A, B, or C). | | | -2 Log Likelihood of Reduced Model | Chi Square | | df | Sig. | Reject the null hypothesis |
| | Distinction | 58 | 8.428 | 0 | | 0 | . | |
| | First Class | 101 | 8.94 | 0 | | 0 | . | |
| | Second Class | 108 | 8.929 | 0 | | 0 | . | |
| | Pass Class | 43 | | 7.887 | 0 | 0 | . | |
| | Total | 310 | Intercept | 34.184 | 0 | 0 | . | |
| | | | Grade | 58.171 | 23.99 | 6 | 0.001 | |

## Table 4

**Represents the Parameter Estimates Related to Table 3 Variables and Testing**

| Parameter Estimates | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Intention | Intercept/ Class Categories | Coefficient (B) | Std. Error | Wald | df | Sig. | Exp(B) | 95% Confidence Interval for Exp(B) | |
| | | | | | | | | Lower Bound | Upper Bound |
| Own Business | Intercept | -0.325 | 0.364 | 0.799 | 1 | 0.371 | | | |
| | Distinction | 0.192 | 0.471 | 0.166 | 1 | 0.684 | 1.212 | 0.481 | 3.049 |
| | First Class | 1.12 | 0.429 | 6.81 | 1 | 0.009 | 3.066 | 1.322 | 7.112 |
| | Second Class | 0.929 | 0.42 | 4.884 | 1 | 0.027 | 2.532 | 1.111 | 5.771 |
| | Pass Class | 0b | . | . | 0 | . | . | . | . |
| Own Social Business | Intercept | -0.405 | 0.373 | 1.184 | 1 | 0.277 | | | |
| | Distinction | -0.208 | 0.507 | 0.167 | 1 | 0.682 | 0.813 | 0.301 | 2.197 |
| | First Class | -0.529 | 0.515 | 1.053 | 1 | 0.305 | 0.589 | 0.215 | 1.618 |
| | Second Class | -0.953 | 0.528 | 3.258 | 1 | 0.071 | 0.386 | 0.137 | 1.085 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pass Class | 0b | . | . | 0 | . | . | . | . |
| a. The reference category is: WFS. | | | | | | | | | |
| b. This parameter is set to zero because it is redundant. | | | | | | | | | |

## Table 5

**Multinomial Logistic Regression (MLR) Test of the Relationship Between BMCC Male Students' Grades (The Independent Variables) and Students' Intention (A, B, or C, the Dependent Variable)**

| Likelihood Ratio Tests | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Null Hypothesis (All Students) | Intercept/Class Categories | Number of Valid Cases (n) | Effect | Model Fitting Criteria | Likelihood Ratio Tests | | | Decision |
| There is no relationship between a male student's marks in last semester and his/her intention towards any (A, B, or C). | | | | -2 Log Likelihood of Reduced Model | Chi Square | df | Sig. | Reject the null hypothesis |
| | Distinction | 32 | | 7.24 | 0 | 0 | . | |
| | First Class | 74 | | 7.881 | 0 | 0 | . | |
| | Second Class | 91 | | 8.709 | 0 | 0 | . | |
| | Pass Class | 34 | | 7.339 | 0 | 0 | . | |
| | Total | 231 | Intercept | 31.228 | 0 | 0 | . | |
| | | | Grade | 57.452 | 26.22 | 6 | 0 | |

## Table 6
### Represents the Parameter Estimates Related to Table 5 Variables and Testing

| Intention | Intercept/Class Categories | Coefficient (B) | Std. Error | Wald | df | Sig. | Exp (B) | 95% Confidence Interval for Exp(B) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower Bound | Upper Bound |
| | Intercept | -0.405 | 0.408 | 0.986 | 1 | 0.321 | | | |
| Own Business | Distinction | -0.105 | 0.587 | 0.032 | 1 | 0.858 | 0.9 | 0.285 | 2.843 |
| | First Class | 1.373 | 0.489 | 7.878 | 1 | 0.005 | 3.947 | 1.513 | 10.297 |
| | Second Class | 1.062 | 0.47 | 5.108 | 1 | 0.024 | 2.893 | 1.151 | 7.268 |
| | Pass Class | 0b | . | . | 0 | . | . | . | . |
| | Intercept | -0.511 | 0.422 | 1.468 | 1 | 0.226 | | | |
| Own Social Business | Distinction | -0.118 | 0.608 | 0.038 | 1 | 0.846 | 0.889 | 0.27 | 2.926 |
| | First Class | -0.824 | 0.656 | 1.578 | 1 | 0.209 | 0.439 | 0.121 | 1.587 |
| | Second Class | -0.624 | 0.57 | 1.2 | 1 | 0.273 | 0.536 | 0.175 | 1.636 |
| | Pass Class | 0b | . | . | 0 | . | . | . | . |
| | | | | | | | | | |
| a. The reference category is: WFS. | | | | | | | | | |
| b. This parameter is set to zero because it is redundant. | | | | | | | | | |

## Table 7

**Multinomial Logistic Regression (MLR) Test of The Relationship Between BMCC Female Students' Grades (The Independent Variables) and Students' Intention (A, B, or C, The Dependent Variable)**

| Likelihood Ratio Tests | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Null Hypothesis (Female Students) | Intercept/Class Categories | Number of Valid Cases (n) | Effect | Model Fitting Criteria | Likelihood Ratio Tests | | | Decision |
| There is no relationship between a female student's marks in last semester and his/her intention towards any (A, B, or C). | | | | -2 Log Likelihood of Reduced Model | Chi Square | df | Sig. | Accept the null hypothesis |
| | Distinction | 26 | | 6.769 | 0 | 0 | . | |
| | First Class | 27 | | 6.908 | 0 | 0 | . | |
| | Second Class | 17 | | 3.284 | 0 | 0 | . | |
| | Pass Class | 9 | | 4.922 | 0 | 0 | . | |
| | Total | 79 | intercept | 21.882 | 0 | 0 | . | |
| | | | grade | 30.315 | 8.433 | 6 | 0.208 | |

## Table 8

**Represents the Parameter Estimates Related to Table 7 Variables and Testing**

| Intention | Intercept/Class Categories | Coefficient (B) | Std. Error | Wald | df | Sig. | Exp (B) | 95% Confidence Interval for Exp(B) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower Bound | Upper Bound |
| | Intercept | 0 | 0.816 | 0 | 1 | 1 | | | |
| Own Business | Distinction | 0.288 | 0.928 | 0.096 | 1 | 0.757 | 1.333 | 0.216 | 8.219 |
| | First Class | 0.288 | 0.928 | 0.096 | 1 | 0.757 | 3.947 | 0.216 | 8.219 |
| | Second Class | 0.357 | 0.954 | 0.14 | 1 | 0.708 | 2.893 | 0.22 | 9.262 |
| | Pass Class | 0b | . | . | 0 | . | . | . | . |
| | Intercept | 0 | 0.816 | 0 | 1 | 1 | | | |
| Own Social Business | Distinction | -0.588 | 0.989 | 0.353 | 1 | 0.552 | 0.889 | 0.8 | 3.858 |
| | First Class | -0.405 | 0.972 | 0.174 | 1 | 0.677 | 0.439 | 0.099 | 4.478 |
| | Second Class | -20.963 | 0 | . | 1 | . | 7.87E-10 | 7.87E-10 | 7.87E-10 |
| | Pass Class | 0b | . | . | 0 | . | . | . | . |
| | | | | | | | | | |
| a. The reference category is: WFS. | | | | | | | | | |
| b. This parameter is set to zero because it is redundant. | | | | | | | | | |

# INCONSISTENCIES IN ENTREPRENEURS' HEALTH AND WELL-BEING RESEARCH: A REVIEW

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**ABSTRACT**

*The contradictory results of whether self-employed individuals and entrepreneurs suffer from better or worse health outcomes and the lack of a consistent definition of health and well-being variables motivated this literature review. Some of the inconsistencies include the definition of health and well-being and the extrapolation of findings for self-employed or entrepreneurs. Self-employed, entrepreneurs, founders, business managers and business owners are categories sometimes used interchangeably in the literature. Researchers use self-employed as a proxy for entrepreneurs. In this paper, we separate studies based on the sample, and discuss the limitations of generalizability. We provide a state of the research and examine the studied interactions between self-employed individuals and variables related to their physical and mental health. In our literature search we found 28 articles related to the health and well-being of the self-employed or entrepreneurs. The results of these studies indicate there is confusion regarding the causes and definition of stress, poor health, and well-being. Research regarding the occupational health and well-being of the self-employed is critical to understanding their success and failure. We present various future research avenues and questions.*

Keywords*:* Entrepreneurs, physical health, mental health, well-being, self-employed

## INTRODUCTION

The self-employed are underrepresented in occupational health research (Schonfeld & Mazzola, 2015). Thus far, there exists conflicting results on whether self-employed individuals suffer from better or worse health outcomes than their organizational-employed counterparts. Important distinctions identified by research are related to whether there are differences between the self-employed and wage earners or business managers as well as comparing the different types of self-employed (i.e. independent contractors and founders). The context in which self-employed individuals work can be viewed as one that elicits more extreme experiences with stress, well-being, and work addiction than the workers in an organizational context, and self-employed individuals are at a higher risk for negative health outcomes. Conducting research with the self-employed can uncover ways to mitigate negative health outcomes for entrepreneurs.

Self-employed, entrepreneurs, founders, business managers, and business owners are categories sometimes used interchangeably in the literature. Researchers often use self-employed as a proxy for entrepreneurs. In this paper, we separate studies based on the sample,

and discuss the limitations of generalizability. Self-employed business owners face several stressors that are not experienced by employees. For example, a self-employed individual does not have access to organizational health benefits, faces more overall uncertainty (financially and otherwise) and often has a higher responsibility load, especially if they employ workers. They do, however, also experience more autonomy/control, freedom, and a large body of literature reports them as having higher job satisfaction than employees despite working longer hours and facing higher levels of stress. Cardon and Patel (2015) provide a great discussion of the relationship between stress and negative health outcomes.

Given the contradictory results as well as the inconsistent application of health and well-being variables, a comprehensive review of the literature is needed. As such, we provide a state of the research and examine the interactions between self-employed individuals and variables related to their physical and mental health. We also review the theoretical foundations and contributions of the studies included in the sample. Additionally, directions for future research and specific research questions finalize the paper. The research in this area is very nuanced and differs with how health is defined and measured; who is considered an entrepreneur; and what management roles for the self-employed affect health. As such, a review of the existing body of work is necessary to highlight the theoretical and empirical literature gaps and to propose areas for future research. The arguments for whether entrepreneurship and self-employment are better (or worse) in terms of health outcomes are not consistent and findings seem contradictory. There seems to be a tipping point where the negative impacts of entrepreneurship (e.g. role conflict) overtake the positive impacts of entrepreneurship (e.g. autonomy). Evidence has also been found to conclude that improving entrepreneurs' health should focus on both individual and organizational measures and that entrepreneurs' health might be an underestimated resource for entrepreneurial behavior (Vinberg, Gundersen, Nordenmark, Larsson, & Landstad, 2012). Finally, there is room for more consideration of the theoretical foundations and contributions in this stream of research.

We begin with a discussion of our methodology, including how we curated the list of studies included in this review. We include studies examining stress due to the impact on both health and well-being. We review research that examines the health/well-being outcomes of the self-employed. Additionally, we examine research that has compared health/well-being outcomes of the self-employed versus the organizationally employed (also known as wage earners or wage workers). In addition, while some self-employed work alone, others may have a small group of employees that they manage. This distinction is important because job roles differ among independent contractors, business owners and owner-managers. A discussion of coping and transition are included. Coping is a specific line of research related to stress and the health/well-being of the self-employed, therefore we include this in our review. We include transition due to the temporal effects of moving between being organizationally employed and self-employed. Finally, we present our discussion, which includes future research in occupational health and well-being for the self-employed.

## METHODOLOGY

We followed a structured review procedure to identify relevant sources for this study. We used Web of Science, Google Scholar, and other library databases (ABI/INFORM Collection, Business Source Complete and ProQuest). Web of Science covers research across many disciplines where relevant studies and conference proceedings would be stored and published. We used a variety of search and phrases terms for entrepreneurs and for health outcomes. Table 1 presents some examples of the terms and phrases used in the search.

**Table 1**
**Example Search Terms and Phrases**

| Entrepreneurship Related | Health Related |
|---|---|
| Entrepreneur | Health |
| Self-Employed | Physical health |
| Venture owner | Mental health |
| Founder | General health |
| Business manager | Somatic health |
| Business owner | Psychosomatic health |
| Independent contractor | Well-being |
| Freelancer | Physical well-being |
| Enterprise owner | Mental well-being |
| Enterpriser | Depression |
| Businessman | Heart attack |
| Businesswoman | Stress |

Next, by reading the title and abstract of the studies, we determined if they were relevant to the current paper. Our primary focus was to identify papers which discussed physical or mental health outcomes for entrepreneurs and the self-employed. We then read those papers thoroughly and narrowed the pool of papers again. Using the papers in the narrowed pool, we conducted references searches of the manuscripts to determine if we missed any papers in the database searches. We then used the first page of Google Scholar search results to locate which studies cited our initial pool of papers.

Many of the papers we found focused on coping strategies and mechanisms and not necessarily on health and well-being as an outcome. A few of these papers are reviewed later in the manuscript, but they are not the focus of this study. We identified 27 relevant papers for this review. We then noticed that the final collection of papers could be divided by sample. For example, some studies only investigated a pool of entrepreneurs or self-employed. Others compared entrepreneurs to business managers. Others focused on self-employed versus organizationally employed. We decided to use these distinctions as the underlying framework for organizing our review. Though most of the papers included in the review were post 2000, some of the earlier studies include relevant scales, measurements, and theory. The final decision

to include papers was not made based on publication date of the article but instead focused on the content of the paper.

## HEALTH AND WELL-BEING FOR ENTREPRENEURS

Most studies we found in this review did not include any definitions of health or well-being. Table 2 presents the studies of mental strain as the health outcome.

**Table 2**
**Mental Strain Outcomes and Measurement**

| Health Outcome | Measurement | Studies |
|---|---|---|
| Mental Strain | Emotional exhaustion - adapted from Maslach (1982). | Tetrick, Slack, Da Silva, and Sinclair, (2000)– Self-employed business owners reported less strain than wage workers. |
| | Swedish Level of Living Survey | Andersson (2008) – No significant difference between self-employed and wage earners |

It can be seen from Tables 2 through 6 that there is very little agreement among the various measures of health and well-being. A further discussion of the findings highlighted in the "Studies" column will be included throughout the review of the literature which follows this section. The discussion of literature is mainly organized by employment type. Tables 3a and 3b organized the studies that focused on psychosomatic/mental health. Some of the measures were self-reported, some were from state-level studies, and others used data from validated measures of health.

**Table 3a**
**Psychosomatic/Mental Health Outcomes and Measurement**

| Health Outcome | Measurement | Studies |
|---|---|---|
| Psychosomatic & Mental Health | Michigan Studies of Workers' Health | Jamal and Badawi (1995) – Self-employed reported more psychosomatic health problems. |
| | Psychosomatic Health -Michigan Studies of Workers' Health; Mental Health – Kornhauser (1965) | Jamal (1997) –The self-employed reported more psychosomatic health problems. |
| | Goldberg's Depression and Anxiety scale | Parslow, Jorm, Christensen, Rodgers, Strazdins, and D'Souza (2004)– Self-employment was associated with relatively few mental health benefits. |
| | Self-reported – Symptoms include stomach pain, anxiety, nervousness, etc. | Gunnarsson, Vingard, & Josephson (2007) – Mental health was second most frequently reported. |

| | | |
|---|---|---|
| | Swedish Level of Living Survey | Andersson (2008) – Self-employed were more likely to state their mental health deteriorated. |
| | Role-related Exhaustion –Depression measured from Simpson's (1984) personal health questionnaire. | Wincent and Otqvist (2009) – Role stress mediates the relationship between venture environment, venture technology, personality, and entrepreneur role related exhaustion. |
| | German National Health Survey Mental Health Supplement | Stephan and Roesler (2010) – Entrepreneurs were less likely to suffer from a mental disorder during their lifetime as compared to wage earners. |
| | General Health Questionnaire (Goldberg, 1972) | Gorgievski, Bakker, Schaufeli, van der Veen, and Giesen (2010) - Results indicate that self-employed who experienced financial problems were impacted by psychological distress. |

## Table 3b
**Psychosomatic/Mental Health Outcomes and Measurement**

| Health Outcome | Measurement | Studies |
|---|---|---|
| Psychosomatic & Mental Health | Perceived mental status<br><br>Mental Health Composite Score SF-12v2<br><br>Kessler index | Yoon and Bernell (2013) – Self-employment is not significantly different from wage work. |
| | Kessler 10 (K10) Screening for Psychological Distress<br><br>Treatment sought for mental health | Cocker, Martin, Scott, Venn, and Sanderson (2013) –Respondents with high psychological distress reported taking more sick days than those with low/moderate levels. Owner/managers that reported receiving treatment for mental health issues reported more absenteeism and working while ill. |
| | Center for Epidemiological Studies Depression Scale | Rietveld, Kippersluis, and Thurik (2015) – No significant difference between the mental health of the self-employed and wage workers. |
| | EuroQol EQ-EL Self-Reported Health instrument – 1 mental health dimension (anxiety/depression) | Rietveld, Bailey, Hessles, and van der Zwan (2016) - Opportunity-based self-employed are overall healthier than wage workers. |
| | Euro-D | Patel, Reid, and Wolfe (2020) – Older self-employed individuals report lower levels of depression, up until approximately retirement age (65). |

Tables 4a and 4b present the studies, outcomes, and measurements for somatic/physical health for entrepreneurs. Table 4a focuses on the studies which generally find that entrepreneurs are healthier (or at least not less healthy) than wage earners or organizationally employed and the studies that find no difference between the two groups. From the data gathering process and analysis, this was a major discrepancy in the literature. Some of the differences can be attributed to the heterogeneity of the measurement instruments. The different types of data used included national health surveys, self-reported health surveys, perception scores, and risk reporting based on behaviors.

**Table 4a**
**Somatic/Physical Health Outcomes and Measurement**

| Health Outcome | Measurement | Studies |
|---|---|---|
| Somatic & Physical Health | German National Health Survey 1998; Behavioral Health – e.g., physician visits, sick days in past year | Stephan and Roesler (2010) – Entrepreneurs had lower blood pressure and somatic morbidity than wage earners. |
| | Health perception scores – perceived physical health status; Physical Health Composite/Short-form Version 2; Medical conditions – e.g. stroke, diabetes, asthma, etc.; Health behavior – e.g. smoking, moderate or vigorous physical activity, BMI | Yoon and Bernell (2013) – Self-employment is associated with greater level of perceived physical health status. Overall conclusion is that the self-employed do not appear to be in poorer physical health than wage earners. |
| | Swedish Level of Living Survey | Andersson (2008) – No significant difference between self-employed and wage earners |
| | Self-rated health – single item measure | Cocker, Martin, Scott, Venn, and Sanderson (2013) - The majority of self-employed reported working while ill. |

The studies in Table 4a include a variety of measurement of health though they consistently report that the self-employed are at least as healthy as wage earners or organizationally employed individuals, if not healthier. Some of the measurements are self-reported items while others include measurable health data such as BMI. Another type of measurement researchers used was reporting of the health history of the individual. Examples of this include asthma, stroke, and diabetes. One of the final types of measurement includes risk-related factors of health. Examples are smoking and level of physical activity.

There is the same heterogeneity in measurement as seen in Table 4b for the studies that find self-employed are less healthy and/or engage in more unhealthy lifestyles. An interesting finding from this group of studies is that even though the self-employed were less healthy, they did not perceive themselves to be as such. The measures include lifestyle choices such as smoking and health measures including blood pressure and cholesterol. Another type of data used in these studies are reported pain levels, fatigue, number of doctor visits, and general self-reporting of overall health. Without knowing the details of the studies, it is obvious that one of

the reasons for inconsistency in the findings is the diversity of health-related measurement tools. It can also be argued that the number of doctor visits is not a valid measure of health, and that self-reported pain can vary from month to month and may represent an injury and not a chronic condition. Some of the studies can tie other information to each observation, but some of the data is aggregated and generalized.

**Table 4b**
**Somatic/Physical Health Outcomes and Measurement**

| Health Outcome | Measurement | Studies |
|---|---|---|
| Somatic & Physical Health | Behavioral risks – smoking habits, BMI, work-related stress; Health measures – Physical symptoms such as blood pressure, cholesterol, fatigue Behavioral health - physician visits, disability days | Epstein and Yuchtman-Yaar (1991) - Self-employed smoked more, are more obese, and experience more work-related stress and they experience greater health risks but do not perceive a difference in their well-being. |
| | Medical Outcomes Study 12 item short form Health Survey; Visits to the general practitioner/doctor | Parslow, Jorm, Christensen, Rodgers, Strazdins, and D'Souza (2004) – Women entrepreneurs reported worse physical health than organizationally employed counterparts. |
| | Overall health – In general how would you describe your health? Musculoskeletal pain – shoulders, neck, back, hips, hands, arms, and legs in previous 3 months | Gunnarsson, Vingard, and Josephson (2007) – Musculoskeletal pain was more frequently reported. Men reported more problems than females. |
| | HRS Research and Development V.L dataset | Rietveld, Kippersluis, and Thurik (2015) – Self-employed are generally healthier than wage workers in both subjective and objective health outcomes. |
| | EuroQol EQ-5D-5L Self-Reported Health instrument | Rietveld, Bailey, Hessels, and van der Zwan (2016) – Opportunity-based self-employed are overall healthier than wage workers. |
| | Self-report measures – e.g. alcohol use, smoking, physical activity, weight gain Subjective Health Assessment – Would you say your health in general is excellent, very good, good, fair, or poor? | Cardon and Patel (2015) – For entrepreneurs, stress had a stronger negative effect on their personal health and income when compared to wage earners. These impacts were mitigated by positive affect. |

Table 5 includes the studies with stress as the outcome. The definitions and measurements of stress are inconsistent in the literature. Stress can manifest at work and at home. It can be related to relationships, family status, or work environment. This makes it difficult to ascertain if researchers are adequately including controls in the models which would invalidate the studies' findings.

**Table 5**
**Stress Outcomes and Measurement**

| Health Outcome | Measurement | Studies |
|---|---|---|
| Stress | Occupational Stress Inventory | Elmuti, Kathawala, and Wayland (1993) – Female entrepreneurs were higher on all three occupational stress factors. |
| | 13 item scale (Parker & DeCotiis, 1983) | Jamal and Badawi (1995) – Self-employed experienced higher job stress than salaried employees. |
| | 15 item scale (Rizzo, House, & Litzman, 1970) | Jamal (1997) – The self-employed reported higher job stress than the organizational workers. |
| | 19 questions – e.g. decision authority, job demands and skill discretion # of hours worked per week, etc. | Parslow, Jorm, Christensen, Rodgers, Strazdins, and D'Souza (2004)– Self-employed reported more decision authority. |
| | Swedish Level of Living Survey | Andersson (2008) – No significant difference between self-employed and wage earners. |
| | Proxy for stress – blood pressure, hypertension<br>Subjective measure – 3 item scale – Under strain, stress, or pressure during the past month/been anxious, worried, or upset/how relaxed or tense have you been in the past month | Cardon and Patel (2015) – Entrepreneurs experience higher stress than wage earners. |
| | Role stressors – Lechat & Torres (2012) Extent of problems related to finances, sales and administration, employees, and suppliers. | Fernet, Torres, Austin, and St-Pierre (2016) – Job stressors and occupational loneliness were positively correlated with burnout. |
| | Household, Income, and Labor Dynamics in Australia survey – My job is more stressful than I ever imagined, I fear that the amount of stress in my job will make me physically ill | Hessels, Rietveld, and van der Zwan (2017) – Work related stress is on average lower for the self-employed than for wage workers. |

In Table 6, the studies focused on well-being (inconsistently defined) and burnout. Some of the studies focused on self-reported data while others relied on national datasets.

**Table 6**
**Well-being and Burnout Outcomes and Measurement**

| Health Outcome | Measurement | Studies |
|---|---|---|
| Well-being | German National Health Survey | Stephan and Roesler (2010) – Entrepreneurs reported significantly higher well-being/life satisfaction than wage earners. |
| | Three items – How satisfied are you with life as a whole? How happy are you? How is your general health? Range from 1-5. | Annink, Gorgievski, and den Dulk (2016) – Results indicated that financial hardship among the self-employed impairs their overall well-being across various countries. |
| | 2008 General Social Survey | Bulmash (2017) – Early-stage entrepreneurs report lower physiological and psychological well-being than late-stage entrepreneurs. |
| Burnout | Maslach Burnout Inventory (1981) | Jamal (2007) – Self-employed experienced higher overall burnout, emotional exhaustion, and lack of accomplishment than organizational workers in both Canada and Pakistan. |
| | French version of the Burnout Measure, Short Version | Fernet, Torres, Austin, and St-Pierre (2016) – Job stressors and occupational loneliness were positively correlated with burnout. |

The following sections organize papers by the sample definition. Some papers only had a sample of the self-employed while others compared the self-employed to organizationally employed. Other papers investigated business managers (non-owners), some only business managers and a few of the papers compared different types of entrepreneurs, e.g., independent contractors, founders, owner-managers, etc.

### General Self-Employed & Entrepreneurs

Gorgievski, Bakker, Schaufeli, van der Veen, and Giesen (2010) investigated the relationship between a businesses' financial situation and the level of psychological distress among a group of business owners. The three-wave longitudinal study is one of the few studies found which uses a dynamic equilibrium model. Experiencing financial problems predicted psychological distress and strengthened the intention for the owner to quit the business. The authors describe this as a self-fulfilling prophecy. Table 7 presents the literature reviewed which differentiates by self-employed or entrepreneur. The findings have been added to highlight the inconsistencies in the literature.

**Table 7**
**Self-Employed or Entrepreneur Literature**

| Study | Stressors | Health/Well-being Measures | Findings |
|---|---|---|---|
| Annink, Gorgievski, & Dulk (2016) | Household income<br>Access to capital | General health | Financial hardship and impaired well-being are weaker for self-employed persons in countries with a more supportive social policy. |
| Baron, Franklin, & Hmieleski (2016) | Psychological capital | Stress<br>Well-being | Psychological capital was negatively related to stress, and stress, in turn, was negatively related to entrepreneurs' subjective well-being. |
| Blanchflower (2004) | | Stress, Exhaustion, Loss of sleep, Depression, Self-Worth, Confidence | Self-employed work under high pressure, report their work stressful, and come home exhausted. |
| Elmuti, Kathawala, & Wayland (1993) | | Role overload, Role insufficiency, Role ambiguity, Role boundary Responsibility, Physical environment, Vocational strain, Psychological strain, Interpersonal strain, Physical strain, Recreation, Self-care, Social Support, Rational cognitive coping | There are significant differences in all three categories of occupational stress for male and female entrepreneurs. |
| Gorgievski, Bakker, Schaufeli, van der Veen, & Giesen (2010) | Experienced financial problems<br>Objective financial situation | Short term psychological distress, Total psychological distress, Baseline psychological distress | Experiencing financial problems predicted psychological distress and strengthened intentions to quit. |
| Wincent & Örtqvist (2009) | Role stressor – role ambiguity, role overload, role conflict | Entrepreneurial exhaustion – depression | Role stress is an important mediator and has pronounced relationships to expanded conceptualizations of role-related rewards and exhaustion. |

Annink, Gorgievski, and Dulk (2016) also conducted a study looking at the relationship between financial hardship and subjective well-being. This was a cross-national study (31 countries) that investigated a sample of 9,755 self-employed individuals between 2004 and 2010. Subjective well-being was measured using three indicators on a 5-point Likert scale. Using multilevel, hierarchical regressions, they found a direct relationship between financial

hardship and subjective well-being, and this relationship is buffered by social trust and higher education.

In one of the first studies, we found on stress and entrepreneurs, Elmuti, Kathawala, and Wayland (1993) examined the difference between male and female entrepreneurs. They used the Occupational Stress Inventory, which categories stress into three factors. These three factors include role stress, personal strain, and personal coping resources. Results indicate that female entrepreneurs experience higher stress in all three factors than male entrepreneurs. These results include both emotional and physical distress as compared to men.

Entrepreneurs often report low levels of stress. For example, Baron, Franklin, and Hmieleski (2013) collected data from a national random sample of American business founders. The final count of usable responses was 160. Their findings indicate that entrepreneurs report relatively low levels of stress. They attribute these results to two types of selection bias. One is environmental and the other is self-selection. In yet another study related to stress and entrepreneurs, Wincent and Örtqvist (2009) sent a questionnaire to a random sample of first year Swedish entrepreneurs and received 282 completed, usable responses. They measured the entrepreneurs' role stress using a higher-order construct combining role conflict and role ambiguity. Role exhaustion was measure using two constructs with a total of seven items combining depression and the impact on home and family life. The findings suggest that role stress mediates between personality, organizational and environmental characteristics, and exhaustion.

Bulmash (2016) examined the physiological and psychological health of early and late-stage entrepreneurs. Results indicate that early state entrepreneurs report lower well-being in both categories. This is explained as being associated with the increased demands on early-stage entrepreneurs. Interestingly, financial satisfaction was found to be a significant mediator and is in part responsible for the differences between early and late-stage entrepreneurs.

The main theoretical foundations in this set of studies were role stress theory and conservation of resources theory (Baron, et al., 2016; Gorgievski et al., 2010; Wincent & Ortqvist, 2009). In an interesting application of theory Baron et al., 2016 also applied attraction selection attrition theory to their study of the effects of psychological capital on the stress experienced by entrepreneurs. Gorgievksi et al., (2010) applied the equilibrium model of well-being in addition to the conservation of resources theory to explain the psychological distress of business owners.

**Independent Contractors vs Business Owners**

Most studies of the self-employed do not differentiate between independent contractors and those with managerial responsibility. Research comparing self-employed and organizational employees have not properly accounted for the variance in working conditions and arrangements for the self-employed (Hundley, 2001). Independent contractors have a wide

range of responsibilities from bookkeeping to supply chain activities, and most employees do not have such a diverse set of work demands (Pink, 2001). Lumping independent contractors and business owners together leads researchers to draw conclusions for both groups that may not be reliable (Prottas & Thompson, 2006). Findings suggest the differences between groups are small in magnitude and can be attributed to demographics rather than heterogeneous work arrangements (Prottas & Thompson, 2006). Table 8 organizes the studies of independent contractors and business owners.

**Table 8**
**Independent Contractors vs Business Owners Literature**

| Study | Stressors | Health/Well-being Measures | Findings |
|---|---|---|---|
| Prottas Thompson (2006) | Job autonomy<br>Job pressure<br>Hours worked | Health<br>Stress | Self-employment, either as owner or independent, was not related to greater stress and poorer health. |
| Schonfeld & Mazzola (2015) | Job/Income threat<br>Interpersonal conflict<br>Constraints<br>Work overload<br>Role ambiguity<br>Isolation<br>Empathy stress<br>Difficulty learning business<br>Uncertain length of work | Apprehension/Anxiety<br>Frustration<br>Anger<br>Sadness/Depression<br>Disappointment<br>Annoyance<br>Disturbed | The self-employed used problem-focused coping much more often than emotion-focused coping. |

Prottas and Thompson (2006) separated national level United States data by categories of employment. They examined differences between organizational employees, independent contractors, and small business owners. The latter two are different categories of self-employment. This study included over 3,500 observations (2,810 employees, 222 owners and 472 independents). With such a large sample size, statistical significance was easier to establish, so the authors relied on effect size for hypothesis testing. In terms of theory, they mentioned the job characteristics model and the job demand control model briefly. They mainly relied on stress and autonomy as their theoretical foundation.

### Owner-Managers

Cocker, Martin, Scott, Venn, and Sanderson (2013) aggregated owners (CEO, owner, director) and senior managers into a data set of 217 owner-managers of small (<200 employees) businesses. Over a third of the sample reported high/very high levels of psychological distress. They found that 66% of the owner-managers reported attending work while they were ill. Those with higher levels of psychological stress were more likely to report to work while ill even though reporting being less productive. The owner-managers with overall better self-reported

health attended work while ill at a much higher rate than those with poor health. Table 9 presents the literature results from the studies of owner-managers.

**Table 9**
**Owner-Managers Literature**

| Study | Stressors | Health/Well-being Measures | Findings |
|---|---|---|---|
| Cocker, Martin, Scott, Venn, & Sanderson (2013) | Number of hours worked in a week<br>Number of employees supervised<br>Productivity<br>Job satisfaction<br>Business confidence<br>Work/life balance<br>Work related job tension | General health status<br>Depression<br>Anxiety | Health-related factors were the strongest correlates of higher presenteeism. Work-related well-being factors job tension and job satisfaction were the strongest correlates of higher absenteeism days. |
| Fernet, Torrès, Austin & St-Pierre (2016) | Job stressors – finances, sales, administration, employees, suppliers | Burnout - emotional, mental, physical exhaustion | The conditional indirect effect of loneliness was stronger when entrepreneurial orientation is low, but weaker and not significant when entrepreneurial orientation is high. |
| Lechat, & Torres (2017) | Stressors - event based (e.g. conflict with suppliers, personnel claims, employee resignation)<br><br>Satisfactors - event based (e.g. Client satisfaction, vacation time, good social climate, good prospection) | Self-rated Mental health<br>Self-rated Physical health | Small business owners reveal that negative events were cited more often than positive events. Overwork was the most commonly experienced stressor and lack of recognition was the least intense. |

Fernet, Torrès, Austin, and St-Pierre (2016) collected multi-wave data from 377 owner-managers in France. They find that job stressors are positively related to burnout, and this relationship is partially mediated by loneliness. This mediation effect can be moderated by entrepreneurial orientation. Loneliness has been largely ignored by researchers, but this study suggests that loneliness may contribute to psychological health issues. Less proactive owners react more strongly to loneliness and are at higher risk for burnout. Another novel contribution of this study is that entrepreneurial orientation may be an adaptive factor and is a significant resource for owner-managers to deal with loneliness and the potential mental health implications.

Lechat and Torrès (2017) conducted a mixed methods study using a panel of 357 small business (<250 employees) owner-managers. The focus was to extend current research of

stressors for entrepreneurs into an event-based predictive arena. This complements the current primarily outcome-based approach to researching these subjects. The framing was that stress was a negative response to certain events and satisfaction was a positive response which works against the stress. Events were categorized based on open ended questions from the qualitative portion of the research. Self-rated health was also measured from open-ended questions. Stress exhibited a strong negative effect on both physical and mental health. Lack of recognition was an event-based stressor reported often but was not intense. Bankruptcy was the most intense stressor event for physical and mental health. Client satisfaction was an intense satisfactor.

The studies in this group included some interesting theoretical foundations. For example, Fernet, et al., 2016 relied not only on role theory and stress, but they also examined entrepreneurial orientation and occupational loneliness. These theories added strength and support to their hypotheses development. Cocker et al., 2013 discussed presenteeism as a theoretical foundation to their study of stress in owner/managers. They did not really apply the theory but just mentioned it and tested it. They also included some discussion of role theory. Lechat & Torres 2017 applied affective events theory to their study of the stressors and satisfactors that predict small business owners' health. This was a unique approach that resulted in an interesting contribution to the literature.

**Self-Employed vs. Wage Earners/Employees**

The self-employed and wage earners have vastly different work experiences. These differences are based on a myriad of factors including stress, job autonomy, job roles, etc. Stress, physical health, and mental well-being have been common variables in studies comparing wage earners and the self-employed. In many instances the happiness and health of these two groups differ (Andersson, 2008). There are, however, conflicting results in the research. For example, while acknowledging these differences in the work context and in the health and happiness of these two groups, Andersson (2008) found that there were no differences in physical health between the self-employed and wage earners, and while there were differences in mental health, they stated the results were not robust. The conclusions from this study were that well-being is not lower for the self-employed than wage earners. Yoon and Bernell (2013) found similar results in their study comparing the self-employed and wage workers. In fact, they concluded the self-employed were just as healthy as wage workers in the US despite the lack of health insurance. In other research, it has been found that business owners or the self-employed were healthier than wage workers in various self-reported health categories (Rietveld, Bailey, Hessels, & van der Zwan, 2016). For example, Bulmash (2016) found that entrepreneurs reported higher physiological and psychological well-being than non-entrepreneurs. The question of whether entrepreneurs are healthier and self-select into business ownership remains open.

Stress can, however, impact the overall health and well-being of the self-employed. Jamal (1997) compared job stress and psychosomatic health problems of the self-employed and

the organizationally employed. Results indicate that the self-employed experienced more stress and psychosomatic health problems, however, they did not experience more mental health problems than wage earners. Similarly, Cardon and Patel (2015) found that self-employed individuals experience higher levels of stress than organization workers. Interestingly, their findings support that self-employed individuals often learn that the more stress they experience the more money they make regardless of their declining physical health. These findings highlight how self-employed workers are at higher risk for developing negative health outcomes because they learn that stress is both rewarding (financially) and punishing (negative health outcomes). Tables 10a and 10b includes a list and description of the findings from the self-employed vs. wage earners literature.

**Table 10a**
**Self-employed vs Wage-earners Literature**

| Study | Stressors | Health/Well-being Measures | Findings |
|---|---|---|---|
| Andersson (2008) | Hours worked-weekly, Annual income, Wage satisfaction, Feeling of control over life | Stress, Mental strain, Mental health problems, Poor general health | Self-employment leads to an increase in mental health problems. |
| Bulmash (2016) | | Happiness, Exciting Life, Subjective Health, HIV test | Entrepreneurs report higher physiological and psychological well-being than non-entrepreneurs. |
| Cardon & Patel (2015) | Stress | Physical Health | The self-employed experience a negative impact of stress on physical health. |
| Gunnarsson, Vinga, & Josephson (2007) | | General health, Musculoskeletal pain, Mental health, Stomach pain, Psychosomatic health, Mental health, Anxiety, Nervousness, Fatigue, Insomnia | Male enterprisers reported higher rate of health problems and female enterprisers equal rate compared with employees in the private sector. |
| Hessels, Rietveld, & van der Zwan (2017) | | Work related stress | Job control fully mediates the negative relationship between self-employment and work-related stress. |
| Jamal & Badawi (1995) | | Job stress<br>Psychosomatic health | Salaried workers were better off than their self-employed counterparts. |
| Jamal (1997) | | Job stress<br>Psychosomatic health problems<br>Mental health | The self-employed experienced higher job stress, non-work satisfaction, and psychosomatic health problems. |
| Jamal (2007) | | Burnout - Emotional exhaustion, depersonalization, lack of accomplishment | Self-employed individuals experienced higher overall burnout,<br>emotional exhaustion, and lack of accomplishment. |

Cardon and Patel (2015) also found that trait-positive affect (PA) mitigated the negative health effects of stress while accentuating the positive income boost of stress. The question in applying this finding becomes how to teach/train individuals to exhibit more positive affect. Also, how can self-employed individuals know when to ease up on the stress they take on while they may also be highly financially reinforced by leaning into it? Research focusing on the "dark side" of entrepreneur personality including entrepreneur addiction (Spivack & McKelvie, 2018; Spivack, McKelvie, & Haynie, 2014) echo this discussion.

Contrary to the previous findings, Hessels, Reitveld, and van der Zwan (2017) found that stress was lower for the self-employed than for organizationally employed wage earners. Interestingly, self-employed with employees reporting to them experienced more stress than the self-employed that worked alone (Hessels, Rietveld, & van der Zwan, 2017). It appears that being responsible for other employees adds an additional burden to the self-employed. The results support other studies that examined the experience of owner-managers (Cocker, Martin, Scott, Venn, & Sanderson, 2013; Fernet, Torrès, Austin, & St-Pierre, 2016; Torrès, 2012).

As mentioned previously, there can be both positive and negative effects on the overall physical and mental health of the self-employed. In one of the earliest studies of health-related outcomes comparing the self-employed with the organizationally employed, Epstein and Yuchtman-Yaar (1991) examined various physical health outcomes including blood pressure, cholesterol, physician visits, somatic complaints, and disability days. In addition, they looked at behavior risks such as smoking, obesity, and stress. They found that the self-employed were more likely to smoke, were more obese, and experienced more work-related stress. Given these facts, it is interesting to note there were no significant differences in blood pressure for the two groups, while cholesterol was only slightly higher for the self-employed. When it comes to physician visits, the self-employed reported fewer trips to the doctor than the organizationally employed. In fact, the organizationally employed make 50% more visits to the physician. The self-employed also take fewer disability or sick days. This suggests that there are more health risks for the self-employed. The authors conclude that, in general, the self-employed are at higher risk for physical health problems as compared to the organizationally employed. Once again, the question becomes one of self-selection. Do those who are self-employed smoke more and eat less healthily because of the stress associated with the job or is there some underlying cause that links these behaviors and self-selecting into self-employment?

Jamal and Badawi (1995) compared the psychosomatic health of the self-employed and wage workers. They adopted the Michigan Studies of Worker's Health measures which include upset stomach, headache, lack of sleep, bloating, nervousness, loss of appetite, etc. Results indicate that the self-employed experienced higher job stress and more psychosomatic health problems that wage earners. In a study conducted in Sweden, Gunnarsson, Vingard, and Josephson (2007) examined differences not only between the self-employed and organizationally employed but also between males and females. Interestingly, they found that

male entrepreneurs reported more musculoskeletal pain and mental health problems than the organizationally employed. In addition, they reported poorer health in general. There were no significant differences found for the female self-employed as compared to their organizationally employed counterparts.

**Table 10b**
**Self-employed vs Wage-earners Literature**

| Study | Stressors | Health/Well-being Measures | Findings |
|---|---|---|---|
| Lewin-Epstein & Yuchtman-Yaar (1991) | Weekly hours, Social and physical environment of work, Recognition, Opportunity for advancement, Flexibility, Task environment, Smoking, Obesity, Work related stress | Physical health<br>Health behavior – physician visits and disability days | Higher levels of behavioral and physiological risk among the self-employed compared to salaried workers. |
| Patel, Reid, & Wolfec (2020) | | Depression | Self-employment is negatively associated with depression among aging workers. |
| Rietveld, van Kippersluis, & Thurik (2015) | Job type<br>Working Hours | Mental health<br>Physical health | The selection of healthier individuals into self-employment accounts for the positive cross-sectional difference. |
| Rietveld, Bailey, Hessels, & van der Zwan (2016) | | Mobility, Self-care, Ability to perform usual activities, Pain and discomfort, Anxiety, Depression | Business owners are healthier than wage workers. |
| Stephan, & Roesler (2010) | | Blood pressure<br>Somatic disease<br>Physician visits<br>Sick days<br>Mental disorders | Entrepreneurs showed significantly lower somatic and mental morbidity and higher rates of well-being. |
| Yoon & Bernell (2013) | | Health perceptions – perceived physical health, perceived mental health, Stroke, Diabetes<br>Asthma, High blood pressure, High cholesterol, Joint pain<br>Arthritis, Emphysema<br><br>Mental Health – Kessler survey, Access to health care, Smoking, Exercise,<br>BMI | Self-employment is positively associated with perceived physical health, and is negatively associated with having diabetes, high blood pressure,<br>high cholesterol and arthritis. No mental health outcome is significantly associated with self-employment. |

The results indicate that the female subjects in the study reported less monotonous work, as well as less physical lifting required of them. These factors impacted their reported health outcomes. Despite the previously mentioned studies, Rietveld, Van Kippersluis, and Thurik (2015) found that the self-employed were generally healthier, both physically and mentally, than wageworkers. It is interesting to note however that they conclude this to be related to self-selection. In other words, individuals that choose to be self-employed are healthier individuals to begin with (Rietveld, Van Kippersluis, & Thurik, 2015). These results were in line with a previous study which found the self-employed to be healthier overall when compared to the organizationally employed (Stephan & Roesler, 2010). They examined various health- related factors including blood pressure, somatic diseases (hypertension, diabetes, ulcers), as well as stress-related mental disorders (affective disorders, anxiety, substance abuse). Results indicate that the entrepreneurs were healthier overall in some areas and experienced no significant difference in others.

Research conducted in Australia related to stress and mental health in self-employed workers and organizationally employed workers found that "overall, self-employment was associated with relatively few mental health benefits" (Parslow, et al., 2004, p. 242). In fact, a different line of inquiry focuses on the "dark side" of entrepreneurial personality. Researchers have found that self-employed individuals have a higher rate of depression, obsessive compulsive disorder, and attention deficit hyperactivity disorder than workers in organizations, for example (Spivack & McKelvie, 2018). While personality traits are beyond the scope of this review, we acknowledge that there are negative impacts on overall well-being from various dark side traits associated with entrepreneurs. A further investigation into workaholism and the factors that lead to these behaviors in entrepreneurs, as opposed to the organizationally employed, can help inform a research agenda into this phenomenon.

Burnout is another topic examined in the self-employment literature. There are three dimensions of burnout which include emotional exhaustion, lack of accomplishment, and depersonalization (Jamal, 2007). Emotional exhaustion is related to well-being and thus we included this study in our review. In a comparison of wage earners and self-employed, results indicate that the self-employed experience higher overall burnout and emotional exhaustion than the wage earners (Jamal, 2007).

Mental well-being is another variable that is often included in studies related to the health of entrepreneurs and the self-employed. In a study of older self-employed workers vs. older wage earners, results indicate that self-employment is negatively associated with depression (Patel, Reid, & Wolfe, 2020). Interestingly, older female workers reported lower depression symptoms than their male counterparts.

There was very little in terms of a theoretical foundation in this set of studies. Most of the hypotheses in these studies were based on previous research and results. There was some discussion of role theory (Cardon & Patel, 1995). In addition, a few studies were based on the

job demand control theory (Hessels, Rietveld, & van der Zwan 2017; Rietveld, Van Kippersluis, & Thurik 2015; Stephan & Roesler 2010). In an early study by Lewin-Epstein and Yuchtman-Yaar (1991) the basis of the theoretical foundation was class theory and they included a discussion of the neo-Marxist framework to hypothesize the impact on the health and well-being of the self-employed.

### Self-Employed vs Business Managers

The self-employed have also been compared to business managers. Entrepreneurs face different stressors and role conflicts than business managers. The entrepreneurial role of starting and leading one's own business requires significant risk-taking (Buttner, 1992). Entrepreneurs and managers differ in their attitudes and values (Benfari & Knox, 1991). Buttner (1992) investigated whether there is a difference between entrepreneurial and managerial stress, what factors drive this difference and are there individual characteristics which moderate the relationship between entrepreneurial stress and health outcomes. Buttner (1992) collected data via mail surveys. There were 68 usable responses from entrepreneurs (those who started their own business and currently still hold a managerial role). Forty-four usable responses were received from upper- and middle-level managers from large organizations. The demographics of the sample of entrepreneurs were similar to those of the managers. The nature of work stress differed between managers and entrepreneurs where entrepreneurs faced more role ambiguity. Managers reported more satisfaction with their work. Entrepreneurs conveyed higher levels of health problems measured by the frequency of 30 different health problems (headaches, backaches, indigestion, insomnia) over the past six months. These health problems were experienced more frequently by entrepreneurs with Type B personalities when compared to Type A. Table 11 organizes the self-employed vs business managers literature highlighting the findings from the relevant studies.

**Table 11**
**Self-employed vs Business Managers Literature**

| Study | Stressors | Health/Well-being Measures | Findings |
|---|---|---|---|
| Buttner (1992) | Role ambiguity, Role conflict, Job vs nonjob conflict, Role overload, Responsibility pressure, Quality concern | Frequency and severity of physical health problems (e.g. headache, insomnia, loss of appetite, ulcer and indigestion) | Entrepreneurs who are able to leave work worries at the office experience fewer health problems. |
| Rahim (1996) | Role conflict, Role ambiguity, Role overload, Role insufficiency | Depression<br>Anxiety<br>Cognitive disturbance<br>Anger | Due to higher internal locus of control, entrepreneurs may be better equipped to deal with their associated job stressors than managers. |
| Tetrick, Slack, Da Silva, & Sinclair (2000) | Quantitative workload, Role ambiguity, Role conflict, Job-personal conflict | Emotional exhaustion | Owners had less social support from work-related sources and perceived lower levels of role ambiguity and role conflict, |

| | | | |
|---|---|---|---|
| | | | less emotional exhaustion, and higher levels of job satisfaction and professional satisfaction than did nonowners. |

Rahim (1996) compared 238 entrepreneurs who started their own business and acting as the CEO with 288 top-, middle- and lower-managers. The study found results suggest that entrepreneurs were older, more educated, had fewer employees and exhibited a higher level of locus of control. It makes sense that entrepreneurs are less likely to externalize. Internalizers may be better equipped to handle the pressures and uncertainties of starting and running a business. Managers reported higher stress. For entrepreneurs, locus of control did not significantly moderate the stress-strain relationship but still may act as a coping mechanism.

Tetrick, Slack, Da Silva, and Sinclair (2000) compared owners (N=63), managers (N=24) and employees (N=55) which were all licensed morticians in the State of Michigan. The study investigated the differences in job demands, emotional exhaustion, satisfaction, and social support in the stress-strain process between the groups. Ownership status significantly predicted job satisfaction, but not emotional exhaustion, after controlling for stressors. Owners may perceive that emotional exhaustion is an indicator of how hard they work, feeling more accomplished and satisfied. Social support moderated the relationship between emotional exhaustion and job satisfaction but not professional satisfaction (Tetrick, Slack, Da Silva, & Sinclair, 2000).

The main theoretical basis for the studies in the group was related to role theory. All three studies in the group included some discussion of role theory as it applies to role overload, role conflict, and role ambiguity (Buttner, 1992; Rahim, 1996; Tetrick et al., 2000). Resource conservation theory was also applied to Tetrick et al. (2000). While role theory has been successfully applied in these studies it is possible that there are other theoretical foundations that can also be examined.

**Coping**

Although a review of coping could be a standalone paper and is not the focus of our review, we decided it is important to give a brief overview of the literature. This will be helpful to set the stage for the future research posited later in this paper. Coping enables people to deal with negative emotions that may result from harm, loss or threats and refer to the thoughts and behaviors used to manage the situation (Folkman & Moskowitz, 2004). Coping strategies can be problem-focused (active) (Billings & Moos, 1981), emotion-focused (avoidance) (Carver, Scheier, & Weintraub, 1989) and/or humanitarian-focused (Schonfeld & Mazzola, 2015). There are other classifications and various terms used to describe similar mechanisms, but those distinctions are not relevant to the current study. The use of different coping strategies is not mutually exclusive (Folkman & Moskowitz, 2004), and entrepreneurs use multiple coping mechanisms to deal with venture-related stress (Patzelt & Shepherd, 2011). Coping tools can

enhance an individual's ability to deal with their stress and emotional stability (Patzelt & Shepherd, 2011).

Uncertainty, autonomy, responsibility effort, risk and responsibility are all job aspects for entrepreneurs. These aspects are related to positive and negative emotions. Self-employed are usually aware of the requirements of this type of occupational role (Hoang & Gimeno, 2009) and, to some extent, the potential consequences of this career path (Patzelt & Shepherd, 2011). Business owners report, at a high rate, that it is more stressful to run your own business than work as an employee or wage-earner (Teoh, Wei, Chong, & Ismail, 2016). Some entrepreneurs experience a higher level of stress due to inadequate knowledge, experience, or education (Parker, 2006). Not having the skills needed to run a business combined with work pressure are major sources of stress for entrepreneurs (Ahmad & Xavier, 2010).

Entrepreneurs with previous start-up experience effectively used avoidance coping mechanisms, but not active, to positively impact personal well-being and mental health (Uy, Foo, & Song, 2012). Stress arouses action, and entrepreneurs could perform at their peak by finding the optimal level of stress (Akande, 1992). Therefore, there is a tipping point where the psychological benefits could overtake the costs and coping strategies can help entrepreneurs find this balance (Schonfeld & Mazzola, 2015). Entrepreneurs who can leave work at work and not bring those worries home, experience fewer health problems (Buttner, 1992).

**Transition**

Again, transitioning in and out of self-employment is only a subset of research. We believe this is an unexplored area of focus and it could better inform motivations for entering self-employment. Additional studies of these dynamics may help with the potential selection bias present in many of the data sets used by researchers in this field. The health of individuals transitioning in and out of self-employment is an understudied area. This line of research would help correct for some of the potential issues with cross-sectional data comparing employees with the self-employed. If research design does not control for the presence of selection bias in the data, then the results may not be reliable. Even if a study finds that self-employed individuals are physically or mentally healthier than their wage-earning counterparts, it could be possible that healthier people are more likely to move into self-employment, or r the opposite could be true. Job benefits, such as health insurance and pensions, may keep the less healthy from making a transition (Zissimopoulos & Karoly, 2007).

The motivations for transitioning into self-employment must be considered as a control or possibly an antecedent when studying the health of entrepreneurs. Push factors are related to the economic necessity to start a business. These factors include loss of job, decrease in family income, divorce, and job dissatisfaction (Alstete, 2003). Poor health can also be a push factor especially for older works (Zissimopoulos & Karoly, 2007). Entrepreneurial activities motivated by push factors are referred to as necessity driven. Pull factors are more associated with

individual based psychological and personal considerations such as self-fulfilment, the need for independence, improving self-status, the need to be in control, higher income potential and risk tolerance (Barber III, Saadatman, & Pierce, 2019; Fosic, Kristic, & Trusic, 2017), and this describes the motives of an opportunity-driven entrepreneur. This can be measured by using the state of employment as a baseline to proxy opportunity or necessity. The movement from regular employment to self-employment (proxy for opportunity) leads to an increase in life satisfaction, while the transition from unemployment to self-employment (proxy for necessity) does not (Binder & Coad, 2013).

## DISCUSSION

Research regarding the occupational health and well-being of the self-employed is critical to understanding their success and failure. In our literature search we found 26 articles related to the occupational health and well-being of the self-employed. The results of these studies indicate there is still come confusion regarding the causes of stress as well as poor health and well-being. In addition, not all self-employed experience these negative effects. More research is needed to clarify these relationships as well as to tease out the differences between the various types of entrepreneurs. In addition, researchers need to come to some agreement regarding how these variables are measured and defined. The lack of agreement even just among the definitions of stress, physical and mental well-being has contributed to the contradictory findings. Table 12a posits a list of research questions related to business performance, antecedents, mediators/moderators, methodology, sample, and selection bias.

**Table 12a**
**Future Research Questions**

| Topics | Questions |
|---|---|
| *Business Performance* | What do entrepreneurs with better mental health do differently that impacts business performance? (Gorgievski, et al., 2010)<br>How do entrepreneurs with better mental health make decisions, set goals, and develop business strategies differently?<br>Is the relationship between physical/mental health and business performance circular? Does one feed into the other and vice versa? |
| *Theory* | What theoretical foundations can be applied to this stream of research?<br>What are the theoretical contributions of research in this area?<br>What frameworks or more comprehensive models can be developed? |
| *Antecedents & Predictors* | Which entrepreneurship-specific job demands (e.g. number of direct reports) impact entrepreneurs' mental/physical health? (Stephan & Roesler, 2010)<br>What are more specific stressors related to entrepreneur's physical/mental health?<br>What are the predictors of mental health among the self-employed and non-self-employed? (Jamal, 1997)<br>Do somatoform disorders (specifically pain disorders) serve as early indicators or risk factors of work-related stress? (Stephan & Roesler, 2010)<br>What are the health-relevant aspects of an entrepreneur's psychosocial work environment? (Stephan & Roesler, 2010)<br>Does burnout manifest differently for entrepreneurs than salaried workers? And, how does |

| | |
|---|---|
| | entrepreneurial burnout relate to physical/mental health outcomes? |
| *Mediators & Moderators* | What variables mediate and/or moderate the relationship between business performance and mental health?<br>Do gender, race, age, ethnicity, and national origin mediate/moderate the relationship between self-employment and physical and mental health outcomes?<br>Does overconfidence or optimism bias mediate or moderate the relationship between self-employment and physical/mental health? |
| *Methodology* | What are the longer-term causal effects of self-employment on physical/mental health?<br>How can we ensure the robustness of baseline physical/mental health measures?<br>How can we better design longitudinal studies to track subjective and objective health measures of entrepreneurs over time? |
| *Sample* | How does physical/mental health change based on entrepreneurial type (freelancer, founder, executive, contractor, etc.)?<br>How do we better assess variations in psychological distress and physical/mental health outcomes contingent on industry characteristics?<br>How generalizable are studies across countries? |
| *Selection Bias* | What is the role of self-selection bias in the study of entrepreneurs' physical/mental health?<br>How can future research further disentangle the selection mechanism to establish whether health status is a perceived barrier (the less healthy do not even try to become self-employed) or an actual barrier (the less healthy are faced with more obstacles, such as in the process of securing loans, when they want to start a business)? (Rietvield, Kippersluis, & Thurik, 2015)<br>How is the motivation (necessity vs opportunity) for entrepreneurship related to the relative health of entrepreneurs? |

### Business Performance

Research has indicated the occupational health and well-being of entrepreneurs impacts the performance of their business. Gorgievski (2010) suggests further research is needed to determine what healthy entrepreneurs do differently that impacts business performance. This question is related to both antecedents of occupational health and well-being as well as coping.

Related to this is the question of how entrepreneurs with better physical and mental health make decisions, set business goals, and develop strategies differently from entrepreneurs with poor physical and/or mental health. Finally, future research is needed to determine if the relationship between physical and mental health and business performance is circular. In other words, does strong business performance result in better health of the entrepreneurs and vice versa, does better health lead to stronger business performance? Research that examines how these two factors impact each other is still needed.

### Theory

There is very little theory to support the studies in this stream of research. There has been some application of role theory as well as the job demand role model. In addition, most studies rely on stress and the stress-strain perspective as the main theoretical foundation for studies on the health and well-being of entrepreneurs. These are strong theoretical foundations from which research can be built. Future studies need to identify the theories and frameworks

that support the hypotheses they are testing. There has been enough research conducted to begin creating frameworks and models that explain the relationship between being self-employed and health and well-being outcomes. In addition, researchers should begin to consider the theoretical contributions of their studies. There was a lack of this included in many of the discussion sections of the studies we examined. Lechat & Torres (2017) took a unique approach to their theoretical development and testing that resulted in a strong contribution to the literature. The same can be said of Fernet et al., (2016) and Coker et al., (2013). More research along the lines of these owner/manager studies is needed.

**Antecedents and Predictors**

While some research has been conducted on the antecedents and predictors of the health of entrepreneurs more clarification is needed. For example, further research identifying stressors that result in poor health outcomes will help entrepreneurs do what they can to mitigate those stressors or develop more coping mechanism for dealing with them. Stephan and Roesler (2010) identify several avenues that still need to be explored.

First, research needs to identify job specific demands, such as the number of direct reports, that impact the health of the self-employed. More specifically they suggest that research should identify which somatoform disorders serve as early indicators of risk factors or work-related stress. Finally, they state that more research is needed to uncover the health-relevant aspects of an entrepreneur's psychosocial work environment.

While there has been quite a bit of research on burnout, one avenue for future research, as it pertains to entrepreneurs, is concerned with how burnout manifests differently in the self-employed versus the organizationally employed. This is particularly relevant given that burnout can result in stress and negative physical/mental health outcomes. How does entrepreneurial burnout relate to physical/mental health outcomes, specifically?

**Mediators and Moderators**

We have already mentioned the relationship between physical/mental health and business performance, but further research is needed to investigate possible mediators and moderators. We know that the health of the self-employed is complex. For example, does the gender, race, age, ethnicity, and/or national origin of the entrepreneur moderate or mediate the relationship between being self-employed and physical and mental health? What about overconfidence or optimism bias? There are many potential variables that might act as mediators or moderators.

### Methodology

In terms of methodology, one of the main unresolved questions relates to longitudinal studies. Are there differences in the physical and mental health of the self-employed over generations? Future research is needed to track the physical and mental health of the self-employed over time. Additionally, more robustness checks are needed to ensure we are using appropriate measures of physical and mental health.

### Sample

There are a few studies that have been conducted outside of the U.S. More international studies are needed so we can determine how generalizable studies are across countries. Additionally, future research is needed that teases out differences in types of entrepreneurs. For example, are there differences between freelancers, founders, and contractors?

### Selection Bias

Further research is needed to understand the role of self-selection in the physical and mental well-being of entrepreneurs. Does self-selection bias impact the health of the self-employed? Additionally, Rietveld, Van Kippersluis, and Thurik, (2015) suggest further research is needed to disentangle the selection mechanism to establish whether health status is a perceived barrier (the less healthy do not even try to become self-employed) or an actual barrier (the less healthy are faced with more obstacles, such as in the process of securing loans, when they want to start a business). And finally, how is motivation (necessity vs. opportunity) related to the health of the self-employed?

### Tipping Point

Future research regarding the tipping point is needed to determine at what point do the costs of being self-employed outweigh the benefits, in terms of physical and mental health. Cardon and Patel, (2015) ask at what point is sacrificing one's health is worth the apparent increase in one's personal income for entrepreneurs? Additionally, Schonfeld and Mazzola, (2015) state further research is needed to determine is the tipping point when the psychological benefits of self-employment (e.g., autonomy) are overtaken by business losses outside the individual's control. Finally, does the transition out of self-employment improve physical and mental health?

### Coping

Further research is needed to identify the coping mechanisms used by entrepreneurs. Identification of those mechanisms that are helpful versus those that might be detrimental will help highlight the importance of healthy coping mechanisms for the self-employed. In addition, Cardon and Patel (2015) identified several areas for future research including a call for research

aimed at specific variables such as positive affect and emotional regulation. Additionally, they suggest that future research aimed at the specific motivators for stress and health-related behaviours is needed. Tipping point and coping future research questions can be seen in Table 12b.

**Table 12b**
**Future Research Questions**

| Research Directions | Questions |
|---|---|
| *Tipping Point* | At what point do the health benefits of entrepreneurship outweigh the health costs?<br>At what point is sacrificing one's health worth the apparent increase in one's personal income for entrepreneurs? (Cardon & Patel, 2015)<br>Where is the tipping point bearing on when the psychological benefits of self-employment (e.g., autonomy) are overtaken by business losses outside the individual's control? (Schonfeld & Mazzola, 2015)<br>Does the transition out of self-employment improve physical/mental health? |
| *Coping* | What are appropriate coping mechanisms and strategies for entrepreneurs suffering from physical/mental health problems?<br>Does situational positive affect help entrepreneur's cope with stress? (Cardon & Patel, 2015)<br>How can entrepreneurs better regulate their emotions to harness the productive potential of positive affect? (Cardon & Patel, 2015)<br>What are the motivations behind stress and health-related behaviors? (Cardon & Patel, 2015) |

## FUTURE RESEARCH

While research has made some progress in advancing our knowledge regarding the occupational health and well-being of the self-employed, we hope this review has helped bring together the various pieces to form a better picture of the body of work. There are, however, important questions that remain unanswered. These questions will be important in future research to advance our understanding. We have grouped future research into the following categories: business performance, antecedents and predictors, mediators and moderators, methodology, sample, selection bias, tipping point, and coping. They are displayed above in Table 12a and Table 12b.

## CONCLUSION

Given the contradictory results for studies of whether self-employed individuals and entrepreneurs suffer from better or worse health outcomes as well as the lack of a consistent application of health and well-being variables, a review of the literature was needed. Some of the inconsistencies include the definition of health and well-being and the extrapolation of findings for self-employed or entrepreneurs. Self-employed, entrepreneurs, founders, business managers and business owners are categories sometimes used interchangeably in the literature.

Researchers will use self-employed as a proxy for entrepreneurs. In this paper, we separated studies based on the sample, and discuss the limitations of generalizability. We provided a state of the research and examined the studied interactions between self-employed individuals and variables related to their physical and mental health. In our literature search, we found 28 articles related to the occupational health and well-being of the self-employed or entrepreneurs. The results of these studies indicate there is confusion regarding the causes and definition of stress, poor health, and well-being. The heterogeneity in measurement types and data collection approaches has led to the inconsistencies in the health of entrepreneurs and self-employed literature. Research regarding the occupational health and well-being of the self-employed is critical to understanding their success and failure. In conclusion, there are multiple gaps in the research and unanswered questions that are seen in the future research section, and hopefully this study spurs further investigation and interest in subject of health and entrepreneurship.

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# LESSONS LEARNED FROM TEACHING ENTREPRENEURSHIP THROUGH MOVIES

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## ABSTRACT

*The aim of this paper is to present a novel approach to teaching entrepreneurship. Using movies from Hollywood to highlight entrepreneurial concepts and creating student-led discussion of these concepts has been used in a special topic class in a small public university in the Northeast United States. This paper presents how the class came to be, its results, and lessons learned from the experience.*

Keywords: Entrepreneurship, Movie, Instructional design, Experiential Learning.

## INTRODUCTION

There is some conundrum regarding whether one can learn entrepreneurship in a business classroom setting. Indeed, one unique challenge of entrepreneurship education is that it is grounded in Schumpeter's economic theory as, at least to some degree, entrepreneurship involves disruptions of the usual business rules, norms, and models. Hence, entrepreneurship may not conform to the scientific management rationality that is promoted in most management education and traditionally taught. Therefore, if entrepreneurship is moving away from the norm: how do we teach a discipline that may not conform to our traditional ideas of rationality? Even if entrepreneurship education is relatively new, business schools are teaching entrepreneurship, and evidence exist that the discipline has grown considerably (Solomon, 2007; Xu, Chen, Fung, & Chan, 2018). Also, the number of courses and co-curricular programming have grown rapidly across most business schools (Bryne, 2012; Katz, 2003). However, questions of how and whether entrepreneurship can be taught are still widely contested (Kuratko, 2004). As business schools take on the challenge of developing programs for entrepreneurship, it is important to examine how faculty, staff, and students go about constructing, disseminating, and evaluating knowledge claims pertaining to entrepreneurship (Bathia & Levina, 2020).

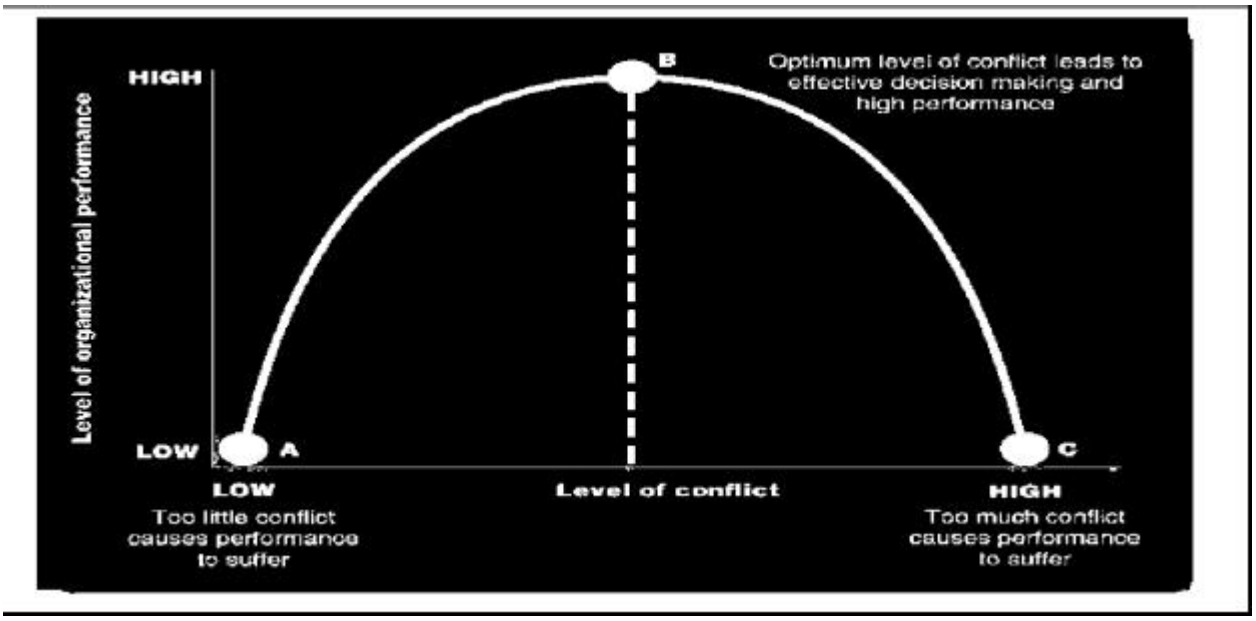
## LITERATURE REVIEW

Therefore, how can we "disrupt" the traditional way of teaching entrepreneurship? This paper proposes to focus on a different way of reaching to the students by offering visual reinforcement to learning concepts. Confucius once said, "I hear and I forget, I see and I

remember, I do and I understand" (Childs & Sepples, 2006). This statement captures the essence of teaching with experiential exercises. Experiential exercises help students grasp entrepreneurial concepts, from both an affective and a cognitive perspective, that are difficult to learn in any other way. There have been several studies that have focused on the "I do and I understand" component (Naufalin, Dinanti, & Krisnaresanti, 2017; Josien, Gough and Robinson, 2017; Krakauer, Serra, & De Almeida, 2017; Robb, Rahn, & Buffardi, 2019; Turner & Turner, 2015), in which pedagogical methods are proposed to teach students how to become better entrepreneurs. The principal idea is that by students completing specific activities, the experience would enhance their entrepreneurial abilities akin to an experience effect. In essence, "doing" enlightens the students and helps them better understand the concepts at hands. As an example, many may be aware that water is composed of two atoms of hydrogen and one of oxygen ($H_20$) but many students may encounter difficulty understanding this. Hence, students' efforts in completing an experiment in which they mix hydrogen and oxygen together would result in creating water and may enable a deeper understanding of the concept at hand. Another example might involve conducting an exercise in total silence to highlight how important communication is for an entrepreneur, and that if an entrepreneur cannot communicate his or her vision or even task to be done, then the business venture is highly likely to fail (Josien, Gough, & Robinson, 2017).

This study, by contrast, focused on the "I see, and I remember" component, in which students are shown business-related activities, with the goal of helping them "see" concepts that have been developed in other classes and relate that learning to what they see and what could or should have been done. As an example, students enrolled in business courses may be introduced to the organizational conflict performance inverted U curve seen in Figure 1 below (adapted from Jones & George, 2003).

**Figure 1:**
**Conflict performance**




As illustrated above, a low level of conflict in a team or an organization leads to lower potential performance, while a moderate level of conflict results in the highest performance potential, and an excessive level of conflict results in low performance.

How might students be able to "see" that concept in a live action movie? There are several scenes in "Bohemian Rhapsody" (Singer, 2018) that can be related to the conflict concept. In one scene, Freddie Mercury is shown in a great deal of conflict with the rest of the band (leading to the band breakup), which illustrates the issue that too much conflict leads to decrease in performance. In another scene, after commencing his solo career, he experiences very low levels of conflict and is not able to produce music he considers worthy; the experience illustrates that a low level of conflict is not leading to a high level of performance. In a third scene, Freddie Mercury reconnects with the rest of the band and acknowledges that their interaction and conflict is what led him and the band to write their best music, suggesting that some level of conflict is better than none.

Movies and movie clips as a tool for teaching concepts has been an approach used in different fields. For instance, Desai, Jabeen, Abdul and Rao (2018) used film to teach cross-cultural management, as actual exposure to other culture may not always be available or feasible. Hence, films can be used as a medium of simulation to immerse the students to a different culture. To that end, they provided a list of 101 films that can help to teach cross

cultural management. Smithikrai (2016) used movies to promote positive characteristics and behaviors to Thai students and found it to be an effective method to do so. The fields of physics and chemistry have also involved movies as a teaching tool. Goll and Woods (1999) drew on the film "Apollo 13" to discuss connections between the study of chemistry and space exploration, including fuels and oxidants used in rockets and lithium hydroxide containing carbon dioxide filters used to keep the crew alive. Frey, Mikasen, and Griep (2012) developed criteria for selecting film clips to show students, and concluded that clips with more "wow," as in popular actors, incredible sets, memorable dialog, and special chemical effects, engage students' attention and maximize learning.

## MOVIES AND ENTREPRENUERSHIP EDUCATION

This paper relates a recent experience teaching entrepreneurship through movies and documentaries. As previously noted, the idea was to show students several different business concepts and ask them to reflect on these concepts. The goal of this paper is to explain and provide feedback on how the class was developed and the students' reactions to the class. The following sections will explain how the class was established, which movies were selected, how and why they were selected, students' feedback about which movies they liked or disliked and their thoughts regarding the class, and recommendations for educators who might wish to use movies to teach entrepreneurship or other business classes.

The class was offered as a special topic, with an Entrepreneurship prefix, (ENT 4xx) 3-credit class in the Spring semester at a small, AACSB accredited, public university in the Northeast region of the United States. Students met in the evenings, once a week, for 3 hours each session. Regarding copyright implications, the face-to-face exemption of the Copyright Act allows for movies to be shown to a class. Section 110(1) of the Copyright Act allows instructors to perform or display a copyrighted work without seeking permission of the copyright owner, in the course of face-to-face teaching activities at a nonprofit educational institution in a classroom or similar setting devoted to instruction. There are no restrictions on the type or length of work for this purpose; a full-length movie can be shown without a license, to the extent it is within the classroom and that the instructor maintains an official copy of the movie (DVD, Blu-ray, or VHS) [www.copyright.gov]. As movies can contain scene(s) that can be sensitive to some individuals, a description of movie rating was included in the syllabus and students were advised that some movies could have an R rating. The following statement was included in the course syllabus:

"(4) R - Restricted. Children Under 17 Require Accompanying Parent or Adult Guardian. An R-rated motion picture, in the view of the Rating Board, contains some adult material. An R-rated motion picture may include adult themes, adult activity, hard language, intense or persistent violence, sexually-oriented nudity, drug abuse or other elements, so that parents are counseled to take this rating very seriously. Children under 17 are not allowed to attend R-rated motion pictures unaccompanied by a parent or adult guardian. Parents are

strongly urged to find out more about R-rated motion pictures in determining their suitability for their children. Generally, it is not appropriate for parents to bring their young children with them to R-rated motion pictures." From: Filmratings.com. (https://filmratings.com/Content/Downloads/rating_rules.pdf retrieved Jan 18, 2019).

Students were expected to be in class to watch the movie and then engage in an in-class discussion about the business topics demonstrated in the movie. Attendance was strongly encouraged, with a stringent attendance policy (perfect attendance or 1 absence: 100% of the grade earned, 2 absences: 95% of the grade earned, 3 absences: 90%, 4 absences: 80%, 5 absences: 70%, and 6 or more absences resulting in failing the class). After each class, students were required to submit a 3 to 4 pages, double-spaced essay on the topics discussed in class and seen in the movie; the essays were worth a third of the overall class grade and were due before the next movie was shown. The other graded components were class participation (another third of the overall grade) and a reflection paper (10-12 pages, double-spaced) in which students were asked to review the whole class and discuss their learning. At the beginning of the semester, students were presented a "framework" to guide them in crafting their essay for the week (see Table 1, below, for the movie Tucker).

**Table 1**
**Essay framework for the movie Tucker**

| | Tucker: The man and his dream |
|---|---|
| 1) | Political influence: what do you think is the government place concerning business? Explain your position. |
| 2) | What could Tucker have done to save his business? |
| 3) | Entrepreneurs often use investors' money to start/grow their business; can they do whatever they want with that money? |
| 4) | Is Elon Musk the next "Tucker"? Why or why not? |
| 5) | Any other issue(s)? |

There are many Hollywood movies or documentaries that address business issues. Movies were selected for the class based on the instructor's personal knowledge of films and through discussions with other colleagues in the school of business. As a result, a list of 24 movies were identified and 14 were selected. Movies not selected were rejected based on a few variables: one was too long for a single class session (Citizen Kane: over 3 hours), others were not selected due to a duplication of the topics exhibited in the movie (i.e., Wall Street and Wall Street: Money Never Sleeps focus on similar business concepts, hence only one was selected). In total, 14 movies were selected for the class (only 13 were shown as one class was cancelled due to a snowstorm). The 14 movies selected are (listed in alphabetical order):

**The Big Short** (Adam McKay, 2015). Business topics in this movie includes analysis of the market (AKA the ability to see the future, whether the economy is going to do good or not) while using a data-driven approach and a "gum shoe" verification of the analysis, "sticking to

your ideas" even when it is not going well, ethics (profit through betting on people losing), and professionalism (interaction with your investors and employees).

**Bohemian Rhapsody** (Brian Singer, 2018). In this movie, entrepreneurial topics includes creativity, marketing (tailoring your product/music to a specific audience), partners, managing success, contract negotiation, risk taking (selling your only mode of transportation to pay for recording an album) and following/having the right advice. It also shares a look at the world of the music industry, which is quite different than other industry.

**Capitalism: A Love Story** (Michael Moore, 2009). This documentary by Michael Moore shows the "dark side" of capitalism and, hopefully, challenges students to think about ethical ways to run a business. Ethical questions raised include whether it is proper to have life insurance on your employee, and the implications of selling something to a client who does not understand what he or she is buying, or the risk associated with that purchase (e.g., changing interest loans). This movie was shown in contrast to another documentary, Something Ventured.

**The Founder** (John Lee Hancock, 2016). The Founder follows the live and genesis of Ray Kroc as he discovers McDonald and makes it into the corporate giant we now know. This film can be used to illustrate the concept of franchising, as well as issues such as relationships with partners, vision for the growth of a business (moving from one store to many), understanding customers' needs (fast, cost-controlled food), contracts, sales (sales tactics and selling franchises), loans and profitability, business operations, sources of key business and revenue generation (real estate vs. percentage of a burger sale), and ethics.

**Hidden Figures** (Theodore Melfi, 2016). While not a business movie per se, there are nonethelss quite a few business issues to be gleaned from this film. The first one is how to deal with an emerging technology (the computer from human to machine) and all the corresponding change that is has on how to run a business. Other issues include labor relations, gender equality, race relations, and competitive pressure. Also, the topic of the movie can make students think about business opportunities that are coming up in the space industry (space tourism, satellites delivery, colonization, etc.).

**Joy** (David O. Russell, 2015). This movie highlights the difficulties that an entrepreneur has to start his or her business. Having a good idea for a business, the movie illustrates, is much more complicated than starting and running a business. It also highlights how networking can help, what patents can do for a business, dealing with suppliers, the positive and negatives of working with family, the importance of planning, dealing with inventories, persistence, and hard work, believing in oneself and your idea, and what success can do for you at the end.

**Tucker: The Man and his Dream** (Francis Ford Coppola, 1988). Tucker is a movie that focuses on the difficulties that an entrepreneur can have when he or she tries to disrupt an established industry. Coming up with a better product is not enough to take over the

competition. Issues relating to financing a growing venture, political influences, competitor reactions, moving from a small business to a corporation with different regulations and duties (Board of Directors, SEC reporting, etc.) are among the issues raised in this movie.

**Moneyball** (Bennett Miller, 2011). Moneyball is a movie focused on baseball, and on how that industry was selecting and trading players. It introduces the concept of analytics and how to measure a person's performance or potential. Also, it showcases how coming up with an innovative way of doing things can have an immediate impact on your industry. It can also be used to introduce the idea that you can succeed even if you do not have the same amount of money as your competitors have (by, for example, being more creative than them and seeing what they do not see).

**Pirates of Silicon Valley** (Martyn Burke, 1999). Pirates of Silicon Valley retraces the genesis of Apple and Microsoft and the impact their founder had on their businesses and industry. It also highlights some issues in professionalism (e.g., the way you look may have an impact on your ability to get a loan), dealing with difficult partners and competitors (trust), fostering competition within your employees, creating alliances to grow an industry rather than simply trying to grow your own business, and recognizing opportunity when others see none (Xerox and the mouse).

**The Social Network** (David Fincher, 2010). The Social Network retraces the creation of Facebook by Mark Zuckerberg. As far as entrepreneurship is concerned, it shows how to start a company from a single idea; hence, it deals with creativity. It also deals with partners, financing a new, fast-growing venture, how and when to monetize an idea, and reputation. Another issue raised in the movie pertains to copyright and contract laws, the lawsuits that can happen when one does not follow, and the high cost of such lawsuits.

**Something Ventured** (Daniel Geller and Dayna Goldfine, 2011). This documentary shows the genesis and impact of venture capitalists, what they look for in a business, why they invest in some businesses and not others, mistakes they have made, what they do to help the business they invest in to succeed (the role of venture capitalists in running a business they invested in) and how much money they made while helping entrepreneurs grow their business. It was shown as an antithesis of Michael Moore's Capitalism: A Love Story.

**Wall Street** (Oliver Stone, 1987). "Greed is good," the story of rags to riches, is often portrayed in the media by showing an entrepreneur who started with nothing and is now a billionaire. It can be an encouraging, motivating story, but it can also encourage a propensity for excess or looking for a short cut. Issues such as persistence, hard work, commitment, knowledge of an industry, as well as insider trading, corporate greed (hostile takeover, golden parachute, mass lay off), and questionable interactions with unions can be seen in this movie. It can also be used to launch a discussion about how much profit is "enough."

**War Dogs** (Todd Philips, 2016). Based on a true story, War Dogs focuses on the creation of a business, relationships between partners and legal contract between them (articles of incorporation), ethical behavior, international business and the different laws that can be in place in each country, government contracts, and reversed/sealed bidding. Other issues include supply chain management, finding and paying subcontractors, and moral boundaries (whether one is willing to be associated with a particular industry).

**What Women Want** (Nancy Meyers, 2000; cancelled movie). This movie was selected as it relates to creativity and marketing issues that businesses are faced with. Knowing what customers want is one of the most difficult challenges for an entrepreneur.

Overall, the class was very well-received by students. Historically, enrollment in entrepreneurship classes in the school of business is in the low to mid 20s per class, and lower enrollment is expected for a "special topic" class that may not constitute a requirement for graduation. The class was reserved for any business majors and was not advertised on campus; however, advisors were notified of the offering and business students received an email about the class. Enrollment for the class was 44, and no students withdrew from the class during the semester.

At the end of the semester, every student was asked to rank each movie in order of preference in their final reflection paper; emphasis was placed on ranking the movie on its entrepreneurial/business learning potential and value to the class, as opposed to ranking the movie on personal like or dislike. That ranking was then used to determine which movie was most liked by the students. The methodology used to determine the best movie was to attribute 1 point for 1$^{st}$ place, 2 for second…13 for last place and then average the total by the number of students. Hence, the lowest average determined which movie was considered the best overall for the students enrolled in the class. Of the 44 students enrolled, 39 usable rankings were used to determine the final ranking. Table 2 shows the rank for each movie, the number of times the movie was selected as the best movie by a student, the number of times the movie was selected as the worst movie by a student, and the standard deviation for the average rank.

As Table 2 shows, the movie that students considered to be the best is The Founder, followed by War Dogs and Bohemian Rhapsody. The bottom 3 movies are Pirates of Silicon Valley, and the two documentaries Something Ventured and Capitalism: A Love Story. The movie that received the most first place votes was Bohemian Rhapsody and the one that received the most last place votes was Capitalism: A Love story. It is worth noting that Bohemian Rhapsody is the movie with the highest standard deviation, indicating that students generally either loved it or did not think it was of much value to the class.

**Table 2**
**Students' perception of the movies**

| Movie | Average Rank | First place | Last place | Std Deviation |
|---|---|---|---|---|
| The Founder | 4.68 | 7 | 0 | 2.77 |
| War Dogs | 5.10 | 3 | 1 | 3.22 |
| Bohemian Rhapsody | 5.35 | 9 | 2 | 4.23 |
| Joy | 5.38 | 3 | 0 | 3.15 |
| Hidden figures | 6.05 | 5 | 2 | 3.97 |
| Moneyball | 6.33 | 3 | 4 | 3.63 |
| The Social Network | 6.73 | 1 | 1 | 3.05 |
| Wall Street | 7.15 | 1 | 0 | 2.61 |
| The Big Short | 7.35 | 4 | 6 | 3.99 |
| Tucker | 7.95 | 2 | 2 | 3.26 |
| Pirates of Silicon Valley | 8.28 | 1 | 4 | 3.25 |
| Something Ventured | 9.90 | 0 | 4 | 2.72 |
| Capitalism: A Love Story | 10.13 | 0 | 11 | 2.96 |

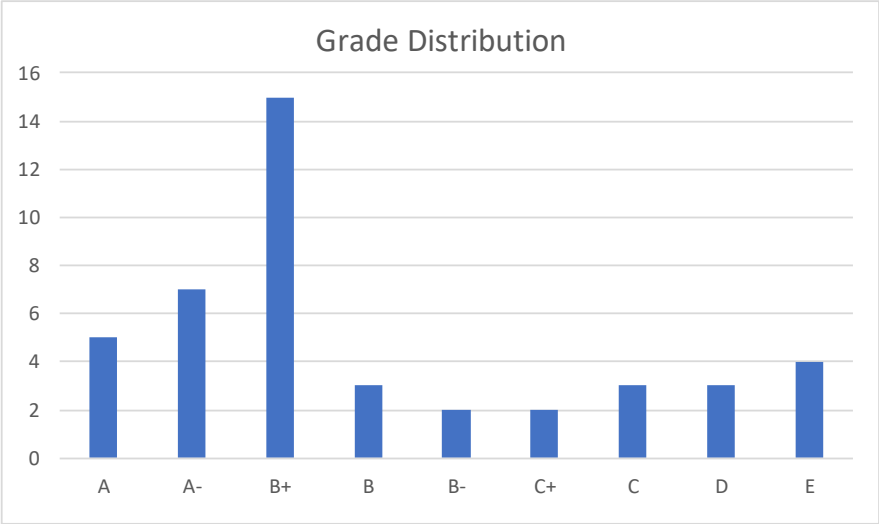
A side issue that developed while the class was in progress was participation. The class was structured to have a discussion right after the end of the movie; however, many students were hesitant to actively participate in the discussion. This issue may have been exacerbated by the large class size, as the size of the class allowed for each student to remain relatively inconspicuous. After a few weeks, a pattern emerged in which a few students would volunteer to engage in offering topics to discuss based on the movie, but it was always the same students who would start and nearly always the same that would respond, with the other students tending to listen to, though not participate in, the exchange. Even with gentle prodding, it appeared that the class structure was not working as well as one would hope. Hence, a change was made by putting students in small groups to engage in internal discussions, then moving on to discussion with the full class. This method worked reasonably well by encouraging student participation in small groups, though many students remained reluctant to participate in discussions with the full class. For the final four weeks, a new method was utilized, in which the discussion was moved to the beginning of the next class. It was initially surmised that the discussion would be more robust if occurring immediately after the movie, as it would be "fresh" in the students' minds, however, a counterpoint can be made that providing greater time for students to organize their thoughts before the discussion is valuable. This method improved the discussion to an extent, as the instructor was able to call on any student to start the discussion, but many students remained reluctant to participate.

When asked about the three different methods used for the discussions, the students' responses indicated that the first methodology (discussion immediately after the movie) was

their least favorite method. Multiple students commented that they were simply too exhausted at the end of the day to engage in a discussion, and that they preferred to return home rather than actively participate. Indeed, the class was offered from 4pm to 6:50pm and one can understand that physical and mental exhaustion can occur. Regarding the other two methods, the responses were roughly split between the two, with about half of the students preferring the small-group discussion over the discussion held during the subsequent class session.

As far as attendance was concerned, the semester began well, with no students absent. However, after a few weeks, a few students started to miss class and two of them failed the class as a result of their lack of attendance. Overall, Figure 2 shows the grade distribution for the class. The class average was slightly above a B- (80.53) and about 10% of the class failed to pass (4 out of 44); failure was due primarily to attendance, with one student attending all classes but failing to submit the required reflection and all but one of the weekly essays.

**Figure 2**
**Grade distribution**




After having offered this class, a few modifications could be suggested by the instructor. The first change would be to mix the top two methodologies used previously. Creating small discussion groups, the week after the movie was shown and using the whole class period for discussion may be helpful. The main advantage of doing so would be that students would be more prepared, as they would have written their own weekly essay, and the small group setting should encourage them to share their views with their classmates. It would also mitigate their concern regarding being too tired after a long day of classes and watching a movie. The biggest drawback is that it would, in effect, reduce the number of movies shown by half. However, there were quite a few duplications of topics among all the films shown; hence reduction in the number of films shown would not necessarily reduce the number of concepts introduced. Another potential would be to require students to complete a research paper on a topic they have

seen, as it would provide depth for one of the topics and another graded component. Furthermore, presentation of their research to the class may be beneficial, as it would provide them the opportunity to develop their speaking skills and provide depths for several topics to the full class. A third change would be to limit enrollment; while the high number of students can represent a benefit, it also creates challenges with the class flow. Hence, a smaller class size would be more conducive for engagement, as it would not provide a setting in which students remained somewhat inconspicuous. Finally, it might be worthwhile to investigate the selection of other films. When asked which movies they would add to the class, students provided the following input: Wolf of Wall Street*, The Pursuit of Happiness, The Devil Wears Prada, Enron: The Smartest Guys in the Room*, Lord of War*, The Devil's Advocate, Too Big to Fail*, Draft Day, The Lion King, The Greatest Showman, Fyre: The Greatest Party That Never Happened, Margin Call, The Intern, Erin Brockovich, Willy Wonka and the Chocolate Factory, Catch Me if You Can, Jerry Maguire, The Gambler, Limitless, Jobs, Office Space*, A Star is Born, Avatar, Boiler Room, Inside Job, Other People's Money, Risky Business, The Secret of my Success, Henry Ford, Barbarians At The Gate*, Becoming Warren Buffet, E-dreams, Gold, and Miracle (* movies that were on the list but didn't made the cut).

## CONCLUSION

The genesis of the class was based on a reflection of how to help entrepreneurship students better grasp business concepts. The idea of showing these concepts through movies seems to have some merit based on the feedback received after the class was offered. Nearly all students said that if they could go back in time, they would take the class again (41 out of 42 students) even if most also said that they underestimated the amount of work involved in weekly assignments. The "seeing" of the concepts, perhaps particularly among millennial students, can have a great impact on their understanding and retaining of concepts. Hence, a movie class is likely to be very valuable for the students. "Common sense is based upon common experience" (Schutz 1962). After completing the class, students should have a memorable common experience that serves as a foundation to help them gain confidence in their entrepreneurial abilities. Finally, that type of class can also be used as a "recruitment" tool to bring students to the field of entrepreneurship; indeed, who would not be intrigued by a class that involves watching good movies?

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