**Measuring Entrepreneurial Success in Emerging Wine Regions**

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In Partial Fulfillment

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Master of Science

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by

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The undersigned, appointed by the dean of the Graduate School

have examined the Thesis entitled:

**Measuring Entrepreneurial Success in Emerging Wine Regions**

Presented by Rachel “Kate” Hangley

A candidate for the degree of

Master of Science

And hereby certify that, in their opinion, it is worthy of acceptance.

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Dr. Mary Hendrickson

*To my mom, my role model, my biggest fan and best friend: Thank you for your sacrifices, support and our Thursday lunches. The greatest feeling I receive through my achievements is seeing your joy.*

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## Chapter I: Introduction

Firm performance has traditionally been evaluated from an economic perspective where financial and economic indicators have served as tools of measurement. Several researchers have made the claim that these traditional economic indicators are not appropriate measures to use when analyzing the performance of small entrepreneurial business due to the differences in the nature of the firm, specifically the all-pervasive presence of the entrepreneur. The literature claims that success, which is a result of firm performance, is a measure of entrepreneurs' satisfaction. Whereas satisfaction is the result of an entrepreneur achieving the goals they set forth for their organization. Entrepreneurs should, therefore, be the ones who define and measure their firm's success. Researchers claim entrepreneurs define their success to be primarily contingent on meeting non-economic objectives much more so than the traditional economic objectives used in measuring traditional firm performance.

The literature claims the most important factors on which entrepreneurs base their definitions of firm success are: personal fulfillment, lifestyle, job satisfaction, product quality and customer service all of which are valued as more important objectives than growth and profit. The studies are in agreement that these subjective non-economic performance measures are more important to an entrepreneur and play a larger role in an entrepreneur's evaluation of their firm's success than the traditional economic performance indicators of profit and growth; the literature does not however address how important these economic indicators of performance are to the entrepreneur in addition to the non-economic indicators.

This study surveyed wineries in the emerging wine regions of Missouri, Michigan, New York and Vermont and found that most winery owners started their businesses from motivations that were non-economic in nature but economic motivations were still found to be important to

the entrepreneurs. The value that entrepreneurs place on the objective to maximize profit is downplayed in the literature; however, the sample showed the majority of entrepreneurs place an emphasis on maximizing profit. The discrepancy between non-economic startup motivations and the economic motivation to maximize profits hints that economic indicators play a role in the entrepreneur's measurement of performance along with the non-economic indicators that are important to entrepreneurs. This study examines the relationship between the traditional economic indicators of performance and the non-economic indicators of performance. I find economic indicators play a lesser but still sizeable role in the entrepreneur's measurement of firm success than the non-economic indicators of performance that are defined by the entrepreneur.

## Chapter II: Literature Review

### *2.1 Exploring the systematic relationship between economic and non-economic performance measures*

Despite the attempts to combine both non-economic and economic indicators of performance, researchers have paid very little attention to the actual relationship between these two methods of performance measurement. The following literature review discusses the ways several authors outline how entrepreneurs measure their success. These authors often examine the measures in terms of ordered importance coming to a general consensus that entrepreneurs of small differentiated businesses, such as wineries, place a greater emphasis on non-economic measures of performance such as: personal fulfillment and job satisfaction, product quality and customer service, and lifestyle than they do on economic measures of performance such as growth and profit. Many authors have also revealed a relationship showing that the importance of these non-economic measures is often contingent upon the level of a firm's economic performance. There has been research on how the motivations of an entrepreneur also affect their willingness to strive for economic performance such as increasing growth or profitability. There has not; however, been research done to identify the extent to which traditional economic measures of performance are correlated with entrepreneurs' perception of success which brings this study to its main research question:

*Research question: How does traditional economic performance systematically translate into success as defined by the entrepreneur? How important are the traditional measures of the firm's economic performance to the entrepreneur while evaluating her firm's performance subjectively?*

### *2.2 Defining success from an entrepreneur's perspective*

The literature on business performance commonly uses the term 'performance' to refer to a firm's economic performance. Often time the terms "performance" and "success" are used interchangeably when discussing the outcome of a firm's inputs when in fact the terms are not interchangeable; instead, success is a result of firm performance. The interchangeability of the terms performance and success is understood because high-performing businesses are generally considered successful by researchers. The path from a venture's economic-performance to success is especially linear in larger businesses with various stakeholders; however, in small and micro businesses where the entrepreneur plays a magnified role in the organization, the linear relationship between firm performance and firm success becomes less defined because 'success' becomes less defined. An entrepreneur of a small business has more autonomy over choosing their business objectives than the principals and agents of a multi-stakeholder firm. Economic performance is important for their survival but it does not translate into whether or not entrepreneurs define themselves as successful. Entrepreneurs use their businesses as a means to achieve various non-economic goals in additional to, and usually in preference over, financial goals.

It is most effective and common to use the *goal approach* when defining firm success in small entrepreneurial business, because of how ubiquitously present the entrepreneur is in the operations of their firm (see Haber and Reichel, 2005; Reijonen 2008). The goal approach is founded upon the consensus that organizations are operated on the principles of identifiable goal setting and an organization's performance is measured by the attainment of its goals (Dess and Robinson, 1983). Many studies have used the goal approach to examine success in small entrepreneurial ventures. The goal approach internalizes success by centering goals as the unit of analysis. Since it is the entrepreneur who sets these goals, it then only makes sense for the

entrepreneur to be the one who defines success. Also, in small entrepreneurial ventures, there are fewer misaligned objectives, the principal is often the agent; decision making is centralized which causes collective decision making costs to be lower than that of larger stakeholder firms that are more effectively examined by using the constituency, processes and systems resource approaches[1].

*2.3 Success, defined as satisfaction*

The literature has attributed the achievement of goals as the definition of success; however, according to Reijonen (2008) the mechanism responsible for bridging the gap between goal achievement and an entrepreneur's assessment of success is the feeling of satisfaction received by achieving their goals. Paige and Litrell (2002) find satisfaction of goals to be the leading factor in accounting for success in the craft retailing business. Nowak and Anderson (1999) write that entrepreneurs of Australian wineries view goal achievement as an important indicator of firm success. Corkindale and Welsh (2003) argue that small wineries define success in terms of goals: financial goals, personal and lifestyle goals, and product quality goals. Getz and Carlsen (1999) use goals to examine family and owner-operated businesses in rural tourism and hospitality sectors in Australia. After performing three studies on small business performance, Reijonen (2008) concludes that the findings show that entrepreneurial satisfaction through achieving goals is the "ultimate measure of success."

[1] *Constituent approach*: analyzes the multidimensionality of performance through various constituents involved in organizational networks, viewing performance as an outcome of the preferences of each of the organizations' constituents. (Shellenberg, 1982; Zammuto, 1984)

*Systems resource approach:* focuses internally on the organization and its interactions with its environment, primarily focusing on transactions and the organization's ability to procure scarce resources that contribute to the activities of the organization (Yuctman and Seahore,1967).

*Process approach:* behavioral processes of players in an organization to analyze performance (Shellenberg, 1982).

Satisfaction in entrepreneurship is defined by discrepancy theory. Cooper and Artz's (1995) state:

> "satisfaction is determined in part by the 'gap' between an individual's personal standards of comparison (e.g., what he or she wants or feels entitled to) and actual experiences."

Assuming that entrepreneurs start their business with the intention to be successful, excluding all external factors, one would expect the entrepreneurs to focus on and achieve the goals that are the most important to them which leads to the first hypothesis expected to be seen in the data:

*Hypothesis 1: Startup motivations should correlate with respective performance outcomes.*

One would expect for entrepreneurs to outline startup goals that relate to the most common factors discussed in the literature on traditional firm performance: growth, size, efficiency and profitability; this however, is not the case.

*2.4 Success: subjective and non-economic*

I chose to examine entrepreneurial literature that is close in nature to the wineries in emerging regions that were sampled for this research. I felt it was important to keep the nature of the businesses similar so the objectives, goals and interpretations of the entrepreneurs remain as consistent as possible. The following studies are mainly studies examining entrepreneurial perspectives in wineries, craft retailers, artisan business and rural tourism all of which differ greatly from traditional multi-stakeholder firms and to some degree other types of entrepreneurial business.

The developed theory of firm performance is primarily reliant upon financial and economic success; however, it has been shown that traditional indicators such as growth and

profitability are not as important in entrepreneurs' interpretation of success as they are for traditional, multi-stakeholder firms. In the case of the literature, subjective, non-economic measures may be useful in explaining small business success. Dess and Robinson conclude that "subjective measures may be useful in attempting to operationalize broader, non-economic dimensions of operational performance" After asking the entrepreneur how they themselves define success, the literature reveals the most meaningful indictors of success to be subjective and non-economic in nature. The most important objectives reflecting goal attainment and the measures entrepreneurs use when qualifying themselves as successful are: personal fulfillment, product quality and customer service, lifestyle and job satisfaction. The magnified importance entrepreneurs are said to place on non-economic factors bring about the second hypothesis of this research followed by a supporting discussion of the literature that outlines these important measures of success.

*Hypothesis 2: Decision to enter the wine business in an emerging region will be motivated primarily by non-economic factors.*

Paige & Littrell's 'satisfaction of goals' is found through factor analysis to be the leading variable for success criteria and contains factors related to lifestyle and self-fulfillment: 'achieving personal happiness and fulfillment,' 'having independence and control over life.' and 'balancing family/personal life with work;' each of these factors prove to be more explanatory of success than 'achieving sales growth' or 'increased profit.' Buttner & Moore (1997) perform a factor analysis on female entrepreneurs in small business and find that after partialling out demographic characteristics, the women viewed 'self-fulfillment' as their most important metric for defining success.

Reijonen and Komppula (2007) find that "product quality" is the most important factor by which their sample of small craft retailers measured their success followed by the 'level of respect from customers.' In the same study, the authors find that 'delivering customer satisfaction' and 'developing long-term relationships' are the most important measures of success in rural tourism business. The fourth most important factor of "satisfaction of goals" in Paige and Littrell's factor analysis is 'exceeding customer expectations.' Haber and Reichel (2005) use 'customer satisfaction' as an explanatory short-term, subjective variable in determining performance of small tourism businesses. Nowak and Anderson (1999) use factors from the balanced scorecard approach and find that 'customer service' is the most important non-financial measure focused on by Australian winery owners. Four factors explaining the 'customer service' category are ranked in order of importance: 'overall satisfaction,' 'delivery performance/customer service,' 'product/process quality,' 'service quality.' Customer satisfaction is not only important for entrepreneur's sense of achievement but it is also proven to be an important causal determinant to a firm's financial performance and a direct result of product quality (Anderson, Fornell and Lehmann, 1994; Haber and Lerner, 1999). Because entrepreneurs in the literature list product quality and its resulting outcome of customer satisfaction to be more important objective than financial and economic performance, the second hypothesis for the wineries sampled is:

Lifestyle is also one of the most prevalent goals and measures of success for small business entrepreneurs. Getz and Carlsen (2000) study the motivations of rural tourism entrepreneurs and after an exploratory factor analysis find there to be two distinct groups of entrepreneurs: "family first" and "business first." Most entrepreneurs in their sample fall under the "family first" category. These entrepreneurs are primarily oriented towards family and

lifestyle before making money, regardless of the individual characteristics of the owners or business. Lewis (2008) makes the case that small firm owners in New Zealand tend to view lifestyle not as a result of their businesses but instead choose their lifestyle first and then shape their business operations around it. The directional relationship identified by Lewis is an interesting finding as small business has a reputation for determining the lifestyle and usually consuming the life of the entrepreneur instead of a mechanism for the entrepreneur to achieve their desired lifestyle.

Greenbank (2001) finds the most important personal non-economic objective for micro-entrepreneurs in accounting, building and printing to be "job satisfaction." Reijonen (2008) finds through interviewing both small craft retailers and rural tourism entrepreneurs, most view "job satisfaction" as an important indicator of success. "Feeling satisfied with owning business" was also a factor in Paige & Littrell's "satisfaction of goals." Given the relative importance of these non-economic measures of performance to economic measures of performance, the third hypothesis is:

*Hypothesis 3: Maximizing profit will not be as important of an objective as producing a high quality of wine, achieving desired lifestyle or job satisfaction.*

*2.5 The roles of economic performance measures*

Traditionally, firm performance has been commonly measured by profitability and growth (see Murphy *et al*,1996; *Kean et al.* 1998; Unger *et al.'s* 2011; Bosma *et al.* 2004; Fairley and Robb 2009; Wiklund and Shepherd 2005) Profitability and growth, although not the primary goals of most small business entrepreneurs, are still relevant to an extent which varies by entrepreneur. The literature unveils a hierarchy in success measures that exists for entrepreneurs

in different phases of their business. Crockindale and Welsh (2003) found through their research on small Australian wineries that top performers tend to place more emphasis on quality and subjective lifestyle goals where bottom performers focus primarily on financial goals. The authors suggest the existence of a possible pyramid of success measures where the base is a desired level of financial performance that once achieved, entrepreneurs shift focus to less financial aspects of their business. Reijonen (2008) supports this hierarchal hypothesis by finding that small business owners "who emphasize economic goals tend to be more sensitive to financial performance." These hierarchical relationships lead to the study's third hypothesis:

Entrepreneurs of small business view financial goals with an attitude of sufficiency and not maximization. Most entrepreneurs view economic goals as a means to achieve the non-economic goals that are more important to them. Increasing "overall profitability" ranks less of a priority than the owner making a "reasonable living" (Reijonen, 2008). The same study also finds that "business making high profits" falls at the bottom of the list under eight other important factors in being a small business owner. Paige and Littrell's (2002) factor analysis on success criteria for craft retailers shows that "achieving sales growth or increased profit" is viewed as the sixth and least important factor in entrepreneurs achieving their satisfaction of goals. Gray (2002) finds that "increase in profits" and "increase in sales" are not the most important strategic objectives for small business entrepreneurs and that "making money" lags well behind the "desire for independence" as a personal career motivator in SME firms. Greenbank (2001) finds that micro-business entrepreneurs' most occurring personal economic objective is to make a "satisfactory income" a factor that greatly exceeds the objectives to make a "high or higher income" and to make "money for luxuries".

Another common misconception of understanding the objectives of small business owners and performance is the idea that entrepreneurs strives for growth. As mentioned, growth is a traditional indicator of a firm's economic performance. Barriers to growth and size in small business are prevalent; however, often times the barrier to growth is a conscious choice, simply the preference of the entrepreneur to remain small or cap growth. Rauch and Frese (2000) point out that using growth as a performance indicator may be misleading in the case of many entrepreneurs who have chosen a limit to their preferred venture growth but remain operating successful businesses. Lewis (2008) finds that "the gap between capability for growth and desire for growth seems large" for SMEs. Reijonen and Komppula (2007) find that attitudes toward growth in craft and rural tourism businesses are negative and that entrepreneurs in craft and rural tourism industries do not consider growth to be an important criteria for small business success. Often time's entrepreneurs understand that growth signifies a tradeoff with opportunity costs; the business owners, particularly those in rural tourism, hospitality and artisan food tend to lean towards family and lifestyle objectives and will purposely cap growth if they see it as an interference with these objectives (Getz and Carlsen, 1999; Lewis, 2008; Tregear, 2005).

*2.6 Economic performance: measuring subjectively*

Although objective performance measures are traditionally the most preferred indicators of a firm's economic performance, Eddleston *et al.* (2008) and Sapienza *et al.* (1988) point out that proprietary financial information is often unavailable to researchers studying smaller, private firms. Covin and Slevin (1989) argue that objective financial data can be misleading in small firms due to the tradeoffs between profits and growth or due to sample heterogeneity. Limitations such as data availability and heterogeneous samples are common for small business and entrepreneurship researchers and have led to alternative methods of measuring economic

performance in a more subjective manner. The most commonly used subjective performance measures are Likert-scale variables where firm respondents are asked to rank their ventures on a numerical scale for variables that correspond to the common objective measures of economic performance: “growth”, “size”, “efficiency” and “profit”. Subjective Likert-scale questions are often times asked in terms of ranking performance relative to one’s competitors, others in their industry or over time. There are several ways researchers have used subjective Likert-scale values to measure a firm’s economic performance. In their study, Eddleston *et al.* (2008) ask eight comparative performance questions regarding growth, efficiency and profits and sum the scores to generate an overall subjective performance score. Often times subjective measures are used along with similar objective measures in order to measure firm performance. Richard (2000) uses a subjective Likert-scale ranking to compare “marketing”, “growth in sales”, “profitability” and “market share” in addition to objective measures of “employee productivity” and “return on equity”. Lechner and Gudmundsson (2014) study performance with three variables: “firm survival”, “relative cash-flow” and “relative performance.”

### *2.7 Mixed measurement methods*

A few studies have used a mixed-methods approach to attempt to explain the various economic, non-economic, objective and subjective dimensions of firm performance in smaller entrepreneurial firms. Haber and Reichel (2005) develop a four-dimensional matrix to explain performance in small tourism ventures. The matrix is a combination of objective, subjective, long-term and short-term measures of performance where the long-term measures are growth-oriented and the short-term are more profit-oriented with the objective measures being measurable by actual economic values and the subjective measures being scale and relational measures. Haber and Reichel explicitly state their desire to be able to examine more subjective

measures regarding goal achievement viewed from the entrepreneur's perspective but given the sample's heterogeneity, the researchers were unable to do so. Frese et al. (2000) sum subjective Likert-scale measures of personal success that are a combination of realized start-up goals with Likert values of profitability measuring sales, profits, investments, personnel and personal income to create one variable for performance.

*2.8 Overarching hypothesis*

The three previous sections show that the literature states three things: entrepreneurs do focus on economic goals but less so than non-economic goals, both economic and non-economic goals can be and are frequently measured subjectively given the data limitations of entrepreneurship research and finally, a few studies have tried to measure performance using a variety of combinations of economic, non-economic, subjective and objective performance indicators. What the literature does not explore is the relationship between an entrepreneur's use of economic and non-economic subjective measures of performance when ascertaining their success. If the three hypotheses above are true then the sample should show that entrepreneur's startup motivations are primarily non-economic in nature, with profit being one of the lowest objectives whereas their performance will be correlated with these motivations and we should see a greater focus on non-economic measures of performance than economic measures, particularly growth. Adding to these hypotheses, the literature states that economic performance measures matter in addition to non-economic measures; therefore, in attempt to address the research question, is the final and overarching hypothesis:

*Hypothesis 4: there is a relationship between economic performance and subjective measures of success where economic performance will play a lesser role in an entrepreneur's interpretation of success than subjective non-economic indicators of performance.*

## Chapter III: Methods

### *3.1 Data Collection*

The data used in the empirical analysis originated from primary survey research gathered by researchers Dr. Brent Ross at Michigan State University, Dr. Miquel Gomez at Cornell University and Dr. Fabio Chaddad, PhD student, Bruno Miranda and M.S. student Rachel Hangley at University of Missouri. Project funding was given by the United States Department of Agriculture in attempt to "better understand current strategies and to identify common challenges faced by wineries in emerging wine regions." Exhibit 1 in Appendix A displays the recruitment letter sent to Missouri wineries. The general objective of the survey was to collect data on wineries in emerging regions. Each researcher involved in the survey development had various and differing research objectives that are reflected by the broad scope of survey questions. Several survey questions were modeled from a previous survey conducted by the same researchers in 2011. A copy of the survey may be viewed in Exhibit 2 of Appendix A.

Surveys were sent to wineries in Michigan, Missouri, New York and Vermont in April of 2015. Electronic surveys were sent to each winery and hard copy surveys were sent to each winey in Missouri. Michigan had a total population of 112 wineries, Missouri 114, New York 201 and Vermont 28. Survey collection in the form of email and call follow-ups took place between the months of April and August, 2015. The response rate for Michigan was 28.6%, Missouri 40.4%, New York 14% and Vermont 29% tallying a total sample of 111 surveys with a 24.4% total response rate.

Following Parmigiani (2007) and Li *et al's* (2002) justification of choosing survey respondents, we chose a key informant single-respondent approach as the most appropriate technique given the subjective nature of the questions, especially those regarding entrepreneurship and relative rankings. When collecting the surveys, we requested the survey respondent be an owner or individual with complex knowledge of the organization's operations and history. After collecting the surveys, data show 60% of survey respondents to be the winery owner, 12% to be the operation's chief executive officer or general manager,10% identified as 'other' while the remainder were unspecified. Those who were not able to offer opinions about entrepreneurship were requested to seek the input of the entrepreneur. The question asking the respondent's position was asked prior to the majority of the subjective entrepreneurial questions, meaning some surveys could have possibly had more than one respondent participating but not identified.

### *3.2 Data: Descriptive trends*

#### *3.2.1 Wineries*

The following are the descriptive statistics for the wineries sampled. Wineries in the sample have been in existence for an average of 13 years. The newest wineries are less than a year old and the oldest has been in business for 48 years. The average winery has a storage capacity of 20,790 gallons, ranging from 400 to 300,000 gallons, and an average production of 7,359 cases ranging from zero cases to 100,000 cases. Seventeen wineries have experienced negative production growth over the past four years, 28 have experienced no growth and 38 have experienced a positive growth in production. Average growth in production is at 4% with some wineries experiencing as much as an 80% decrease in production and a 100% increase in production. Ten wineries have experienced a decrease in revenues over the past four years while

19 have experienced no change in revenues and the remaining 56 have experienced an increase in revenues. Revenue growth has an average of 12% with as much as a 30% decrease and a 150% increase in revenues. The wineries' descriptive statistics can be viewed in Table 1.

Table 1

| Descriptive Statistics Wineries in sample | | | | | | |
|---|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | | Std. Deviation |
| | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic |
| Storage capacity | 102 | 400 | 300000 | 20790.3 | 4103.32 | 41441.512 |
| Age | 106 | .00 | 48.00 | 13.1698 | 1.12126 | 11.54409 |
| Production | 104 | 0 | 100000 | 7358.93 | 1665.49 | 16984.740 |
| Change production | 83 | -80.00 | 100.00 | 3.9759 | 2.93379 | 26.72807 |
| Change revenue | 85 | -30.00 | 150.00 | 12.1571 | 2.51230 | 23.16224 |

*3.2.2 Entrepreneurs*

The following are the descriptive statistics for the entrepreneurs surveyed. The average age of the winery owner is 54 years old ranging from 29 to 83 years. The average entrepreneur spends 48 hours working with their business each week, hours worked range from 3 to 160 hours per week. The average percentage of net worth the entrepreneurs have invested in their wineries ranges from 0% to 100% with an average of 41.14%.

The majority of entrepreneurs have post-secondary education; 56% of respondents have a bachelor's degree, 23.4% have a master's degree and 5% have a PhD. 14% have some college education and 2.7% have no post-secondary education. 63% of respondents have a certificate or training in enology, 60.4% in viticulture and 43.2% have training in business management. The entrepreneurs have an average of 14 years' experience in the wine industry and 14.6 years of

experience in grape production, which correlate with the average age of the wineries sampled at 13 years. The entrepreneurs have on average 23.3 years of experience in agriculture and 20.2 years of experience in owning or managing a business. The entrepreneurs' descriptive statistics may be viewed in Table 2.

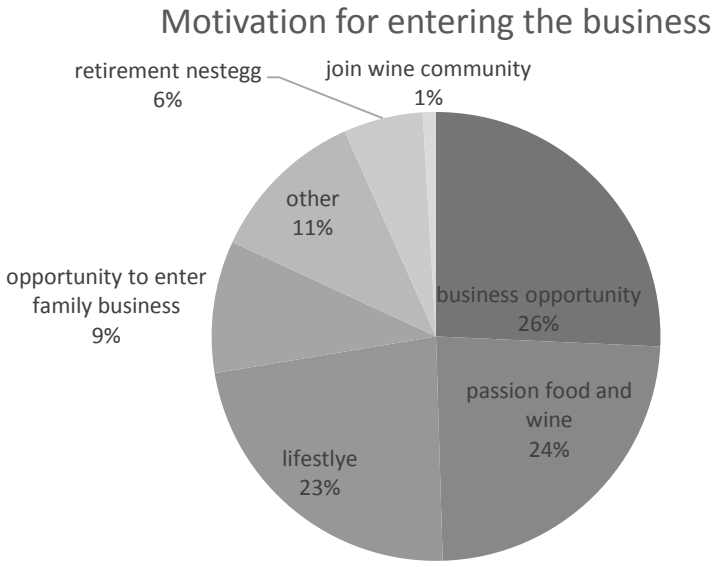
Table 2

| **Entrepreneurial Descriptive Statistics** | | | | | | |
|---|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | | Std. Deviation |
| | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic |
| Age | 110 | 29 | 83 | 54.68 | 1.163 | 12.198 |
| Hours/wk | 111 | 3 | 160 | 48.34 | 2.428 | 25.581 |
| Net worth | 106 | 0 | 100 | 41.14 | 2.962 | 30.497 |

*3.2.3 Motivations, objectives and goals*

Several survey questions were asked to seek insight regarding the entrepreneurs' motivations behind starting their businesses and to uncover information regarding their business objectives. Many of the following values are cross-tabulation correlations, they are percentages meant to unveil trends in the data, not causal relationships. Figure 1 shows entrepreneurs most important reasons for entering the wine business were 'business opportunity', 'passion for food and wine' and 'lifestyle'. The following motivations can be broken down into two broad categories: economic motivations and non-economic motivations. Economic motivations include 'business opportunity,' and 'retirement nest egg.' Non-economic motivations include 'passion for food and wine,' 'lifestyle' 'opportunity to enter family business,' "join the wine community' and some reasons classified under 'other'. 33.5% of respondents entered the business for economic reasons while 64.5% of respondents entered the business for non-economic reasons.

Figure 1




Although the majority of entrepreneurs entered the business for non-economic reasons, 66% of respondents agreed or strongly agreed that maximizing profit was an important objective of their winery. 85% of respondents who claimed to start their businesses for economic reasons agreed or strongly agreed that maximizing profit was important for them while only 65% of respondents who started their businesses due to non-economic motives agreed or strongly agreed that maximizing profit was an important objective. 47% of entrepreneurs have over 50% of their net worth invested in their winery, of these, 64% agree or strongly agree that maximizing profit it an important objective. Of the entrepreneurs who wish to maximize profit, 72% answered that their relative profitability is either higher or much higher than their top three competitors. Of the

entrepreneurs who claim to be economically motivated, only 39% are actually achieving profits that are higher or much higher relative to their top three competitors.

Table 3

| | Economic Motivations | Non-Economic Motivations | Net worth>50% | Higher Relative Profits | Total |
|---|---|---|---|---|---|
| Max Profit Objective | 85% | 65% | 64% | 72% | 66% |
| Higher Relative Profits | 39% | | | | |
| Total | 33.5% | 64.5% | 47% | | |

Respondents were asked if given the choice, if they would choose to assume ownership of their winery a second time. This question was asked to assess entrepreneurs' general satisfaction with their businesses as well as their decisions to start their businesses. Nearly 74% of entrepreneurs answered that they agree or strongly agree that they would choose the same course the second time. When examining the relationship between starting motivations and satisfaction of their decisions to start the business, it shows that there is a higher level of satisfaction among entrepreneurs who chose to start their businesses out of passion and to be part of the wine community while those who chose the business as a means to save for retirement, involve their family or as a lifestyle answered a lower rate of agree or strongly agree that they would again assume ownership of their winery. Trends between wineries' profitability and decision to 'do-over' also show wineries that have a higher and much higher profitability also

have a higher rate of deciding to make the decision to assume winery ownership a second time with 71% and 88% respectively.

Another trend examined was that between entrepreneurs' startup motivations and their self-assessed level of goal achievement. 50% of entrepreneurs who started their business due to a non-economic motivation agreed and strongly agreed that they had met or were on track to meet their initial business goals. 64% of entrepreneurs who started their business due to an economic motivation agreed and strongly agreed that they had met or were on track to meet their initial business goals. In total 53% of survey respondents agreed or strongly agreed that they were on track or had met the goals that they had outlined at the time of startup.

*3.3 Data preparation*

The data was coded and cleaned using the software SPSS. Most variables of interest were measured on a five point Likert scale and needed no coding transformations apart from labelling. Some variables were continuous and one in particular, wine production, needed to be cleaned. Prior to conducting normality tests, I omitted an outlying case because the respondent answered in the incorrect measurement. I also omitted three additional because the winery was less than four years old whereas the growth in production measured the previous four years. Maximum likelihood is the most commonly chosen estimation technique for structural equation modelling and is the estimation technique used in the following four models. In order for maximum likelihood to produce non-biased estimates, the data must conform to a multivariate normal distribution. Upon analyzing the data for multivariate distribution, the Shapiro Wilks test for normality showed the data to be non-normally distributed; however, the test is sensitive to sample size so I plotted the data on Q- Q plots and examined the levels of kurtosis and skewness. All variables' excess kurtosis and skewness values fell between the values -1 and 1 except the

variable measuring change in wine production which showed a leptokurtic distribution with an excess kurtosis of 2.4. I then performed a Box Cox transform to test for a recommended transformation of the data; results showed a theta of 1 and p value of 0.000, meaning no transformation was suggested in order to make the variable's distribution more normal.

### *3.3.1 Variables*

The following is a list and description of variables used in the four structural equation models reported:

*Performance*- latent construct used to explain wineries' performance by traditional economic measures through the following indicator variables:

*Relative profitability*- five-point Likert scale answer to the question: "compare your winery's performance relative to your top three competitors based on profitability." With values ranging from "much lower than rivals" to "much higher than rivals," respectively

*Competitive position*- five-point Likert scale answer to the question: "compare your winery's performance relative to your top three competitors based on competitive position in the wine industry." With values ranging from "much lower than rivals" to "much higher than rivals," respectively

*Profit motivation*- five-point Likert scale answer to question: "To what extent is maximizing profit an objective of your winery?" With values ranging from "not important" to "very important."

*Growth*-item constructed to fit a five point scale of wineries' growth in production over the previous four years, ranging from negative to positive growth as a percentage of total production. More detailed description of variable construction to follow.

*Success*- latent construct used to explain wineries' success as defined by the entrepreneur by the following manifest variables:

*Fulfillment*- five-point Likert scale answer to question: "Owning this winery makes me feel a sense of personal fulfillment." With values ranging from "I strongly disagree" to "I strongly agree," respectively.

*Customer satisfaction*: five-point Likert scale answer to the question: "compare your winery's performance relative to your top three competitors based on customer satisfaction." With values ranging from "much lower than rivals" to "much higher than rivals," respectively

*Product quality*- five-point Likert scale answer to the question: "compare your winery's performance relative to your top three competitors based on product quality." With values ranging from "much lower than rivals" to "much higher than rivals," respectively

*Relative performance*- five-point Likert scale answer to the question: "compare your winery's performance relative to your top three competitors based on overall performance." With values ranging from "much lower than rivals" to "much higher than rivals," respectively. Table 3 shows the descriptive statistics for all the indicator variables used in the following four models.

Table 4

| **SEM Indicator Variable Descriptive Statistics** | | | | | | |
|---|---|---|---|---|---|---|
| | N | Minimum | Maximum | Mean | Std. Deviation | Variance |

| | | | | | | |
|---|---|---|---|---|---|---|
| Relative performance | 109 | 2 | 5 | 3.53 | .740 | .548 |
| Competitive position | 111 | 1 | 5 | 3.09 | 1.075 | 1.155 |
| Profit motivation | 109 | 1 | 5 | 3.92 | 1.029 | 1.058 |
| Growth | 83 | 1 | 5 | 2.88 | .705 | .498 |
| Fulfillment | 110 | 1 | 5 | 4.33 | .836 | .699 |
| Customer satisfaction | 110 | 2 | 5 | 3.90 | .649 | .421 |
| Product quality | 111 | 2 | 5 | 3.96 | .738 | .544 |
| Relative profitability | 108 | 1 | 5 | 3.00 | .937 | .879 |

*3.3.2 Missing data*

Change in production was a question asked on each survey but only applied to wineries that had been in existence for at least four years, causing 15 cases to not be applicable to the question and therefore, not to be considered missing completely at random. No patterns were found in the additional missing data so it was assumed to be missing completely at random due to respondent error, lack of information, lack of understanding the question or preference to not share information. Given the non-random nature of the missing data, full information maximum likelihood (FIML) was chosen as the technique to deal with missing data. According to Enders and Bandalos (2001), FIML has been shown to produce more efficient and unbiased estimates than the other methods of listwise deletion, pairwise deletion and imputation. FIML is an especially superior missing-data technique to this particular research for two reasons: the small sample size and the non-random nature of certain missing cases. Listwise deletion is a wasteful technique that deletes too many observations which leads to inefficient parameters estimates. In addition to inefficiency, listwise deletion and imputation methods both result in biased estimates if the data are not missing completely at random. Instead of wasting observations, FIML includes all the data for each case which increases the efficiency. Enders and Bandalos (2001) also make the case that FIML improves accuracy by using "the partially observed cases to provide

important information about the underlying distributions of the incomplete variables and hence may reduce the bias that would result from the listwise deletion of cases."

In the variance-covariance matrix used to estimate results, the variables used in the four models remain in their measured form of five-point Likert scale items with the exception of one variable, "growth." "Growth" originated from a survey question regarding change in production. Survey respondents were asked if their wine production had increased, decreased or remained the same over the previous four years and by what percentage it had changed. The responses were used to construct a continuous variable ranging from negative to zero to positive growth values. After testing the variable's scale reliability against the other variables in the models, the Cronbach's alpha scores ranged from .075 to .077, showing a weak internal consistency. In order to increase the scale reliability, the variable "growth" was binned into five categories with equidistant ranges of 56 units between each category. Five categories were chosen while binning because maximum likelihood is shown to produce the most accurate estimates on ordinal variables with a scale of five or more (see Rhemtulla, 2012). By scaling the variable into five bins, the scale for all variables is constant giving meaning to the interpretation of unstandardized parameter estimates. After rescaling, the Cronbach's alpha increased to .575 to .726. George and Mallery (2003) report these ranges as being: ">.7 acceptable, >.6 questionable, >.5 poor (p.231)."

*3.4 Structural equation modelling: model formation and background*

I used confirmatory factor analysis (CFA) to construct a measurement model with two unobserved variables, 'performance' and 'success.' The relationship between the two unobserved variables is analyzed through a structural model. Together these constructs form a structural equation model. I provide the following general overview of Confirmatory factor analysis for

clarity because it is an infrequent estimation technique within agricultural economics. Confirmatory factor analysis is a way to assess the accuracy of measurements for a hypothesized theory. The objective of confirmatory factor analysis is to construct a parsimonious model that reproduces a covariance matrix similar to the model's indicator covariance. The measure of 'similarity' is known as the model fit. A model with good overall fit will be one that accounts for the correlations or covariance of the variables in the model. Factors are the actual constructs used to capture the covariance or correlations of the measured variables, known as indicators. Indicators are observed variables that correlate with one another, this correlation is captured by the factor, or unobserved, latent variable. After the latent variable accounts for the shared variance of the indicators, the leftover variance of each respective indicator is captured by an exogenous error term. Paths from the factors to the indicator variables measure the amount of correlation or covariance between the two items and are most commonly referred to as 'factor loadings'. The root mean squared error is the squared factor loading value that explains the amount of variance being explained in the indicator variable by the unobserved latent variable/ factor.

I constructed four structural equation models, each with two CFA models joined together, to analyze the relationship between traditional measures of firm performance and performance as defined by the entrepreneur. Traditional firm performance, as stated in the review of the literature is a measure of economic and financial indicators such as growth and profitability. In an attempt to maintain trust with the wineries surveyed, researchers agreed to not ask respondents to disclose detailed objective proprietary information about their businesses; therefore, all traditional performance measures are subjective in nature. Growth was asked in terms of percentage of revenue and production growth over the previous four years. Even though

revenue growth is a more common growth measure than production growth, production growth was chosen as an indicator variable due to being more normally distributed than the data on revenue growth. Two variables were chosen to explain profitability in the model: perceived profitability relative to top three competitors and profit motivation which is a measure of how much emphasis the owner placed on maximizing profits. The final variable used to indicate traditional firm performance is competitive position, a perceived ranking of how the winery views their competitive position within the industry relative to their top three competitors. Each model contains a combination of three of the above variables to measure a constructed latent variable "performance" which is a measure meant to capture the wineries' performance in a traditional way by using economic and financial indicators.

The top CFA portion of the model, 'success,' is a measurement of firm performance as defined by the entrepreneur. Small entrepreneurial success as defined by the entrepreneur is a measure of how well the entrepreneur satisfies their goals which most commonly surround the areas of lifestyle, personal fulfillment, job satisfaction , customer satisfaction and product quality. Due to survey limitations, lifestyle was not a factor surveyed; instead, the variables gathered to define entrepreneurial success were fulfillment, customer satisfaction, product quality and relative performance. Each question was asked from the entrepreneur's perspective, making the variables subjective in nature.

The structural component of the model is the relationship between the two latent variables, 'performance' and 'success.' The model shows the amount of variance in 'success' that is accounted for by 'performance.' This relationship is central to answering the question "how does traditional performance systematically translate into performance as defined by the

entrepreneur?"  More specifically, "how important are the traditional measures of firm performance to the entrepreneur while evaluating their firm's success subjectively?"

## Chapter IV: Results

### *4.1 Model 1*

Second to theoretical soundness, model fit is the most important output when analyzing structural equation results. Model fit is a measure of how consistent the model is with the data, more specifically, how well the model accounts for the variances and covariances contained within the data used in the model. SEM does not identify a single correct model supported by tests of statistical significance; therefore, several types of fit statistics are estimated (see Schermelleh-Engel, 2003). The primary and most commonly reported fit statistic is the $\chi^2$ test statistic. The $\chi^2$ tests the null hypothesis that the difference between the population covariance and the model-implied covariance is equal to zero. Model 1's $\chi^2$ is equal to 8.525 with a p-value of .578 meaning there is insufficient evidence to reject the null hypothesis that the difference between the population's covariation and the model-implied covariance is zero; therefore, the model fits. A good $\chi^2$ only shows model fit in absolute terms, not comparative, there could be other models that fit the data better. According to Schermelleh-Engel (2003), the $\chi^2$ has shortcomings dealing with assumptions, model size and model complexity. The $\chi^2$ can be biased by data that does not meet the assumption of multivariate normal distribution. As mentioned above, none of the variables in any of the models passed the Shapiro Wilk's test for multivariate normally distributed data, and the variable "growth" did not fall within the acceptable range of skewness or kurtosis for normally distributed data. The $\chi^2$ is also sensitive to sample size and requires samples to be "sufficiently large" in order to produce unbiased results. The sample used in all four models is considered small at 111 observations with some variables such as "growth" containing as few as 83 observations. Small samples can lead to small $\chi^2$ values with inaccurately insignificant p-values. The $\chi^2$ also tends to decrease along with an increase in the complexity of a

model whereas a more parsimonious model such as the four models outlined in this research may have an inflated $\chi 2$ test statistic.

In efforts to avoid biased acceptance or rejection of model fit, additional ancillary indices exist to examine model fit. Model 1 has 10 degrees of freedom which is more than its $\chi^2$ value of 8.525; therefore indicating that the noncentral $\chi^2$ distribution is equal to the ordinary $\chi^2$ distribution. A non-centrality parameter equal to zero is the reason for the model's root mean squared error of approximation (RMSEA) to equal zero, further implying a good model fit (see Loehlin, 2004). A zero noncentrality parameter could be an effect of the small sample. Hu and Bentler (1999) recommend analyzing the mean absolute value of the covariance residuals in addition to the RMSEA in order to assess model fit. Model 1's standardized root mean squared residual ranges between the values .000 - .092, equaling less than the .1 suggested cutoff.

Other incremental global fit indices along with the specific RMR scores may be assessed to check for model fit. The comparative fit index (CFI) which Hu and Bentler (1999) claim is better for assessing fit in small samples, equals 1.00. The Tucker Lewis Index (TLI) which Hu and Bentler claim to be best for considering model parsimony equals 1.029. Bentler and Bonnett's (1980) suggested normed fit index (NFI) equals .933. With the exception of the NFI, these values equal or exceed the .95 cutoff value recommended by Hu and Bentler (1999) as well as exceed the .97 cutoff suggested by Schermelleh-Engel et al. (2003).

The $\chi^2$ and other ancillary fit indices only provide overall information regarding the discrepancies between the observed and predicted covariance matrix; therefore, the standardized residual covariance matrix was examined to check for any specific miss-fitting relationships; none were found.

After assessing that the model is consistent with the data, the magnitude of measurement power is analyzed by the values of the factor loadings. The interpretation of the factor loadings is similar to that of a beta coefficient in a linear model, except it should be understood as an interpretation of correlation or covariation and not causation. The indicators are oblique and reflexive meaning each indicator variable is assumed to be correlated to some degree, the correlation is reflected in the latent variable, explaining why the arrows in the models point from the latent variables to the indicator variables. The leftover variance that is not explained by the shared indicators' correlation or covariance is represented in each of the indicator's respective error terms.

The two factor loadings, 'product quality' and 'competitive position' have the value of 1.00. This is due to manually constraining the unstandardized factor loadings in order to achieve model identification. I fixed the two variables to have their respective error variances equal to zero after the original estimation produced negative standardized error variances, a situation known as Heywood cases. The Heywood case is especially common in small samples and occurs in instances of sampling fluctuations, inappropriate model structure or model unidentification. Identifying the underlying cause of a Heywood case is important in choosing the correct method to resolve the negative error variances. The Heywood cases in Model 1 for the variables 'product quality' and 'competitive position' were statistically insignificantly different than zero and their standard errors were similar to the other indicators' standard errors. Dillon *et al* (1987) write:

> "Heywood case would be attributed to sampling variation when the confidence interval for the offending estimate covers zero, and the magnitude of the corresponding estimated standard error is roughly the same as the other estimated standard errors." (p.128)

I therefore assumed sampling variation was the reason for the Heywood cases in Model 1. Dillon *et al* (1987) recommends the best treatment for fixing Heywood cases that are a result of sampling variation is to fix the negative error variances to be equal to zero. After fixing the variances to zero, a $\chi^2$ difference test was performed and there was not significant evidence to believe the original model fit the data better than the Heywood-adjusted model.

After correcting for the Heywood cases, the two variables' factor loadings do not have much interpretive value as it has been manipulated to equal 1.00 with a variance of 0, meaning the factors have no unique variance or measurement error. The values can be considered in relative terms as the factors that explain the most covariation in their respective latent variables, 'success' and 'performance.' 'Customer satisfaction' is the second best indicator of 'success' with an unstandardized factor loading of .461 followed by 'fulfillment' which has a low factor loading of .239. Following 'competitive position,' 'relative profitability' is the second best indicator of 'performance' with a factor loading of .528. The smallest factor loading of the entire model belongs to the 'performance' indicator 'growth' with a value of .211. Each factor loading except for the smallest two loading values of 'fulfillment' and 'growth' are statistically significant at the 1% level.

The small factor loading and lack of statistical significance on 'growth' makes sense both empirically and theoretically. Empirically, growth is not statically significantly correlated with 'relative profitability' and because indicators are assumed to be correlated in confirmatory factor analysis given its reflexive nature, this lack of correlation could result in both low significance and small factor loadings. The lack of correlation itself is surprising given the theoretical assumption that growth and profits are inversely related and that there remains a tradeoff for firms pursuing either. 'Growth's' small loading on 'performance' could be small due to the lack

of correlation, but it also makes theoretical sense given the information existing in the literature that most small entrepreneurial firms in businesses such as wineries are not pursuing growth past a certain sufficient threshold and that many view growth as a negative aspect that could pose harm to their other business goals such as lifestyle and product quality. The poor loadings on 'fulfillment' are not as intuitive or theoretically plausible. The most likely issue is the lack of variance contained in the variable with over 52% of respondents answering that they "strongly agree" and 30% "agree" that owning their winery gives them a sense of fulfillment.

The squared multiple correlations show how much of the indicator's variance is explained by its latent variable. Apart from 'competitive position' and 'product quality' which were manually set to 1.0, none of the factors have a majority of their variance accounted for by their latent variables. 'Relative profitability' has the highest with 36.8% of its variance accounted for by 'performance' followed by 'growth' with 10.3% of its variance accounted for by 'performance.' 'Customer satisfaction' has 27.5% of its variance accounted for by 'success' while 'fulfillment' only has 4.4% of its variance accounted for by 'success' which is again possibly due to the variable's low overall variance. 'Success' in general only has 17.4% of its variation accounted for by all of its indicators combined.

This structural path between the latent variables ('performance' and 'success') measures the shared covariance amongst the indicators of their respective latent variables. The result is consistent with the theory that states that traditional measures of firm performance do not fully account for how entrepreneurs measure their firms' success. Not assuming causality, the interpretation can be made that as 'performance' increases by one unit, a positive change of .286 units occurs within 'success' that is statistically significant at the 1% level.

Figure 2: Model 1

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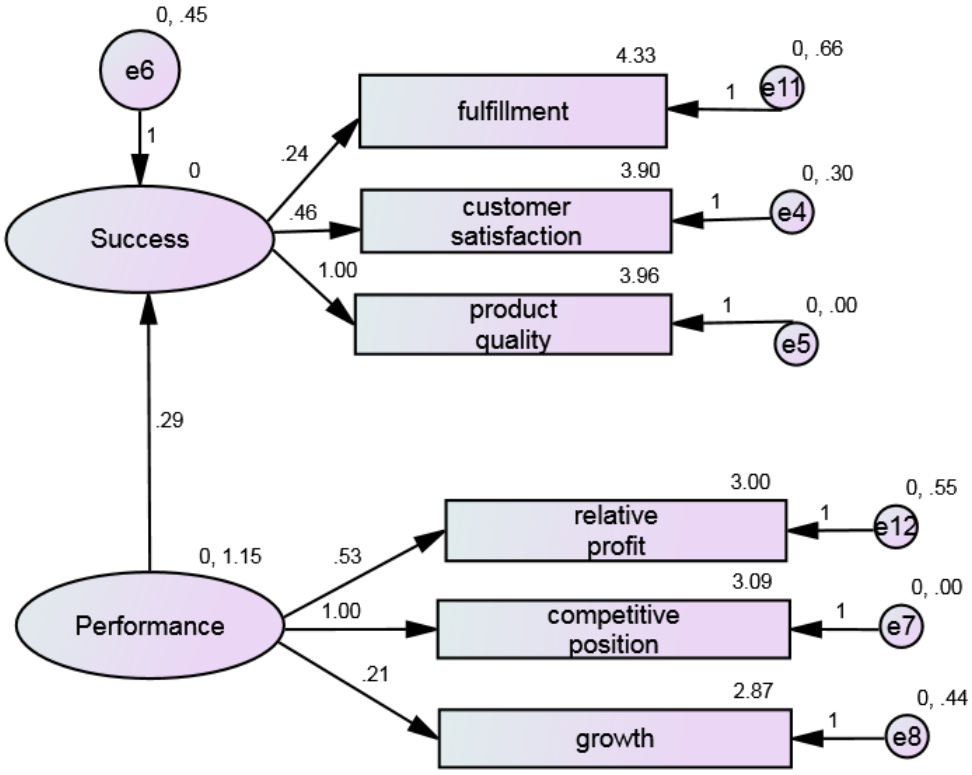


*4.2 Models 2, 3, 4*

I constructed three additional models to test for better model fit and to address the lack of significant correlation found in Model 1, this was addressed by adding 'profit motivation' in place of 'growth' in Model 2 and by replacing 'relative profit' with growth in Model 3. Model 4 was theory-driven and was constructed to identify the indicative power 'relative performance' has on 'success'. The specific results for Models 2, 3 and 4 may be found in Appendix B. The following discussion only covers model structure and notable differences in results from the base model: Model 1.

*4.2.1 Model 2*

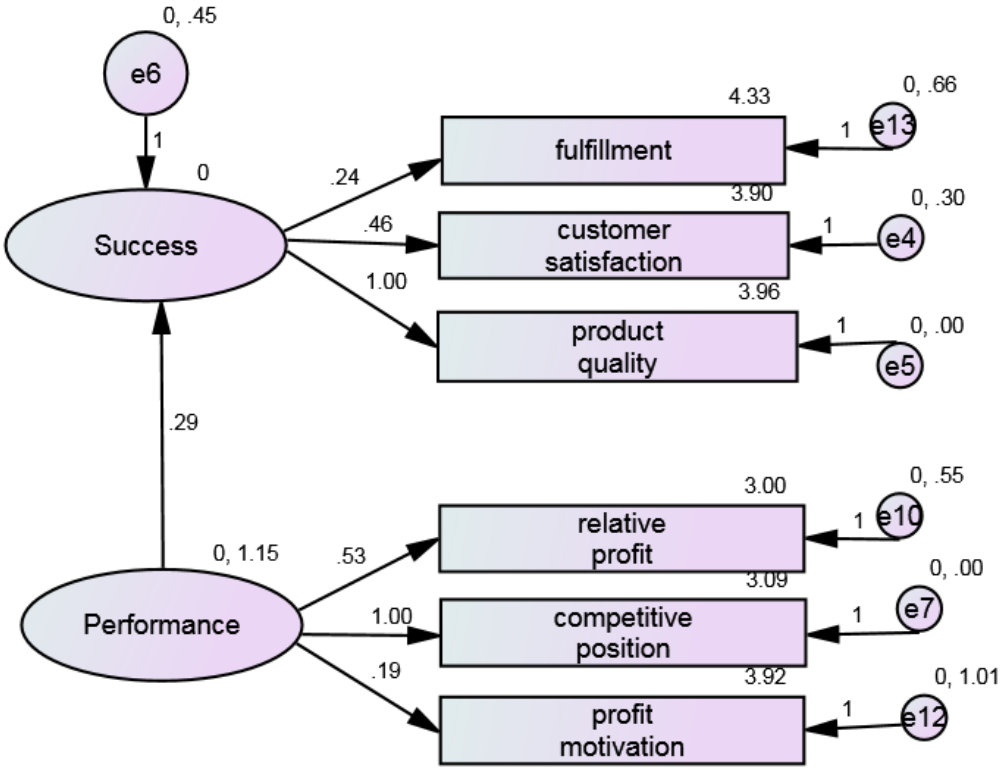
In Model 1 it can be seen that 'growth' is not an ideal measure to explain 'performance' due to its small factor loadings and lack of correlation with 'relative profitability' so another variable, 'profit motivation' thought to be an indicator of traditional 'performance' was added to the model in place of 'growth.' 'profit motivation' is a measure of how important the entrepreneur viewed the objective to maximize firm profits. This variable was included in the model because it can be assumed if the entrepreneur places a high emphasis on maximizing profit then its performance in terms of the other two indicators, 'relative profitability' and 'competitive position' will be positively correlated and together provide a comprehensive measure of traditional firm performance.

Although the theory is sound and the indicators are significantly correlated, Model 2 does not fit the data as well as Model 1. Its model fit is satisfactory by some measures such as the $\chi^2$, CFI and the RMSEA but less ideal by other measures such as the RMSEA upper bound which is .136, exceeding the recommended maximum of .1. The incremental measure of NFI is a .881 and the TLI is a .895 which passes the .8 threshold accepted by several but not the stricter

recommendations set forth by Hu and Bentler (1999) whom require a minimum of .95. The mediocre NFI fit is most likely caused by the small sample size as "a major drawback to this index is that it is sensitive to sample size, underestimating fit for samples less than 200" (see Hooper *et al*, 2008). There is also justification for accepting a lower TLI fit estimate as it is a parsimony-adjusted fit measure that Hooper *et al* (2008) recommend using along with other fit indices that have values exceeding .90.

The factor loadings in Model 2 are similar to that of Model 1 with the same indicators 'product quality' and 'competitive position' fixed to one for model identification and their respective error variances fixed to zero to take care of the Heywood cases. The other estimates are similar in weight values with 'customer satisfaction' and 'relative profitability' being the second best indicators of 'success' and 'performance' while 'fulfillment' and 'profit motivation' have small factor loadings that are not statistically significant. The poor factor loading on 'profit motivation' is due to it being much less correlated with 'relative profitability' and 'competitive position' than the latter two are with each other. In theory this might mean that an objective to maximize profit does not necessarily translate into the outcome of maximizing profit. Statistically, this is shown in the sample where 69.3% of respondents declared that maximizing profit was important to very important for them while only 24.3% declared that their relative profitability was higher or much higher than rivals. The squared multiple correlations produce similar estimates as Model 1. The relationship between "performance" and "success" also remains unchanged.

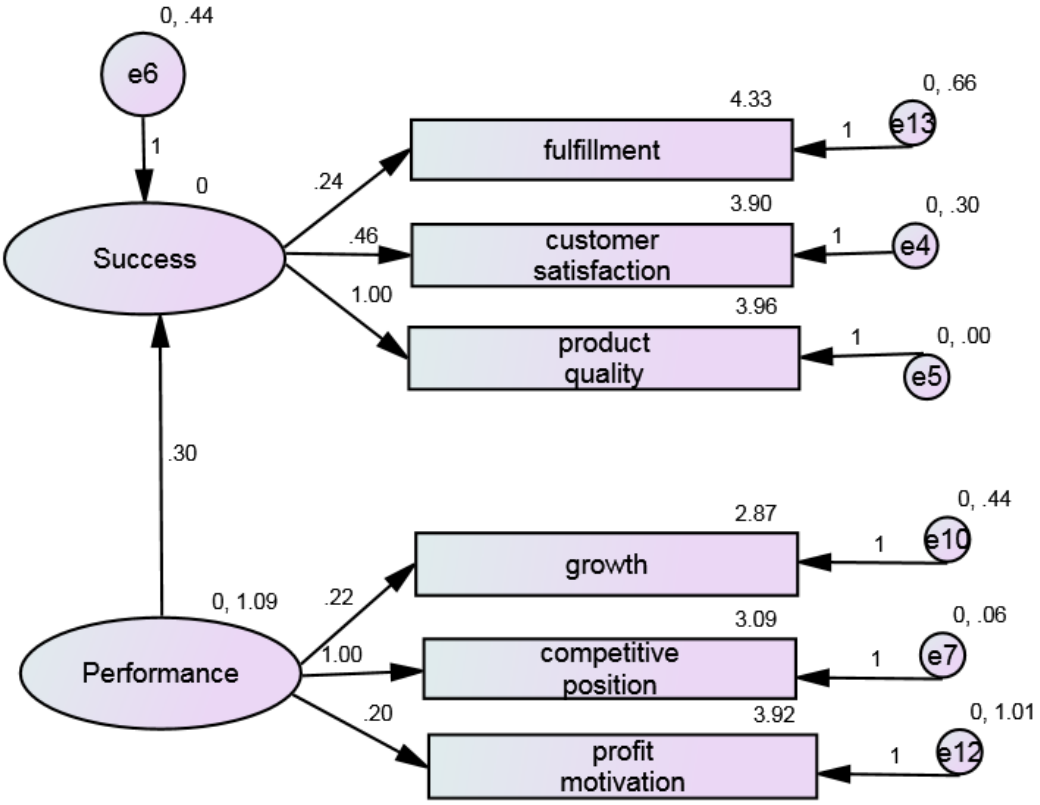
Figure 3: Model 2



*4.3.2 Model 3*

Model 3 is a combination of Models 1 and 2. The indicators of 'success' remain consistent while 'growth' is added back in to be an indicator of performance along with 'profit motivation' and 'competitive position.' The model fits the data well by both the absolute and incremental measures with the NFI being slighter smaller in value than desired at a .938, not exceeding the recommended .95 value; however, as before, this is most likely due to the small sample size. The factor loadings and estimates are not as desirable in Model 3 as in Models 1 and 2. 'Customer satisfaction' is the only statistically significant factor loading. The relationship between 'success' and 'performance' remains similar in magnitude but is no longer statistically significant. The model also has a theoretical issue, the variables 'growth' and 'profit motivation' are not statistically significantly correlated. To conclude, the model is consistent with the data but has poor measurement power.

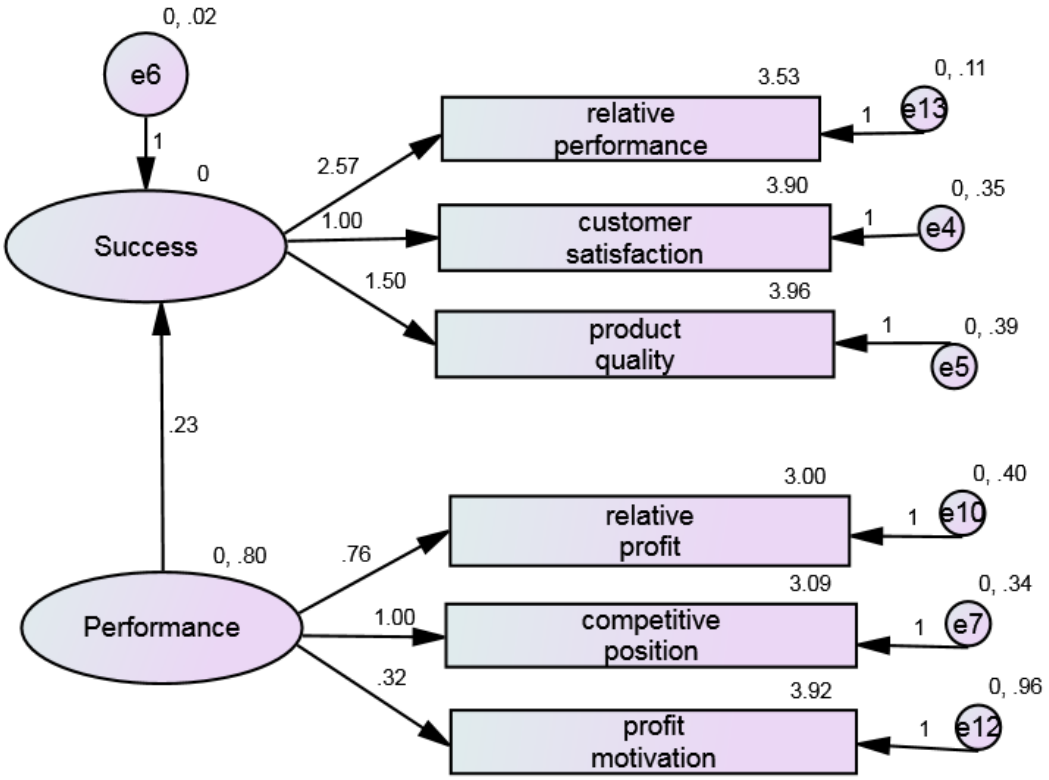
Figure 4: Model 3



*4.3.3 Model 4*

Model 4 is the most unique of the four models as a new variable 'relative performance' takes the place of 'fulfillment' as an indicator for 'success.' 'Performance' remains explained by 'relative profitability,' 'competitive position' and 'profit motivation.' 'relative performance' was added to the measurement of 'success' because it was asked as an overall assessment of performance from the perspective of the entrepreneur. The idea being that each entrepreneur would answer the question based on how they chose to define performance, which is the goal behind the variable 'success': to define performance based on the entrepreneur's perspective. This idea is supported by the large and statistically significant factor loading value of .759 of 'relative performance' The model; however, must be rejected overall because its poor fit with a $\chi^2$ of 42.269 and a p-value of 0.000 shows the model to be inconsistent with the data.

Figure 5: Model 4



## Chapter V. Discussion

The following section addresses the hypotheses outlined in the literature review and uses the descriptive statistics as well as the results generated from the structural equation models to determine how the wineries surveyed conform or differ from the assumptions set forth by the literature.

*Hypothesis 1: Startup motivations should correlate with respective performance outcomes.*

According to discrepancy theory, satisfaction can be measured by comparing the goals of the wineries with the reality of a winery's performance of that specific goal. If the entrepreneurs in this study are striving for satisfaction then wineries motivated primarily by economic reasons should experience a higher rate of relative economic performance than their peers. The sample shows that only 39% of the economically-motivated are achieving relatively higher profits; What about non-economic and higher profits however, 64% of these entrepreneurs report that they have or are track to meet their business goals. This finding could suggest that the wineries motivated by economic reasons also derive satisfaction from additional measures. These could be economic measures such as growth or they could represent non-economic measures. Only having a winery's primary motivation adds a constraint on trying to unveil all the objectives of an entrepreneur.

Another trend that sheds light on entrepreneurial satisfaction is their willingness to 'do-over'. The majority of winery owners agreed or strongly agreed that they would choose to enter the wine business again, if given the chance to make the decision a second time. Those with the highest rate of 'do-over' were the ones motivated to start their businesses out of passion or to be

part of the wine community. Motivations linked to lifestyle showed the lowest percentage willing to enter the wine business a second time.

*Hypothesis 2: Decision to enter the wine business in an emerging region will be motivated primarily by non-economic factors.*

Motivations for starting a business are considered goals, how well an entrepreneur reaches those goals results in a corresponding level of satisfaction which translates into an entrepreneur's assessment of "success". The wineries, rural tourism, artisan and craft retailers and other small businesses examined in the literature review all define success to be measured primarily subjectively using non-economic measures such as: personal fulfillment, job satisfaction, product quality, customer service and lifestyle. Given the interpretation of success in similar businesses, if an entrepreneur wants to be successful, one would expect the motivations of an entrepreneur starting a winery in an emerging region to be primarily non-economic in nature. Sample findings do prove this to be true for the wineries in Missouri, Michigan, New York and Vermont where 64.5% of respondents claimed to have started their business primarily due to non-economic reasons whereas only 33.5% of respondents claimed economic motives to be responsible for their choice in entering the wine business.

It is important to note that I categorized the motivations into economic versus non-economic categories after the survey was administered. Respondents only had a handful of options from which to choose and the wording was vague which could have led to some misinterpretation of motivations. For example, entering the family business is assumed to be a non-economic motivation due to the literature stating that family businesses are motivated by goals such as lifestyle and family-centered goals more so than economic goals of growth and

profitability (see Getz and Carlsen, 1999). This however, is not always the case and economic motivations could be a component of 'opportunity to enter family business.'

*Hypothesis 3: Maximizing profit will not be as important of an objective as producing a high quality of wine, achieving desired lifestyle or job satisfaction.*

Quality is a non-economic goal that the literature states is in general more important to an entrepreneur especially in businesses centered on artisan products or luxury goods such as wine. The literature on Australian wineries and craft retailers show the importance of product quality which would lead one to hypothesize that producing high quality wine would be more important on average to the survey respondents than the economic objective of maximizing profit. Interestingly, the majority of respondents agreed or strongly agreed that maximizing profit was an important business objective. The response to maximizing profit was much higher amongst those who started due to economic motivations versus the entrepreneurs driven by non-economic motivations; but with the latter still reporting 64% agree or strongly agree that maximizing profit is an important objective. This high rate leads one to believe that non-economic motivations, although played the primary role in the startup of the business, may not be the only important goals of the entrepreneurs. Although the majority of respondents placed emphasis on maximizing profit, 75% of respondents agreed that they would choose to sacrifice profit for wine quality. The results were consistent with the literature especially when examining the trend between motivations and product-quality tradeoff where the non-economic group showed a higher willingness to trade profits versus the economic group.

The relationship between a firm's profitability or financial performance and its emphasis on quality and customer satisfaction is claimed to change depending on a firm's financial health. This hierarchy unveiled in the literature was unable to be properly tested for given the nature of

the survey; however, the relationship between relative profitability and entrepreneurs' willingness to trade profits for product quality was examined through a correlation. The correlation was significant but showed the relationship to be the opposite as hypothesized; higher profits were correlated with less willingness to sacrifice profits for quality. This result makes sense as firms who are less likely to sacrifice profits will as a result have higher relative profitability' however, firms that do not choose to sacrifice profit for quality may suffer loss of profits due to lack of product quality. The hierarchical relationship addressed in the literature is a complex relationship with several endogenous factors that would need more precise measures and a more advanced statistical estimation approach to be examined fairly.

Unfortunately, the survey did not contain any questions that compared an entrepreneurs' desire to achieve lifestyle or job satisfaction with their desire to maximize profit. Startup motivations did however show that entering the business for economic reasons such as business opportunity and retirement nest egg accounted for 32% of the sample while only 23% of the entrepreneurs entered the business because of lifestyle motivations. This would suggest that economic motivations, and possibly profit are more common objectives to an entrepreneur than lifestyle. No data on job satisfaction was collected. This relationship between lifestyle or job satisfaction and profit cannot be properly analyzed without data that ranks these objectives against one another.

It is important to note that the trends above are only cross-tabulated correlations. No causal relationships are implied. Many factors both endogenous and exogenous play a role in influencing the motivations, objectives and outcomes explained above. In order for these relationships to be properly explained, more advanced methods are needed that account and control for several other factors. The main research question of this paper is addressed by a more

advanced technique using a structural equation model; however, it too is only a test of measurement and covariation.

*Research question: How does traditional performance systematically translate into success as defined by the entrepreneur? How important are the traditional measures of firm performance to the entrepreneur while evaluating their firm's performance subjectively?*

The idea that traditional economic indicators of performance do not play the primary role in how an entrepreneur defines themselves as successful is supported by all four models. The regression weights on the structural paths between the latent variables 'performance' and 'success' range from .23 to .30, accounting for at most, one-third of the variance in 'success.' This relationship in Model's 1 and 2 is significant. An interesting finding is that regardless of the indicators on performance, there is little variation in the size of the relationship between 'performance' and 'success.' Even though traditional economic indicators do not explain the majority of an entrepreneur's assessment of success; the magnitude of the path is hardly miniscule. Some of the literature seems to downplay the role of traditional economic performance claiming that it has very little to do with how small business entrepreneurs measure their success; however, these models indicate that traditional measures do in fact play a sizeable role in the measurement of an entrepreneur's assessment of success.

The acceptable fits and significance of the structural paths in Model 1 and Model 2 do imply that the models are consistent with the data; however, the size of the factor loadings in the measurement model imply that the variables outlined in the literature and used in the models do not do an adequate job of fully measuring the ideas of 'performance' and 'success.' There is a lot of unshared variance in four out of the six indicator variables which most likely means other factors exist that could capture some of this variance. Identifying and adding those factors could

partial out some of the correlation in the error terms that could be causing omitted variable bias. But because the factor loadings are not grand in scale, does not indicate that they are meaningless. All of the factor loadings besides 'fulfillment' in Model 1 are statistically significant, which mean they do a good job measuring their latent variables; even though they do not account for a majority of the measurement. The insignificant loading of 'success' on 'fulfillment' is an interesting finding given the importance the literature places on fulfillment as a way entrepreneurs define their successfulness. As mentioned previously, the insignificance and small loading weight could be due to the lack of variance in the 'fulfillment' variable; however, it does contrast the literature's claims that fulfillment is a component in addition to customer satisfaction and product quality that entrepreneurs use to measure their self-perceived levels of success. High-valued factor loadings must also be taken skeptically because they indicate multicollinearity, where each indicator is essentially describing the same variance.

The literature reviewed does not make any direct claims about measuring traditional economic performance through the entrepreneur's motivation to maximize profit; however, given the theory of the goal approach and discrepancy theory, I chose to test whether or not an entrepreneur who places heavy emphasis on maximizing profit could be an indicator of their firm's economic performance. The idea behind this is that goals drive actions which in turn create results. The linear relationship between goals and outcomes is often influenced by exogenous factors, meaning goals do not always translate into their desired outcomes. Model 2's insignificant factor loading on 'profit motivation' shows that an entrepreneur's goal of maximizing profit does not necessarily mean higher relative profits or a better competitive position; if this were the case, 'profit motivation' would be statistically significant and most likely have a larger factor loading.

The small factor loading on ‘growth’ is surprising as it is a traditional indicator of economic performance. One would expect given the tradeoff between profits and growth, that there would be more shared variance between the ‘performance’ measurements and that the factor loading on ‘growth’ would be larger in magnitude. A possible explanation for this is explained in the literature which claims that growth is not usually a primary goal of smaller entrepreneurial firms. If the firms are not actively pursuing growth then the tradeoff between relative profits and growth would not be as apparent as in a sample where firms are either pursuing one or the other objectives.

## Chapter VI. Summary and Conclusions

### *6.1 Conclusion*

In conclusion, when defining success through subjective performance, wineries in emerging wine regions within the United States are in some ways consistent with other businesses of a similar nature but different in other aspects. Like other entrepreneurs of smaller artisan-oriented businesses, the winery owners in the sample were primarily motivated to start their businesses for non-economic reasons. Most winery owners also prioritized wine quality over profits, stating that they were willing to sacrifice profits for quality. The winery owners did; however, place more of an emphasis on maximizing profit than the businesses that were analyzed in the literature. The literature claims that non-economic performance measures were the entrepreneurs' primary objectives and means of measuring success. Our wineries showed non-economic objectives to be important to the entrepreneurs but in addition to economic motivations. This study shows that economic measures of performance account for 23-30% of the variation in 'success' as defined by the entrepreneur. In summary, the wineries in emerging wine regions tend to be oriented towards achieving non-economic goals, but economic objectives are still very important goals of the entrepreneurs who take these factors into account while measuring their success.

### *6.2 Limitations*

It should be noted that despite its contributions, this study does have several limitations and weaknesses. The descriptive trends are only trends that were observed from the data. No causation can be inferred from these trends. Using trends to address the third hypothesis is also not appropriate given the dynamic and changing nature of the hierarchical relationship of an

entrepreneurs objectives that is set forth by the literature. In order to properly address this hypothesis, surveys would need to be conducted over time and ask entrepreneurs more detailed questions relating to their business objectives and how those objectives rank in accordance with one another.

Some ideal questions were not covered in the survey. Having objective financial data would make the research more powerful; however, this was unobtainable due to respondent sensitivity. Several non-economic objectives were also assessed as important in the literature that were not measured in the survey, including factors relating to entrepreneurial lifestyle and job satisfaction. It would be ideal to have measurements of how important these objectives were to the entrepreneurs as well as indicators of how well they saw themselves fulfilling these objectives. General information regarding the rankings of motivations would also have been helpful in determining whether or not this sample was consistent with the literature. Literature comparison is also an area of concern for this study as most of the businesses examined in the literature review were from other countries outside the United States. Although the businesses were similar in industry, many environmental factors such as culture, legal environment and regulations relating to their country of operation could result in comparative differences.

Several issues were discovered with the data that could lead to biased estimates. The small sample size is a study weakness. Loehlin (2004) recommends either 200 observations or 50 more than eight times the number of variables in one's structural equation model. These models have fifteen variables meaning a sample size of 170 observations would be more appropriate.

As mentioned previously, the data is not found to be multivariate normally distributed which could lead to biased maximum likelihood estimates. The lack of variation in some variables could also be causing some estimates to be insignificant in power and/or size. Most variables were measured in Likert values and were subjective in nature; meaning some variance or lack thereof could be a result of common-method bias. Common method bias could be due to several survey or respondent factors such as: consistency motif, social desirability, state of mood, common scale, positive and negative item wording, and the grouping of many subjective questions under categories (see Podsakoff *et al*, 2003). We avoided some potential for common method bias by keeping the respondent's identities and information confidential. Questions were also kept to single topics and followed a logical order. Although, we took precautions during survey writing and collection, common-method variance is still a likely weakness of the sample and is difficult to completely identify and control.

It should also be noted that even though four models were tested and three were found to fit nicely, it is very likely many other indicators and manifest variables exist that could better explain the model, especially in terms of predictive power.

### *6.3 Ideas for Future Research*

The results and limitations of this research give way to several opportunities for future research. The hierarchical relationship mentioned between financial performance and product quality and lifestyle would be interesting to explore with these entrepreneurs. A hypothesis would be that these entrepreneurs seem to weight their objectives based on their hierarchical position. In order for this relationship to be examined, data would need to be collected on entrepreneurs' rankings of objectives as well as more objective indicators of financial performance.

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## Appendix A

Exhibit 1: Survey recruitment letter

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**College of Agriculture,
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PHONE (573) 882-0155
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March 10, 2015

Dear Winery Industry Participant:

My name is Fabio Chaddad, associate professor of agricultural economics at the University of Missouri. I am writing to ask for your participation in a study related to wineries in emerging wine regions of three states – Michigan, Missouri and New York. Our purpose is to better understand current strategies and to identify common challenges faced by wineries in these emerging wine regions. Ultimately we intend to generate knowledge to help wineries become more successful.

This project, funded by the U.S. Department of Agriculture, is the responsibility of researchers in three leading land grant universities – University of Missouri, Michigan State University and Cornell University. I am the Project Director and will be assisted by Bruno Miranda and Rachel Hangley, both graduate research assistants at the Division of Applied Social Sciences of the College of Agriculture, Food and Natural Resources (CAFNR).

We are inviting wineries in the three states to provide valuable insight by participating in the survey attached. Given the breadth of the questions included, we suggest the survey respondent be a person with deep knowledge about the business such as the winery owner or general manager.

Your answers to the survey will be completely confidential. The results of our analyses will be shared only in a consolidated form, which will not identify individuals or specific wineries. For an example, please find the attached consolidated findings of a previously conducted study. The

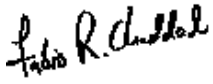
consolidated findings of this new study will be made available to all interested survey participants.

Participation is voluntary. If you have questions regarding your rights as a participant in this research, concerns about the study, or feel under any pressure to participate in this study, you may contact the University of Missouri Institutional Review Board (a body designed to protect participants' rights) at 573-882-9585.

The survey should take approximately 30 minutes to complete. If you prefer to complete the survey electronically, please email me and I will provide you with a link. We also intend to follow up with a phone call or, if your time permits, a visit to your winery. If you have questions or concerns, feel free to contact me at the University of Missouri. Your response is valuable to our research and greatly appreciated, we hope you may take the time to complete the survey.

This research project is endorsed by the Missouri Wine and Grape Board. Please refer to the attached letter of support.

Yours sincerely,



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AN EQUAL OPPORTUNITY/ADA INSTITUTION

Exhibit 2: Survey

**Survey of Wineries 2015**

1. ZIP Code of your winery: _____.

2. In what year was your winery licensed? ___.

3. Why did you decide to enter the wine business? Please check all that apply:
   ( ) Opportunity to enter the family business
   ( ) Good business opportunity
   ( ) Lifestyle or hobby objectives
   ( ) Retirement nest egg
   ( ) Passion for wine and food
   ( ) Join the wine community
   ( ) Other (please specify):_____.

4. Which one was the most important? Please check only one:
   ( ) Opportunity to enter the family business
   ( ) Good business opportunity
   ( ) Lifestyle or hobby objectives
   ( ) Retirement nest egg
   ( ) Passion for wine and food
   ( ) Join the wine community
   ( ) Other (please specify):_____.

5. To what extent is maximizing profit an objective of your winery?
   Not Important 1 2 3 4 5 Very Important

6. Are you willing to sacrifice profits to produce a high quality wine?

Very likely 1 2 3 4 5 Very Unlikely

7. What percent of your wines are named after family? ____%

8. If I had more financial resources I would invest more in the winery.
   Very likely 1 2 3 4 5 Very Unlikely

9. How much time do you devote to socializing with wine industry people (e.g. winery owners, restaurateurs, etc.)?
   A Little 1 2 3 4 5 A Lot

10. Do you have a specific rate of return from your winery in mind? YES ____ NO_____

11. How important is it for you continuing family ownership of the winery?
    Not Important 1 2 3 4 5 Very Important

12. What percent of the family income comes from the winery?
    ( ) 0 – 20% ( ) 21 – 40% ( ) 41% – 60% ( ) 41% – 60% ( ) 61%-80% ( ) 81%-100%

13. Gallo is a superior wine company in comparison to Mondavi.
    Strongly Disagree 1 2 3 4 5 Strongly Agree

14. How many persons (excluding unpaid family workers and labor supplied by third party contractors) worked at the winery (including the vineyard if applicable) in 2014?
Full time, year round _____; Part time, year round _____; Part time, seasonal _____.

15. What is the wine storage capacity of your winery? _____gallons.

16. What was your total wine production in 2014? _____cases.

17. Over the previous three years (2012-2014), your annual wine production has:
( ) been stable at the same level.
( ) increased. By how much? _____%
( ) decreased. By how much? _____%
( ) Not applicable (if winery has less than 3 years in business).

18. Over the previous three years (2012-2014), your winery sales revenue has:
( ) been stable at the same level.
( ) increased. By how much? _____%
( ) decreased. By how much? _____%
( ) Not applicable (if winery has less than 3 years in business).

19. What percentage of your winery's gross revenue is from wine sales only? _____%.

20. Currently, what percentage of wine volume is sold…?

| | |
|---|---|
| At the winery | % |
| Direct to liquor stores | % |
| Direct to restaurants | % |
| At a farmers market | % |
| Direct mail order shipments | % |
| Through distributors | % |
| Festivals or community events | % |
| Other:_____ | % |

21. In the past three years, what percentage of your total wine production was made from (sum to 100%):
Vinifera Grapes ___%Hybrid Grapes ___% Native American Grapes ___%
Other ___%

22. What percentage of your total wine production is from grapes/bulk wine/juice concentrate that you:
Produce in your own vineyards (estate grown grapes)? _____%

Acquire in spot/cash markets as needed? _____%

Procure via verbal (handshake) contract? _____%

Procure via written contract? _____%

Sum: 100%

23. Do you outsource any of your wine making to another winery?
( ) No, I produce all wine on site.

( ) Yes, I outsource.

24. Consider the wineries that compete with your winery (i.e. your main competitors). Please rate your winery relative to your top 3 competitors based on the following attributes:

| | Much Lower than Rivals | | About the Same | | Much Higher than Rivals | |
|---|---|---|---|---|---|---|
| Number of different wines available for sale | 1 | 2 | 3 | 4 | 5 | N/A |
| Ability to stage major events (e.g. wedding, concert, etc.) | 1 | 2 | 3 | 4 | 5 | N/A |
| Geographic proximity to other wine trail members | 1 | 2 | 3 | 4 | 5 | N/A |
| Fermentation and bottling on premise | 1 | 2 | 3 | 4 | 5 | N/A |
| Wine quality | 1 | 2 | 3 | 4 | 5 | N/A |

| | | | | | | |
|---|---|---|---|---|---|---|
| Quality of customer service | | 1 | 2 | 3 | 4 | 5 N/A |
| Quality of wine and food experience | | 1 | 2 | 3 | 4 | 5 N/A |
| Winery tours | 1 | 2 | 3 | 4 | 5 | N/A |
| Tasting room capacity | 1 | 2 | 3 | 4 | 5 | N/A |
| Ability to produce estate-grown grapes | 1 | 2 | 3 | 4 | 5 | N/A |
| Ability to source quality grapes from growers | 1 | 2 | 3 | 4 | 5 | N/A |

25. Again, consider the wineries that compete with your winery (i.e. your main competitors). Compare your winery's performance relative to your top 3 competitors based on the following attributes:

| | Much Lower than Rivals | | About the Same | | Much Higher than Rivals | |
|---|---|---|---|---|---|---|
| Competitive position in the wine industry | | 1 | 2 | 3 | 4 | 5 |
| Customer satisfaction | 1 | 2 | 3 | 4 | 5 | |
| Tasting room experience | 1 | 2 | 3 | 4 | 5 | |
| Wine quality | 1 | 2 | 3 | 4 | 5 | |
| Introduction of new, higher value products | | 1 | 2 | 3 | 4 | 5 |
| Profitability | | 1 | 2 | 3 | 4 | 5 |
| Overall performance | 1 | 2 | 3 | 4 | 5 | |

26. For each type of business or organization below, with how many different entities do you regularly interact, collaborate, or exchange information?

Individual grape growers _____(number of ties)

Other wineries _____(number of ties)

Other food and beverage providers _____(number of ties)

Restaurants _____(number of ties)

Hotels, motels and B&Bs _____(number of ties)

Tour operators _____(number of ties)

Local attraction and recreation providers _____(number of ties)

Grape and wine industry association _____(number of ties)

Colleges and Universities _____(number of ties)

Government agencies _____(number of ties)

Lenders _____(number of ties)

Cooperatives _____(number of ties)

Other (explain)_____

27. What is the extent of collaboration (or how strong is the relationship) that your winery has with the following entities?

| | None | | Some | | Great Deal | |
|---|---|---|---|---|---|---|
| Individual grape growers | 1 | 2 | 3 | 4 | 5 | |
| Other wineries | 1 | 2 | 3 | 4 | 5 | |
| Other food and beverage providers | 1 | 2 | 3 | 4 | 5 | |
| Restaurants | 1 | 2 | 3 | 4 | 5 | |
| Hotels, motels and B&Bs | 1 | 2 | 3 | 4 | 5 | |
| Tour operators | 1 | 2 | 3 | 4 | 5 | |
| Local attraction and recreation providers | | 1 | 2 | 3 | 4 | 5 |
| Grape and wine industry association | 1 | 2 | 3 | 4 | 5 | |
| Colleges and Universities | 1 | 2 | 3 | 4 | 5 | |
| Government agencies | 1 | 2 | 3 | 4 | 5 | |
| Lenders | | 1 | 2 | 3 | 4 | 5 |
| Cooperatives | 1 | 2 | 3 | 4 | 5 | |
| Other (explain)_____ | 1 | 2 | 3 | 4 | 5 | |

28. With how many other wineries do you collaborate with in the following activities?

Sharing equipment _____(number of ties)
Wine trails _____(number of ties)
Cross promotion _____(number of ties)
Funding/producing promotions _____(number of ties)
Events and festivals _____(number of ties)
Purchasing supplies _____(number of ties)
Signage _____(number of ties)
Wine quality improvement _____(number of ties)
Bottling _____(number of ties)

Participating in research and extension _____(number of ties)
Sharing personnel _____(number of ties)
Government lobbying _____(number of ties)
Industry fundraising _____(number of ties)
Other (explain)_____ _____(number of ties)

29. Does your winery belong to a wine trail?
( ) Yes ( ) No – please skip to question 32.

30. If your winery belongs to a wine trial, please respond to the following questions:
a. To which wine trail does your winery belong? _____

b. How long has your winery been a member of this wine trail? _____year(s)

c. What is the extent of collaboration that your winery has with the other wine trail participants?

None 1 2 3 4 5 Great Deal

d. To what extent does participation in the wine trail affect your winery's production decisions (such as types of grapes used or wine making practices implemented)?

None 1 2 3 4 5 Great Deal

e. To what extent does participation in the wine trail affect your winery's marketing decisions (such as promotion, pricing or distribution channels used)?

None 1 2 3 4 5 Great Deal

**Please answer this set of questions about yourself:**

31. Your current position with the winery is:
( ) Owner
( ) CEO or General Manager
( ) Other (specify): _____

32. What is your level of education?
( ) High school ( ) Some college ( ) Bachelor's degree ( ) Master's ( ) Ph.D.

33. Have you received a certificate or training in the following fields?
(a.) Enology ( ) Yes ( ) No
(b.) Viticulture ( ) Yes ( ) No
(c.) Business management ( ) Yes ( ) No

34. How many years of experience do you have:
(a) In the wine industry? _____ years.
(b) In grape production? _____ years.
(c) In agriculture? _____ years.
(d) In owning or managing a business?_____ years.

35. How many hours per week do you spend managing your winery or conducting activities related to your wine business (e.g. vineyard, tasting room, planning, etc.)? _____ hours per week.

36. What percentage of your current net worth is invested in the winery? _____%.

37. What is your age? _____years.

**Please indicate how much you agree or disagree with the following statements**:

38. I have met or I am on track to meet my initial business goals that I had outlined at the time of startup.
I strongly disagree 1 2 3 4 5 I strongly agree.

39. I am able to offer my employees a steady, secure and enjoyable job.
I strongly disagree 1 2 3 4 5 I strongly agree.

40. Owning this winery makes me feel a sense of personal fulfillment.
I strongly disagree 1 2 3 4 5 I strongly agree.

41. I feel that by owning this winery, I am positively contributing to the wine industry and its consumers.
I strongly disagree 1 2 3 4 5 I strongly agree.

42. If given the option to make the decision a second time, I would again choose to assume ownership of this winery.
    I strongly disagree 1 2 3 4 5 I strongly agree.

In the last part of the survey, we want to understand the factors that explain why some grape varietals are produced by the winery while others are obtained from transactions with independent grape growers. **Our goal is to help wineries make better decisions about grape procurement and to avoid excessive costs**.

Please select the grape varietals that your winery uses from the options below and write the names of the varietals in the spaces provided below the table. **You might choose up to five varietals that best define your winery.** For example, you can choose the two most representative varietals in terms of volume and three varietals that, in your opinion, offer the greatest potential to produce high quality wines.

| | | | |
|---|---|---|---|
| Cabernet Sauvignon | Catawba | Cayugu White | Chambourcin |
| Chancellor | Chardonel | Chardonnay | Concord |
| Delaware | Frontenac | Gewurztraminer | Merlot |
| Muscat | Niagara | Norton | Pinot Noir |
| Riesling | Sauvignon Blanc | Seyval Blanc | St. Vincent |
| Syrah | Traminette | Vidal Blanc | Vignoles |
| Vivant | Zinfandel | | |

List selected varietals below:

Grape #1. _____

Grape #2. _____

Grape #3. _____

Grape #4. _____

Grape #5. _____

*For the following questions, please use the above list to answer each question in relation to each grape by matching the grape number below to the type of grape you specified for the corresponding number above.* (e.g. if four grapes are chosen, each question will be answered four times total- one time for each grape.)

**1.** For the past harvest, which option best describes how you sourced this grape varietal? You may choose more than one option if this is the case.
Grape #1. _____

( ) Produced in your own vineyard (estate grown)? Quantity: _____ tons.

( ) Acquired in spot/cash markets as needed? Quantity: _____ tons.

( ) Procured via verbal (handshake) contracts? Quantity: _____ tons.

( ) Procured via long-term written contracts? Quantity: _____ tons.

Grape #2. _____

( ) Produced in your own vineyard (estate grown)? Quantity: _____ tons.

( ) Acquired in spot/cash markets as needed? Quantity: _____ tons.

( ) Procured via verbal (handshake) contracts? Quantity: _____ tons.

( ) Procured via long-term written contracts? Quantity: _____ tons.

Grape #3. _____

( ) Produced in your own vineyard (estate grown)? Quantity: _____ tons.

( ) Acquired in spot/cash markets as needed? Quantity: _____ tons.

( ) Procured via verbal (handshake) contracts? Quantity: _____ tons.

( ) Procured via long-term written contracts? Quantity: _____ tons.

Grape #4. _____

( ) Produced in your own vineyard (estate grown)? Quantity: _____ tons.

( ) Acquired in spot/cash markets as needed? Quantity: _____ tons.

( ) Procured via verbal (handshake) contracts? Quantity: _____ tons.

( ) Procured via long-term written contracts? Quantity: _____ tons.

Grape #5. _____

( ) Produced in your own vineyard (estate grown)? Quantity: _____ tons.

( ) Acquired in spot/cash markets as needed? Quantity: _____ tons.

( ) Procured via verbal (handshake) contracts? Quantity: _____ tons.

( ) Procured via long-term written contracts? Quantity: _____ tons.

Please indicate how much you agree or disagree with the following statements:

2. I am satisfied with the total cost or price of acquisition of this grape varietal.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

3. I am satisfied with the level of cost or price stability of this grape varietal.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

4. I am satisfied with the level of supply stability of this grape varietal.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

5. I am satisfied with the overall quality of this grape varietal.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

6. To assess or measure the quality attributes of this grape varietal, we need detailed information on how it was produced.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

7. We are able to easily and accurately measure all relevant quality attributes of this grape varietal if we have to acquire it from an independent grape grower.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

8. Relative to other varietals, growing this grape varietal demands very specific knowledge on vineyard management.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

9. For this varietal, I know independent growers whose production I do not need to evaluate much because it has always been high quality.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

10. This grape varietal allows me to produce highly differentiated (distinctive) wines.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

11. Considering the industry as a whole, consumers perceive wines produced with this grape varietal as high quality wines.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

12. Consumers perceive the wines I produce with this grape varietal as highly differentiated.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

13. Compared to other grape varietals, the average cost of growing this varietal is relatively high.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

14. The demand for wines produced with this varietal changes a lot from year to year.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

15. Other wineries in my region can use this grape varietal to produce wines with the same quality I produce.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

16. Many independent grape growers in my region are able to supply this grape varietal with high quality.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

17. There is much I can learn from the independent grape growers who produce this varietal in the region around my winery.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

18. In the last ten years, the industry has developed new wines using this grape varietal.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

19. Our winery would face constraints (e.g. land availability, human resources, financial) if we decided to start or increase the production of this varietal.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

I completely disagree 1 2 3 4 5 I completely agree.

20. Relative to our competitors, our *terroir* has favorable conditions for the production of this varietal.

Grape #1. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #2. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #3. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #4. _____

I completely disagree 1 2 3 4 5 I completely agree.

Grape #5. _____

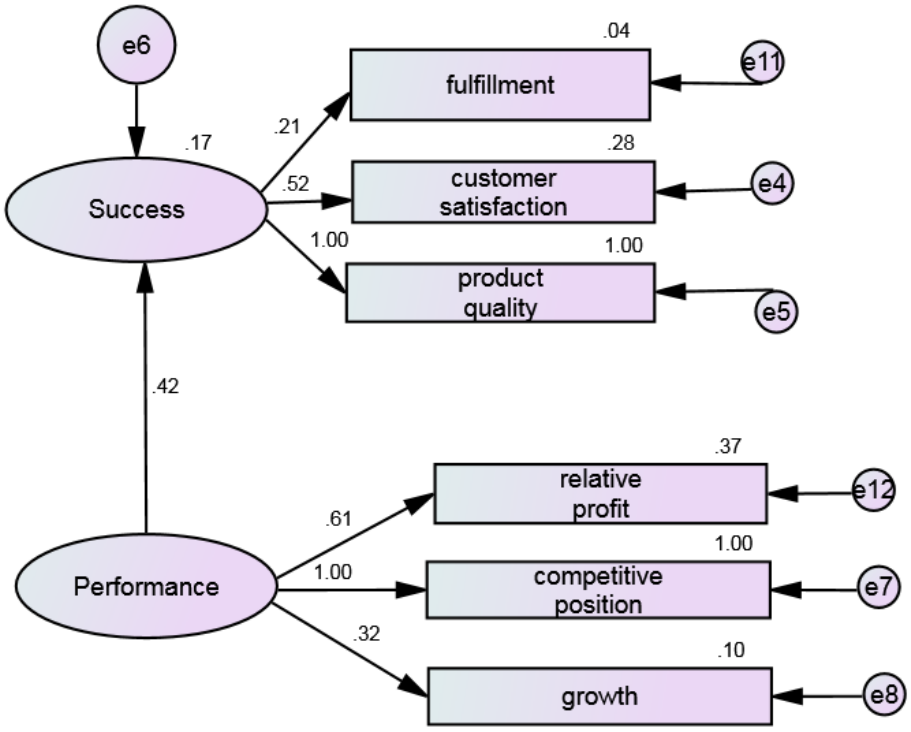
I completely disagree 1 2 3 4 5 I completely agree.

Would you like to receive a final report with the study's collective findings? Yes ( ) No ( )

If you have any comments or remarks concerning the survey, they are welcome below:

## Appendix B

Figure 6



Model 1. Standardized Estimates

Model 1 Results

**Notes for Model (Model Number 3)**

**Computation of degrees of freedom (Model Number 3)**

| | |
|---|---|
| Number of distinct sample moments: | 27 |
| Number of distinct parameters to be estimated: | 17 |
| Degrees of freedom (27 - 17): | 10 |

**Result (Model Number 3)**

Minimum was achieved
Chi-square = 8.525
Degrees of freedom = 10
Probability level = .578

**Estimates (Group number 1 - Model Number 3)**

**Scalar Estimates (Group number 1 - Model Number 3)**

**Maximum Likelihood Estimates**

**Regression Weights: (Group number 1 - Model Number 3)**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| F2 | <--- | F1 | .286 | .059 | 4.810 | *** | par_4 |
| product_quality | <--- | F2 | 1.000 | | | | |
| relative_prof | <--- | F1 | .528 | .066 | 7.937 | *** | par_5 |
| comp_position | <--- | F1 | 1.000 | | | | |
| prod_binned_five | <--- | F1 | .211 | .070 | 3.031 | .002 | par_6 |
| fulfillment | <--- | F2 | .239 | .106 | 2.263 | .024 | par_7 |
| customer_sat | <--- | F2 | .461 | .071 | 6.467 | *** | par_8 |

**Standardized Regression Weights: (Group number 1 - Model Number 3)**

| | | | Estimate |
|---|---|---|---|
| F2 | <--- | F1 | .417 |
| product_quality | <--- | F2 | 1.000 |
| relative_prof | <--- | F1 | .607 |
| comp_position | <--- | F1 | 1.000 |

| | | | Estimate |
|---|---|---|---|
| prod_binned_five | <--- | F1 | .321 |
| fulfillment | <--- | F2 | .211 |
| customer_sat | <--- | F2 | .525 |

**Intercepts: (Group number 1 - Model Number 3)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| customer_sat | 3.900 | .062 | 63.195 | *** | I4 |
| product_quality | 3.964 | .070 | 56.615 | *** | I5 |
| comp_position | 3.090 | .102 | 30.287 | *** | par_9 |
| prod_binned_five | 2.868 | .076 | 37.491 | *** | par_10 |
| fulfillment | 4.327 | .080 | 54.299 | *** | par_11 |
| relative_prof | 2.999 | .090 | 33.489 | *** | par_12 |

**Variances: (Group number 1 - Model Number 3)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| F1 | 1.145 | .154 | 7.416 | *** | par_13 |
| e6 | .446 | .060 | 7.416 | *** | par_14 |
| e4 | .302 | .041 | 7.383 | *** | V6 |
| e5 | .000 | | | | |
| e7 | .000 | | | | |
| e8 | .442 | .069 | 6.413 | *** | par_15 |
| e11 | .662 | .090 | 7.383 | *** | par_16 |
| e12 | .548 | .075 | 7.315 | *** | par_17 |

**Squared Multiple Correlations: (Group number 1 - Model Number 3)**

| | Estimate |
|---|---|
| F2 | .174 |
| relative_prof | .368 |
| fulfillment | .044 |
| prod_binned_five | .103 |
| comp_position | 1.000 |
| customer_sat | .275 |
| product_quality | 1.000 |

**Matrices (Group number 1 - Model Number 3)**

**Factor Score Weights (Group number 1 - Model Number 3)**

| | relative_prof | fulfillment | prod_binned_five | comp_position | customer_sat | product_quality |
|---|---|---|---|---|---|---|
| F1 | .000 | .000 | .000 | 1.000 | .000 | .000 |
| F2 | .000 | .000 | .000 | .000 | .000 | 1.000 |

**Model Fit Summary**

**CMIN**

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 19 | 6.572 | 8 | .583 | .822 |
| Model Number 3 | 17 | 8.525 | 10 | .578 | .852 |
| Saturated model | 27 | .000 | 0 | | |
| Independence model | 6 | 128.171 | 21 | .000 | 6.103 |

**Baseline Comparisons**

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .949 | .865 | 1.012 | 1.035 | 1.000 |
| Model Number 3 | .933 | .860 | 1.012 | 1.029 | 1.000 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

**Parsimony-Adjusted Measures**

| Model | PRATIO | PNFI | PCFI |
|---|---|---|---|
| Default model | .381 | .361 | .381 |
| Model Number 3 | .476 | .445 | .476 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

**NCP**

| Model | NCP | LO 90 | HI 90 |
|---|---|---|---|
| Default model | .000 | .000 | 8.452 |
| Model Number 3 | .000 | .000 | 9.252 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 107.171 | 75.167 | 146.683 |

**FMIN**

| Model | FMIN | F0 | LO 90 | HI 90 |
|---|---|---|---|---|
| Default model | .060 | .000 | .000 | .077 |
| Model Number 3 | .077 | .000 | .000 | .084 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 1.165 | .974 | .683 | 1.333 |

**RMSEA**

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | .000 | .000 | .098 | .748 |
| Model Number 3 | .000 | .000 | .092 | .762 |
| Independence model | .215 | .180 | .252 | .000 |

**AIC**

| Model | AIC | BCC | BIC | CAIC |
|---|---|---|---|---|
| Default model | 44.572 | 47.155 | | |
| Model Number 3 | 42.525 | 44.835 | | |
| Saturated model | 54.000 | 57.670 | | |
| Independence model | 140.171 | 140.987 | | |

**ECVI**

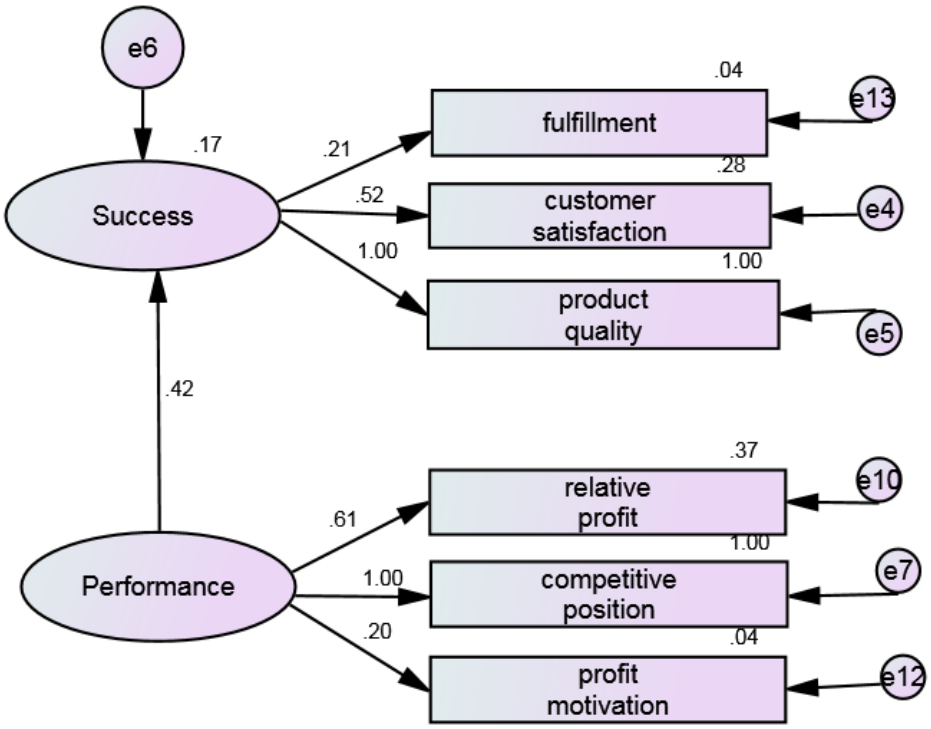
| Model | ECVI | LO 90 | HI 90 | MECVI |
|---|---|---|---|---|
| Default model | .405 | .418 | .495 | .429 |
| Model Number 3 | .387 | .400 | .484 | .408 |
| Saturated model | .491 | .491 | .491 | .524 |
| Independence model | 1.274 | .983 | 1.633 | 1.282 |

**HOELTER**

| Model | HOELTER .05 | HOELTER .01 |
|---|---|---|
| Default model | 260 | 337 |
| Model Number 3 | 237 | 300 |
| Independence model | 29 | 34 |

Figure 7

Model 2 Standardized Estimates



Model 2 Results

**Notes for Model (Model Number 2)**

**Computation of degrees of freedom (Model Number 2)**

| | |
|---|---|
| Number of distinct sample moments: | 27 |
| Number of distinct parameters to be estimated: | 17 |
| Degrees of freedom (27 - 17): | 10 |

**Result (Model Number 2)**

Minimum was achieved
Chi-square = 15.506
Degrees of freedom = 10
Probability level = .115

**Estimates (Group number 1 - Model Number 2)**

**Scalar Estimates (Group number 1 - Model Number 2)**

**Maximum Likelihood Estimates**

**Regression Weights: (Group number 1 - Model Number 2)**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| F2 | <--- | F1 | .286 | .059 | 4.810 | *** | par_5 |
| customer_sat | <--- | F2 | .461 | .071 | 6.467 | *** | par_4 |
| product_quality | <--- | F2 | 1.000 | | | | |
| fulfillment | <--- | F2 | .239 | .106 | 2.263 | .024 | par_6 |
| comp_position | <--- | F1 | 1.000 | | | | |
| relative_prof | <--- | F1 | .528 | .066 | 7.937 | *** | par_7 |
| Q269_1 | <--- | F1 | .187 | .089 | 2.096 | .036 | par_8 |

**Standardized Regression Weights: (Group number 1 - Model Number 2)**

| | | | Estimate |
|---|---|---|---|
| F2 | <--- | F1 | .417 |
| customer_sat | <--- | F2 | .525 |
| product_quality | <--- | F2 | 1.000 |
| fulfillment | <--- | F2 | .211 |
| comp_position | <--- | F1 | 1.000 |
| relative_prof | <--- | F1 | .607 |
| Q269_1 | <--- | F1 | .196 |

**Intercepts: (Group number 1 - Model Number 2)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| customer_sat | 3.900 | .062 | 63.195 | *** | I4 |
| product_quality | 3.964 | .070 | 56.615 | *** | I5 |
| comp_position | 3.090 | .102 | 30.287 | *** | par_9 |
| relative_prof | 2.999 | .090 | 33.489 | *** | par_10 |
| Q269_1 | 3.917 | .098 | 39.791 | *** | par_11 |
| fulfillment | 4.327 | .080 | 54.299 | *** | par_12 |

**Variances: (Group number 1 - Model Number 2)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| F1 | 1.145 | .154 | 7.416 | *** | par_13 |
| e6 | .446 | .060 | 7.416 | *** | par_14 |
| e4 | .302 | .041 | 7.383 | *** | V6 |
| e5 | .000 | | | | |
| e7 | .000 | | | | |
| e13 | .662 | .090 | 7.383 | *** | par_15 |
| e10 | .548 | .075 | 7.315 | *** | par_16 |
| e12 | 1.007 | .137 | 7.349 | *** | par_17 |

**Squared Multiple Correlations: (Group number 1 - Model Number 2)**

| | Estimate |
|---|---|
| F2 | .174 |
| Q269_1 | .038 |
| comp_position | 1.000 |
| relative_prof | .368 |
| fulfillment | .044 |
| product_quality | 1.000 |
| customer_sat | .275 |

**Model Fit Summary**

**CMIN**

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 19 | 14.825 | 8 | .063 | 1.853 |
| Model Number 2 | 17 | 15.506 | 10 | .115 | 1.551 |
| Saturated model | 27 | .000 | 0 | | |
| Independence model | 6 | 130.752 | 21 | .000 | 6.226 |

**Baseline Comparisons**

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .887 | .702 | .944 | .837 | .938 |
| Model Number 2 | .881 | .751 | .954 | .895 | .950 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

**Parsimony-Adjusted Measures**

| Model | PRATIO | PNFI | PCFI |
|---|---|---|---|
| Default model | .381 | .338 | .357 |
| Model Number 2 | .476 | .420 | .452 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

**NCP**

| Model | NCP | LO 90 | HI 90 |
|---|---|---|---|
| Default model | 6.825 | .000 | 21.740 |
| Model Number 2 | 5.506 | .000 | 20.307 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 109.752 | 77.357 | 149.651 |

**FMIN**

| Model | FMIN | F0 | LO 90 | HI 90 |
|---|---|---|---|---|
| Default model | .135 | .062 | .000 | .198 |
| Model Number 2 | .141 | .050 | .000 | .185 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 1.189 | .998 | .703 | 1.360 |

**RMSEA**

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | .088 | .000 | .157 | .166 |
| Model Number 2 | .071 | .000 | .136 | .273 |
| Independence model | .218 | .183 | .255 | .000 |

**AIC**

| Model | AIC | BCC | BIC | CAIC |
|---|---|---|---|---|

| Model | AIC | BCC | BIC | CAIC |
|---|---|---|---|---|
| Default model | 52.825 | 55.407 | | |
| Model Number 2 | 49.506 | 51.817 | | |
| Saturated model | 54.000 | 57.670 | | |
| Independence model | 142.752 | 143.567 | | |

**ECVI**

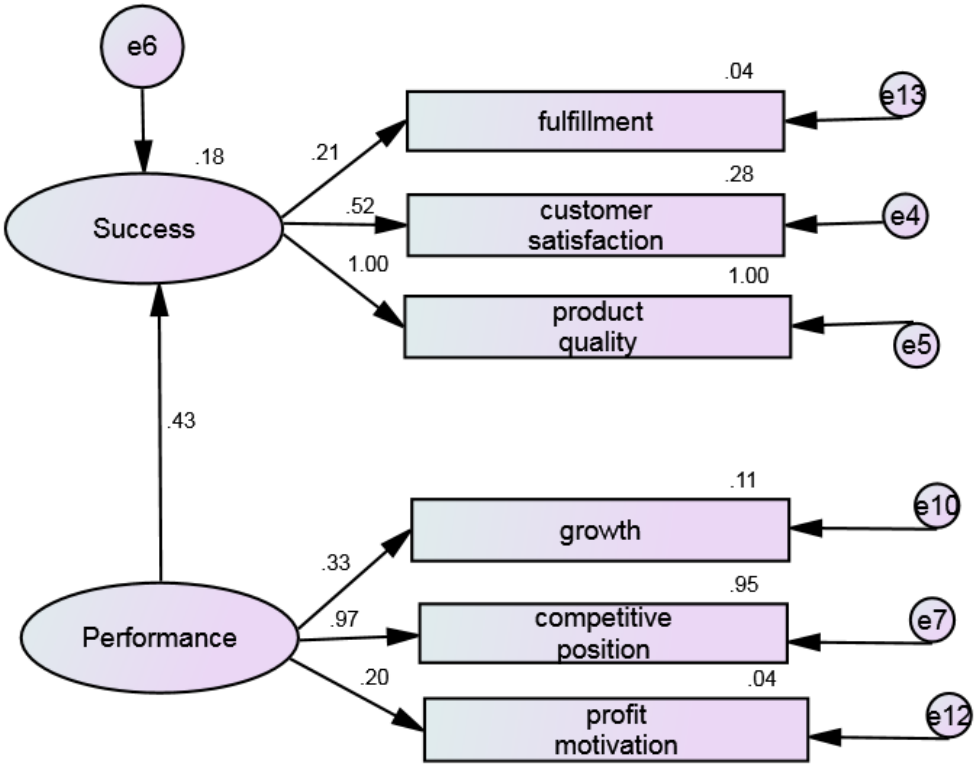
| Model | ECVI | LO 90 | HI 90 | MECVI |
|---|---|---|---|---|
| Default model | .480 | .418 | .616 | .504 |
| Model Number 2 | .450 | .400 | .585 | .471 |
| Saturated model | .491 | .491 | .491 | .524 |
| Independence model | 1.298 | 1.003 | 1.660 | 1.305 |

**HOELTER**

| Model | HOELTER .05 | HOELTER .01 |
|---|---|---|
| Default model | 116 | 150 |
| Model Number 2 | 130 | 165 |
| Independence model | 28 | 33 |

Figure 8

Model 3 Standardized Estimates



Model 3 Results

**Notes for Model (Default model)**

**Computation of degrees of freedom (Default model)**

| | |
|---|---|
| Number of distinct sample moments: | 27 |
| Number of distinct parameters to be estimated: | 19 |
| Degrees of freedom (27 - 19): | 8 |

**Result (Default model)**

Minimum was achieved
Chi-square = 4.926
Degrees of freedom = 8
Probability level = .765

**Estimates (Group number 1 - Default model)**

**Scalar Estimates (Group number 1 - Default model)**

**Maximum Likelihood Estimates**

**Regression Weights: (Group number 1 - Default model)**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| F2 | <--- | F1 | .298 | .174 | 1.715 | .086 | par_6 |
| customer_sat | <--- | F2 | .409 | .153 | 2.673 | .008 | par_5 |
| product_quality | <--- | F2 | 1.000 | | | | |
| fulfillment | <--- | F2 | .205 | .130 | 1.576 | .115 | par_7 |
| comp_position | <--- | F1 | 1.000 | | | | |
| prod_binned_five | <--- | F1 | .218 | .134 | 1.627 | .104 | par_8 |
| Q269_1 | <--- | F1 | .193 | .130 | 1.488 | .137 | par_9 |

**Standardized Regression Weights: (Group number 1 - Default model)**

| | | | Estimate |
|---|---|---|---|
| F2 | <--- | F1 | .402 |
| customer_sat | <--- | F2 | .494 |
| product_quality | <--- | F2 | 1.062 |
| fulfillment | <--- | F2 | .192 |
| comp_position | <--- | F1 | .983 |
| prod_binned_five | <--- | F1 | .326 |
| Q269_1 | <--- | F1 | .198 |

**Intercepts: (Group number 1 - Default model)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| customer_sat | 3.900 | .062 | 63.196 | *** | I4 |
| product_quality | 3.964 | .070 | 56.615 | *** | I5 |
| comp_position | 3.090 | .102 | 30.287 | *** | par_10 |
| prod_binned_five | 2.869 | .077 | 37.314 | *** | par_11 |
| Q269_1 | 3.917 | .098 | 39.791 | *** | par_12 |
| fulfillment | 4.327 | .080 | 54.297 | *** | par_13 |

**Variances: (Group number 1 - Default model)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| F1 | 1.107 | .626 | 1.767 | .077 | par_14 |
| e6 | .510 | .220 | 2.318 | .020 | par_15 |
| e4 | .315 | .054 | 5.794 | *** | V6 |
| e5 | -.069 | .202 | -.342 | .733 | V5 |
| e7 | .038 | .607 | .062 | .950 | par_16 |
| e13 | .667 | .091 | 7.327 | *** | par_17 |
| e10 | .440 | .076 | 5.811 | *** | par_18 |
| e12 | 1.006 | .138 | 7.289 | *** | par_19 |

**Squared Multiple Correlations: (Group number 1 - Default model)**

| | Estimate |
|---|---|
| F2 | .162 |
| Q269_1 | .039 |
| prod_binned_five | .106 |
| fulfillment | .037 |
| comp_position | .967 |
| product_quality | 1.128 |
| customer_sat | .244 |

**Model Fit Summary**

**CMIN**

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 19 | 4.926 | 8 | .765 | .616 |
| Model Number 2 | 18 | 5.074 | 9 | .828 | .564 |
| Saturated model | 27 | .000 | 0 | | |
| Independence model | 6 | 79.502 | 21 | .000 | 3.786 |

**Baseline Comparisons**

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .938 | .837 | 1.043 | 1.138 | 1.000 |
| Model Number 2 | .936 | .851 | 1.056 | 1.157 | 1.000 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

**Parsimony-Adjusted Measures**

| Model | PRATIO | PNFI | PCFI |
|---|---|---|---|
| Default model | .381 | .357 | .381 |
| Model Number 2 | .429 | .401 | .429 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

**NCP**

| Model | NCP | LO 90 | HI 90 |
|---|---|---|---|
| Default model | .000 | .000 | 5.261 |
| Model Number 2 | .000 | .000 | 4.119 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 58.502 | 34.871 | 89.707 |

**FMIN**

| Model | FMIN | F0 | LO 90 | HI 90 |
|---|---|---|---|---|
| Default model | .045 | .000 | .000 | .048 |
| Model Number 2 | .046 | .000 | .000 | .037 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | .723 | .532 | .317 | .816 |

**RMSEA**

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | .000 | .000 | .077 | .875 |
| Model Number 2 | .000 | .000 | .065 | .917 |
| Independence model | .159 | .123 | .197 | .000 |

**AIC**

| Model | AIC | BCC | BIC | CAIC |
|---|---|---|---|---|

| Model | AIC | BCC | BIC | CAIC |
|---|---|---|---|---|
| Default model | 42.926 | 45.509 | | |
| Model Number 2 | 41.074 | 43.521 | | |
| Saturated model | 54.000 | 57.670 | | |
| Independence model | 91.502 | 92.317 | | |

**ECVI**

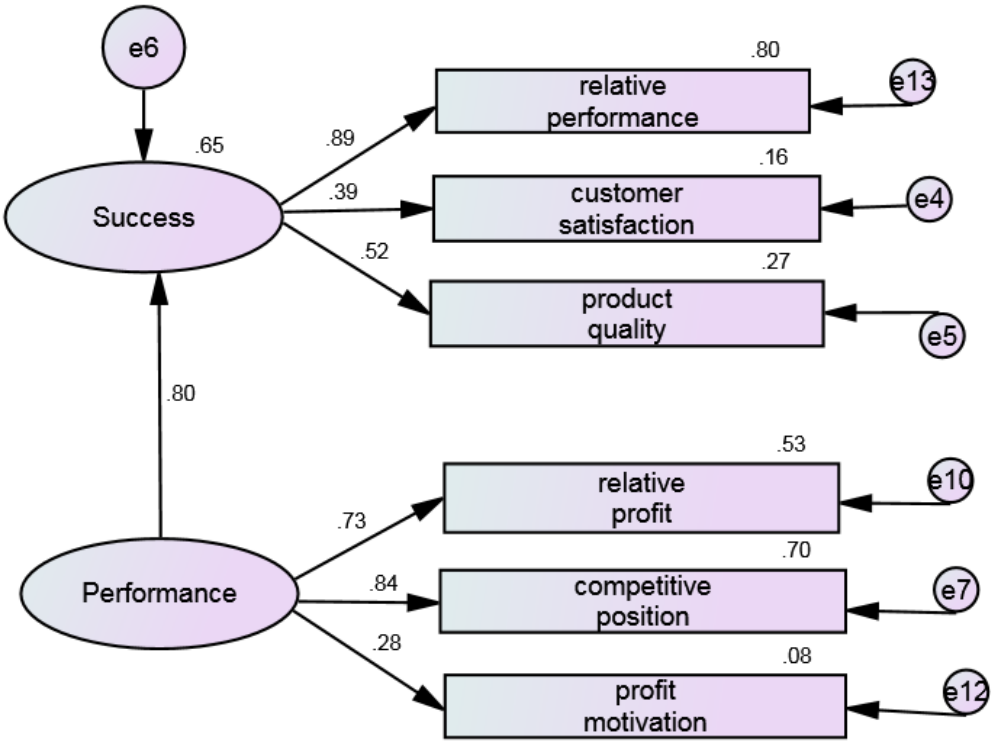
| Model | ECVI | LO 90 | HI 90 | MECVI |
|---|---|---|---|---|
| Default model | .390 | .418 | .466 | .414 |
| Model Number 2 | .373 | .409 | .447 | .396 |
| Saturated model | .491 | .491 | .491 | .524 |
| Independence model | .832 | .617 | 1.116 | .839 |

**HOELTER**

| Model | HOELTER .05 | HOELTER .01 |
|---|---|---|
| Default model | 347 | 449 |
| Model Number 2 | 367 | 470 |
| Independence model | 46 | 54 |

Figure 9

Model 4 Standardized Estimates



Model 4 results

**Notes for Model (Default model)**

**Computation of degrees of freedom (Default model)**

| | |
|---|---|
| Number of distinct sample moments: | 27 |
| Number of distinct parameters to be estimated: | 19 |
| Degrees of freedom (27 - 19): | 8 |

**Result (Default model)**

Minimum was achieved
Chi-square = 42.269
Degrees of freedom = 8
Probability level = .000

**Estimates (Group number 1 - Default model)**

**Scalar Estimates (Group number 1 - Default model)**

**Maximum Likelihood Estimates**

**Regression Weights: (Group number 1 - Default model)**

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| F2 | <--- | F1 | .229 | .065 | 3.522 | *** | par_6 |
| customer_sat | <--- | F2 | 1.000 | | | | |
| product_quality | <--- | F2 | 1.498 | .433 | 3.462 | *** | par_5 |
| relative_perf | <--- | F2 | 2.569 | .735 | 3.496 | *** | par_7 |
| relative_prof | <--- | F1 | .759 | .120 | 6.340 | *** | par_8 |
| comp_position | <--- | F1 | 1.000 | | | | |
| Q269_1 | <--- | F1 | .323 | .125 | 2.586 | .010 | par_9 |

**Standardized Regression Weights: (Group number 1 - Default model)**

| | | | Estimate |
|---|---|---|---|
| F2 | <--- | F1 | .803 |
| customer_sat | <--- | F2 | .395 |
| product_quality | <--- | F2 | .520 |
| relative_perf | <--- | F2 | .892 |

| | | | Estimate |
|---|---|---|---|
| relative_prof | <--- | F1 | .730 |
| comp_position | <--- | F1 | .836 |
| Q269_1 | <--- | F1 | .283 |

**Intercepts: (Group number 1 - Default model)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| customer_sat | 3.899 | .062 | 63.055 | *** | I4 |
| product_quality | 3.964 | .070 | 56.615 | *** | I5 |
| comp_position | 3.090 | .102 | 30.287 | *** | par_10 |
| relative_prof | 3.000 | .089 | 33.547 | *** | par_11 |
| Q269_1 | 3.918 | .098 | 39.813 | *** | par_12 |
| relative_perf | 3.529 | .070 | 50.162 | *** | par_13 |

**Variances: (Group number 1 - Default model)**

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| F1 | .800 | .177 | 4.515 | *** | par_14 |
| e6 | .023 | .014 | 1.696 | .090 | par_15 |
| e4 | .352 | .050 | 7.006 | *** | V6 |
| e5 | .393 | .063 | 6.284 | *** | V7 |
| e7 | .345 | .109 | 3.160 | .002 | par_16 |
| e13 | .110 | .066 | 1.679 | .093 | par_17 |
| e10 | .404 | .082 | 4.922 | *** | par_18 |
| e12 | .963 | .134 | 7.182 | *** | par_19 |

**Squared Multiple Correlations: (Group number 1 - Default model)**

| | Estimate |
|---|---|
| F2 | .645 |
| Q269_1 | .080 |
| relative_prof | .533 |
| relative_perf | .795 |
| comp_position | .699 |
| product_quality | .270 |
| customer_sat | .156 |

**Model Fit Summary**

**CMIN**

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 19 | 42.269 | 8 | .000 | 5.284 |
| Saturated model | 27 | .000 | 0 | | |
| Independence model | 6 | 198.768 | 21 | .000 | 9.465 |

**Baseline Comparisons**

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .787 | .442 | .820 | .494 | .807 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

**Parsimony-Adjusted Measures**

| Model | PRATIO | PNFI | PCFI |
|---|---|---|---|
| Default model | .381 | .300 | .308 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 1.000 | .000 | .000 |

**NCP**

| Model | NCP | LO 90 | HI 90 |
|---|---|---|---|
| Default model | 34.269 | 17.550 | 58.503 |
| Saturated model | .000 | .000 | .000 |
| Independence model | 177.768 | 136.304 | 226.700 |

**FMIN**

| Model | FMIN | F0 | LO 90 | HI 90 |
|---|---|---|---|---|
| Default model | .384 | .312 | .160 | .532 |
| Saturated model | .000 | .000 | .000 | .000 |
| Independence model | 1.807 | 1.616 | 1.239 | 2.061 |

**RMSEA**

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | .197 | .141 | .258 | .000 |
| Independence model | .277 | .243 | .313 | .000 |

**AIC**

| Model | AIC | BCC | BIC | CAIC |
|---|---|---|---|---|

| Model | AIC | BCC | BIC | CAIC |
|---|---|---|---|---|
| Default model | 80.269 | 82.852 | | |
| Saturated model | 54.000 | 57.670 | | |
| Independence model | 210.768 | 211.584 | | |

**ECVI**

| Model | ECVI | LO 90 | HI 90 | MECVI |
|---|---|---|---|---|
| Default model | .730 | .578 | .950 | .753 |
| Saturated model | .491 | .491 | .491 | .524 |
| Independence model | 1.916 | 1.539 | 2.361 | 1.923 |

**HOELTER**

| Model | HOELTER .05 | HOELTER .01 |
|---|---|---|
| Default model | 41 | 53 |
| Independence model | 19 | 22 |