# PERSONALITY TRAITS AND RISK PROPENSITY OF ENTREPRENEURS AND MANAGERS IN THE WESTERN AMAZON

*Abstract:* Entrepreneurs are identified by a set of personality traits that link them to the creation of organizations. Managers are also identified by their behavior. This research aims to identify as relationships of personality traits and risk propensity between entrepreneurs and managers in the western Amazon. The techniques adopted were partial least squares structural equation modeling (PLS-PM) and T-test for independent samples, based on data collected through the Big Five model IGPF-5 scale and the Risk Propensity Scale (RPS). It can be stated that there is a statistical difference in personality traits and risk propensity between entrepreneurs and managers. It was also found that two of the five personality traits of the Big Five model are predictors of Risk Propensity, being Extraversion and Conscientiousness. This research has theoretical contribution in determining which personality traits and characteristics attributed to entrepreneurs and managers are most relevant, solving gaps pointed out by previous studies.

*Keywords***:** Entrepreneurs. Managers. Personality Traits. Risk Propensity.

## 1 Introduction

The literature on entrepreneurship has covered, with a large number of studies, the search to identify relevant personality traits of entrepreneurs that influence business performance (BRANDSTÄTTER, 2010). Several articles in this stream of literature relied on traditional models to determine which classical personality characteristics are relevant (BRANDSTÄTTER, 1997; CIAVARELLA et al. 2004; LEUTNER et al. 2014).

Entrepreneurship depends on a complex interactive pattern that intervenes in the process of scientific discovery, innovative activities and their applications, and results in economic and social transformations. That is why the role of the entrepreneurial individual has always been important in society. (BRANDSTÄTTER, 2010; ANTONCIC, 2013). However, this role has intensified in recent decades, due to technological advances and the new demands of the knowledge society, whose competitiveness increasingly requires entrepreneurial action, innovation and structuring of innovation systems. Entrepreneurs are people who create businesses for the creation of new wealth; and entrepreneurship is part of the driving force of a country's economy (ANTONCIC, 2013).

Entrepreneurs' psychological characteristics, economic and demographic studies of the business environment should focus on what the entrepreneur does. Entrepreneurs are identified by a set of personality traits that link them to the creation of organizations. Managers and small business owners are also identified by their behavior (GARTNER, 1988).

For Palich (1995), although occupying the center of most definitions of entrepreneurship, the concept of taking risks and their links with other constructs (especially personality traits) have been difficult to capture. As a result, it has been difficult to explain why entrepreneurs rush to seize opportunities others cannot see or act on.

There is no consensus in the literature about the existence of differences in personality traits and risk propensity between entrepreneurs and managers or which personality trait is most determinant for these groups (FRANK et al. 2007; KERR et al. 2017). Researchers sought to assess which personality trait favors certain entrepreneurial contexts with different approaches, examining how the need for achievement, the internal locus of control, risk propensity, personal initiative, security, and self-actualization characteristics are significant in entrepreneurs. and managers (KORUNKA et al. 2003).

There is a dearth of work on what defines and differentiates individuals considered entrepreneurs and managers at the data collection site (SILVA, 2011; FIGUEIREDO et al. 2017). What are the differences in personality traits between Entrepreneurs and Managers in the western Amazon? It is proposed to conduct research that can contribute to this field of entrepreneurship and clarify if there really are differences in personality traits between entrepreneurs and managers.

This research aims to identify as relationships of personality traits and risk propensity between entrepreneurs and managers in the western Amazon. For a main outcome study, the following objectives are proposed:

a) Identify theoretical and empirical evidence of differences between entrepreneurs and managers, based on personality traits and risk propensity.
b) Verify the predictive influence of personality traits on risk propensity.
c) Validate the Big Five personality trait measurement scales (IGPF-5) and Risk Propensity (RPS).

This research has theoretical contribution in determining which personality traits and characteristics attributed to entrepreneurs and managers are most relevant, solving gaps pointed out by previous studies, as described in the specialized literature (FRANK et al. 2007; KORUNKA et al. 2003). This research also contributed by empirically testing the theory that personality traits are predictors of risk propensity (MEERTENS, 2008). As a practical contribution, this research can define the use of the IGFP-5 and RPS scales as valid instruments to measure personality traits and risk propensity of entrepreneurs and managers. Consequently, making it possible to use them in vocational tests and also as hiring criteria, according to the characteristics required for the position in the organizations.

## 2 Theorical Background

### Entrepreneurs and managers personality

For Chadwick (2018) scholars often argue that budding entrepreneurs will be more successful if they are resilient. From this assumption, he conducted a study with this psychological construct to develop and test the theory that the processes through which psychological resilience influences the business survival of budding entrepreneurs. The study was conducted over a 2-year period, and highlighted cognitive and behavioral ways in which psychological resilience helps budding entrepreneurs become less vulnerable to their stressful circumstances. Contrary to the previous points of resilience as a secondary factor of entrepreneurship, it established the critical importance of this psychological construct for the creation and survival of new enterprises. Beginning entrepreneurs with high psychological

Galoá { Este trabalho foi publicado utilizando o **Galoá** proceedings

resilience are better able to better assess problems during the start of business, overcoming difficulties (CHADWICK, 2018).

Kaish (1991) analyzed the characteristics of entrepreneurs and managers regarding business opportunities. From scales that measure the alertness to opportunities in the environment, the sources of information, and the source of suggestions from respondents, it was shown that entrepreneurs use more nonverbal and nontraditional sources, such as strangers on the street, therefore more communicative and prone to risk. On the other hand, managers would be more inclined to make use of immediate sources such as books, responding better to economic stimuli than entrepreneurs (Kaish 1991).

Hamel (2006) characterized in his research the innovation of managers. Reported as a sharp departure from traditional management principles, processes and practices, and reaching common organizational forms. The author points out that managerial innovation modifies the modus operandi of managers. Managerial occupation includes some actions, such as setting goals and making plans, motivating and aligning efforts, coordinating and controlling activities, accumulating and allocating resources, acquiring and applying knowledge, building and nurturing relationships, identifying and developing talent, understanding and balancing the demands of external groups. One way to change the behavior of managers in their work is to reinvent the processes that drive these actions. Management processes, such as strategic planning, capital budgeting, project management, hiring and promotion, employee appraisal, executive development, internal communications, and knowledge management, require a higher level of manager innovation (HAMEL, 2006).

The characteristics: willingness to innovate, proactive personality, self-efficacy, stress tolerance, autonomy, locus of internal control, are seen as mental causes and arising from cognitive processes. Given this point, studies are usually based on descriptions of how people reason, feel, and act in different situations of experiences and actions. Thus, opening one's own business does not define an entrepreneur as many people think, but the very action of opening a company is the result of the behavior of a person with characteristics of an entrepreneur. The analysis focused on the intention to start a company, and on the company's performance, showed that risk propensity as a personality trait cannot be measured with just one of the Big Five Factors (BRANDSTÄTTER, 2010).

Leutner (2014) sought to validate and analyze the personality trait measurement scales of the Big Five and META (Measure of Entrepreneurial Tendencies and Abilities). The results revealed that personality accurately predicts various entrepreneurial aspects, demonstrating that personality influences business success as well as business creation and success, and that personality traits are stronger predictors of these outcomes compared to broad traits, contrary to others. authors on entrepreneurship.

## *Big Five*

McDougall is one of the pioneers of the Big Five Personality Theory (NUNES, 2002; SILVA, 2011). From research by McDougall (1930; 1932) who proposed a five-factor model of analysis, other researchers such as Fiske (1949), continued to develop the model. Since then, the Big Five has been recognized as a tool in which it is possible to analyze human personality in five dimensions (NUNES 2002; SILVA 2011; ZHAO & SEIBERT, 2006;

BRANDSTÄTTER, 2010; ANTONCIC, 2013; FIGUEIREDO, 2017), they are: Neuroticism or emotional instability; Extraversion; Agreeableness; Conscientiousness and Openness to Experience. Neuroticism is the dimension that measures emotional instability. The greater the degree of neuroticism, the greater the vulnerability to stress, which leads one to interpret simple and normal situations as threats. It can result in the development of bad feelings and a more reactive posture. Extraversion is the dimension that is characterized by positive emotions: individuals with a greater degree of Extraversion enjoy being among people; being known, then, for being lively and energetic. Agreeableness is the dimension that demonstrates how compassionate and cooperative an individual is: they often tend to rely more on people over individualistic analysis. Conscientiousness is the dimension that defines an individual who has a focus on his goals and is characterized as organized, disciplined and meticulous. Openness to Experience is the dimension that defines someone who is open to new experiences: people who always have new interests, a tendency for flexibility and curiosity (BRANDSTÄTTER, 2010).

The study by Ciavarella (2004) sought to examine the relationship between entrepreneurial personality and long-term enterprise survival through the Big Five personality traits. To test the hypotheses, university graduates were interviewed about their work histories from 1972 to 1995. From the responses, it was determined whether the respondent started a business and the time the business survived. The definition of entrepreneur used by this author is that of an individual who founded a new venture. In all, 111 respondents met the criteria and provided complete information on the study. Of these, 57 individuals were considered successful (able to maintain venture operations for at least 8 years) and 54 individuals closed their businesses to look for employment elsewhere. The results of this study indicated that the "Conscientiousness" personality trait was positively related to the long-term survival of the enterprises. Contrary to expectations, the trait "Openness to New Experiences" demonstrated a negative entrepreneur relationship and long-term entrepreneurial survival. The traits "Extraversion", "Neuroticism" and "Agreeableness" did not correlate with the long-term survival of the company.

### Risk Propensity

For Nicholson (2002) the concept of risk propensity has been the object of theoretical and empirical investigation, but with little consensus on its conceptualization and measurement of risk propensity. A sample of 1,669 managers and professionals demonstrated the internal consistency and correlates of a new scale measuring overall risk propensity and risk taking in six different decision domains. Through the NEO PI-R instrument of the Big Five model, it validated the risk propensity scale, with domain-specific and general attributes. The results showed that Risk Propensity is strongly related to personality, and "sensation seeking" as an important component in most decision domains. A strong Big Five correlation is indicated for Risk Propensity, including Extraversion and Openness to New Experiences with higher coefficients and low Neuroticism, Agreeableness and Conscientiousness. Risk propensity predicts career and other behaviors as predicted, supporting scale validation.

For Meertens et al. (2008) many personality traits have been suggested as sources of influence on the tendency to take risks or risks, including motivation for achievement (ATKINSON, 1957) and the pursuit of sensation (ZUCKERMAN, 1979). Although personality

construct-based scales measure personality traits that can affect risky behavior, few scales have been constructed to specifically measure an overall propensity to take risks.

Meertens et al. (2008) argues that the first results of using the Risk Propensity Scale (RPS) show that it is a short and easy to use questionnaire that seems to adequately measure the tendency to take risks, but the samples used until then consisted only of students, limiting the conclusions. The author suggested that research with groups of participants who are known to differ in their risk behavior should be conducted so that additional support can be found for the ability of RPS to distinguish risk avoiders from risk takers. One of the objectives of the study was also to investigate the relationship between risk propensity and personality traits. The RPS correlated statistically significantly and negatively with the NC scales (CACIOPPO, 1982; CACIOPPO et al., 1984) and NFS (NEUBERG, 1993).

Several studies compare entrepreneurs' risk propensity with managers. Atkinson (1957) argues that other attributes, such as the high need for achievement that both entrepreneurs and managers have, equal or obscure the simpler predictions about risk propensity, and there is no consensus on the differences in these groups.

### Research Hypothesis

Based on what has been described about the personality traits of entrepreneurs and managers (ZHAO & SEIBERT, 2006; BRANDSTÄTTER, 2010; ANTONCIC, 2013; FIGUEIREDO, 2017), and Risk Propensity (ATKINSON, 1957; ZUCKERMAN, 1979; NICHOLSON , 2002; MEERTENS, 2008) the research hypotheses are proposed.

H1: Entrepreneurs have higher Openness to New Experience than managers. Opening a new venture requires the entrepreneur to explore new ideas. They use their creativity to solve problems by proposing an innovative approach to products, business methods or strategies. Managers, on the other hand, have a greater emphasis on following established rules and procedures to coordinate managerial activity (ZHAO; SEIBERT, 2006; ANDRADE, 2008; BRANDSTÄTTER, 2010; ANTONCIC, 2013, FIGUEIREDO, 2017).

H2: Entrepreneurs have lower Agreeableness than managers. Entrepreneurs are expected to behave more individually, as they often operate with less access to legal protection and little financial margin due to limited resources. They are even more susceptible than managers to the serious consequences of their decisions, even in the context of small negotiations (ZHAO; SEIBERT, 2006; ANDRADE, 2008; BRANDSTÄTTER, 2010; ANTONCIC, 2013; FIGUEIREDO, 2017).

H3: Entrepreneurs have higher Extraversion than managers. Entrepreneurs must interact with many people: investors, partners, employees and customers. Lack of human resources at the beginning of a venture causes entrepreneurs to spend considerable time in interpersonal relationships with their partners and employees. Undertaking seems to require greater direct contact with external and internal factors than managing it (ZHAO; SEIBERT, 2006; ANDRADE, 2008; BRANDSTÄTTER, 2010; FIGUEIREDO, 2017).

H4: Entrepreneurs have lower Neuroticism than managers. Managers, by definition, work within an organization that has pre-established procedures and practices. Entrepreneurs, on the other hand, work within a relatively unstructured environment, where responsibility for various aspects of an enterprise prevails, requiring greater emotional control. They have more

working hours than managers and often do not separate work and personal life, which is typical of managers (ANDRADE, 2008 ZHAO; SEIBERT, 2006; BRANDSTÄTTER, 2010; FIGUEIREDO, 2017).

H5: Entrepreneurs have higher Conscientiousness than managers. Managers who work within a stable organization are likely to have their responsibilities, goals, and work monitored by pre-existing organizational systems. Entrepreneurs, on the other hand, operate in a less controlled environment or work alone, needing greater focus on objectives (ZHAO; SEIBERT, 2006; ANDRADE, 2008; BRANDSTÄTTER, 2010; FIGUEIREDO, 2017).

H6: Entrepreneurs have a higher Risk Propensity than managers. For entrepreneurs to start a new business requires taking risks, unlike managers who work with rules established within an organization, which reflects certain security (ATKINSON, 1957; ZUCKERMAN, 1979; NICHOLSON, 2002 MEERTENS, 2008; ZHAO; SEIBERT, 2006; BRANDSTÄTTER, 2010)

H7: Openness to New Experience is positive related to Risk Propensity. Being open to new experiences, trying something new demands the need to take risks. (NICHOLSON, 2002 MEERTENS, 2008; ZHAO; SEIBERT, 2006; BRANDSTÄTTER, 2010). Openness to experience can be seen as the cognitive counterpart of risk seeking - acceptance of experimentation, tolerance for uncertainty, change, and innovation (McCRAE & COSTA, 1997).

H8: Agreeableness is negative related to Risk Propensity. Agreeableness is expected to have a negative impact on Risk Propensity. Individuals acting on their own behalf and lack of interest in consequences for others (empathy) indicate a greater propensity to take risks (NICHOLSON, 2002).

H9: Extraversion is positive related to Risk Propensity. Following Eysenck's theory of Extraversion as a widespread need for stimulation, we expect Extraversion to follow the predicted pattern of sensation seeking by taking risks (EYSENCK, 1973; NICHOLSON, 2002).

H10: Neuroticism is negative related to Risk Propensity. Individuals who have poor emotional stability are expected to have a negative or low correlation to risk propensity. The literature also suggests that repeated risk takers require resilience (KLEIN & KUNDA, 1994), suggesting that they should also have low scores on Neuroticism. (NICHOLSON, 2002; MEERTENS, 2008;)

H11: Conscientiousness is positive related to Risk Propensity. Conscientiousness, which can be summed up as a desire for fulfillment under conditions of conformity and control, is antithetical to these qualities and can be expected to be inversely related to risk propensity (HOGAN; ONES, 1997).

### 3 Methodology

This research starts from a post-positivist research philosophy, in a deductive approach, where a theory is used and a strategy to test the hypotheses is sought. The method is the quantitative through the survey strategy. As for the time horizon of the research, a cross-section was chosen. The techniques and procedures adopted were partial least squares structural equation modelin (PLS-PM) and Test-T for independent samples, based on data collected through the Big Theory IGPF-5 scale and the Risk Propensity Scale (RPS).

To verify the instrument validity, the structural equations modeling based on partial least squares (PLS-PM) was performed on SmartPLS 3 software. For the convergent validity analysis, the Average Variance Extracted (AVE) was calculated. To establish discriminant validity, two measurements were used, the cross loads and the Fornell-Larcker criterion.

The technique used multistage sampling, first stratified into subgroups because the population is divided into strata, in this case, the main cities of the Rondônia state (Western Amazon), such that the size of the strata in the sample is proportional to the size of the corresponding strata in the population (SAUNDERS, 2012). The confidence level used was 95% with a margin of error of 5%. Thus, the population of this research are the business owners entrepreneurs and managers of the municipalities of Rondônia state. The minimum sample per group in a population of 20865 companies is 378. A sample of 797 respondents was collected, consisting of 394 entrepreneurs (on the assumption that each company in Rondônia has an entrepreneur) and 403 managers.
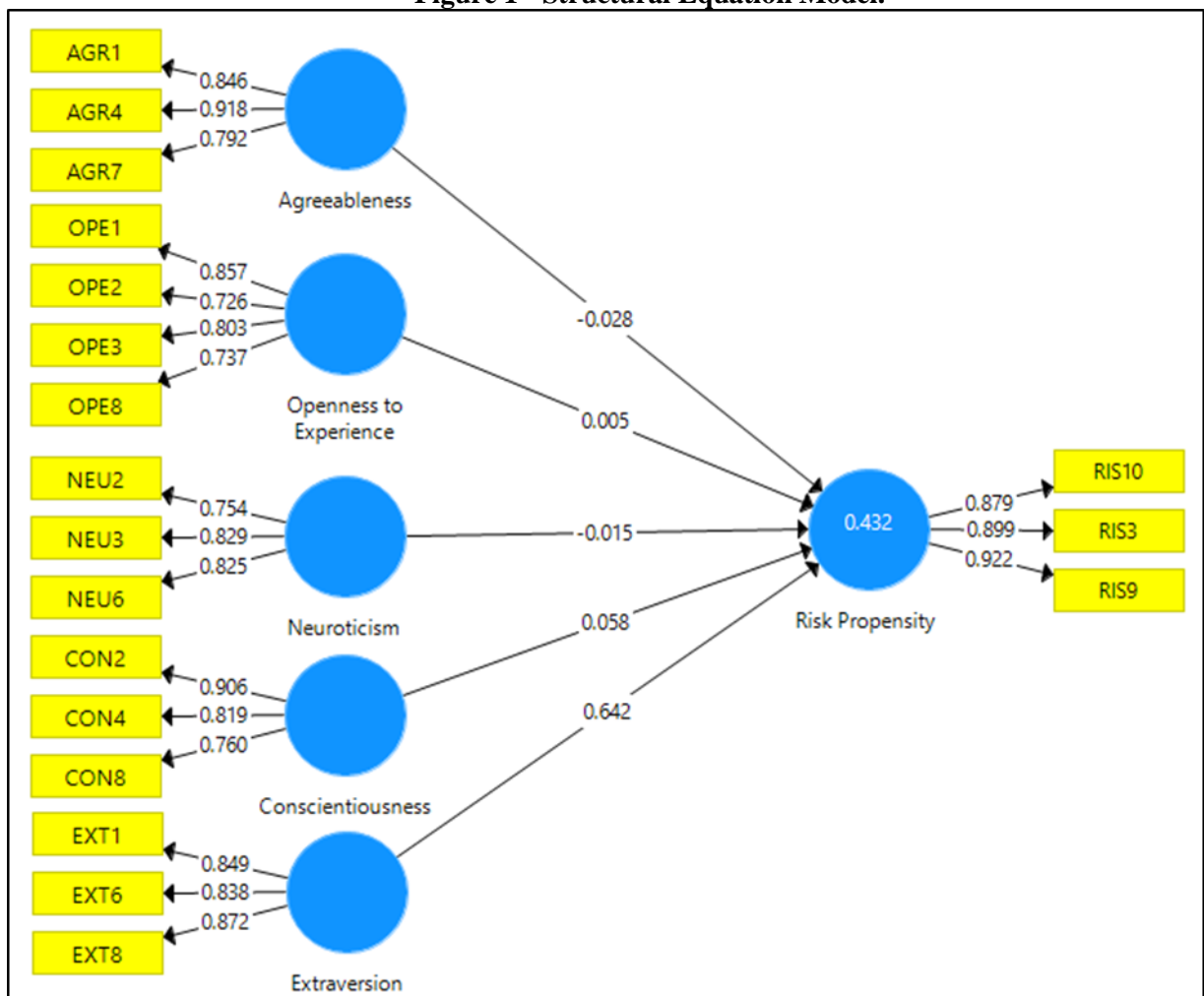
## 4 Results and discussion

The information described here aims to characterize the profile of respondents of this research, demonstrating descriptive statistics of frequency and relative frequency. To operationalize the calculations, the statistical software Statistical Package for the Social Science (SPSS), version 24.0 was used and in a systematized way the frequencies of the answers about gender, age, color or race, monthly income, marital status and education were calculated. It is worth mentioning that all 797 respondents agreed to participate in the survey on a voluntary, non-mandatory basis and with full autonomy to decide whether or not to participate, as well as to withdraw their participation at any time. By agreeing to participate in the research, the confidentiality and privacy of the information provided was guaranteed.

In total, 377 (47.3%) of the respondents were male and 420 (52.7%) were female. Age was divided into ranges where 437 (43.54%) respondents were aged from 19 to 29 years; 234 (29.36%) respondents aged 30 to 39 years; 155 (19.45%) respondents aged 40 to 49 years; 51 (6.4%) aged 50 to 59 years and 10 (1.25%) respondents over 60 years. It is noted that 72.90% of the sample consisted of respondents from 19 to 39 years old.

### Measurement Model Analysis

From the data collection, a measurement model was estimated (Figure 1), in which the Big Five latent variables were predictors of Risk Propensity, according to the hypotheses indicated in this research. In the analysis of the validity and reliability of the structural model, the factor loadings of the items, Cronbach's alpha coefficients, the Average Variances Extracted, the Composite Reliability, the variance inflation factors (VIF) and the $R^2$ (Table 1) were generated.

**Figure 1 - Structural Equation Model.**



Source: Authors (2019).

In the model, we chose to use only items with loads greater than 0.700 (HAIR et al., 2017) indicated in table 1. Therefore, the items AGR2, AGR3, AGR5, AGR6, AGR9, AMA9, OPE4, OPE5, OPE6, OPE7, OPE9, OPE10, NEU1, NEU4, NEU5, NEU7, NEU8, CON1, CON3, CON5, CON6, CON7, CON9, EXT2, EXT3, EXT4, EXT7, RIS1, RIS2, RIS4, RIS5 , RIS6, RIS7 and RIS8 were excluded. In the evaluation of the structural model, the Pearson determination coefficient ($R^2$) calculated for the latent variable Risk Propensity was 0.432, considered a large effect (COHEN, 1988). The values of the Average Variances Extracted (AVE) were greater than 0.500, confirming the convergent validity (FORNELL & LARCKER, 1981; HENSELER, RINGLE & SARSTEDT, 2015). In order to check for multicollinearity, the variance inflation factor (VIF) of each item was calculated, obtaining numbers below 5, considered optimal parameters (HAIR et al., 2017). For the reliability analysis, Cronbach's alpha coefficients were calculated, whose values were greater than 0.700, and the Composite Reliability (CR), with values greater than 0.500; both show the optimal reliability of the model (HAIR et al., 2017).

**Table 1 - Quality adjustment values of the SEM model.**

| Latent Variable | Items | Loads | VIF | α Cronbach | AVE | CR | $R^2$ |
|---|---|---|---|---|---|---|---|
| Openness to New Experience | OPE1 | 0.857 | 1.622 | 0.808 | 0.613 | 0.863 | - |
| | OPE2 | 0.726 | 2.175 | | | | |
| | OPE3 | 0.803 | 2.083 | | | | |
| | OPE8 | 0.737 | 1.525 | | | | |
| Agreeableness | AGR1 | 0.846 | 1.920 | 0.812 | 0.728 | 0.889 | - |
| | AGR4 | 0.918 | 2.641 | | | | |
| | AGR7 | 0.792 | 1.700 | | | | |
| Conscientiousness | CON2 | 0.906 | 2.056 | 0.777 | 0.690 | 0.869 | - |
| | CON4 | 0.819 | 1.543 | | | | |
| | CON8 | 0.760 | 1.611 | | | | |
| Extraversion | EXT1 | 0.849 | 1.859 | 0.813 | 0.727 | 0.889 | - |
| | EXT6 | 0.838 | 1.721 | | | | |
| | EXT8 | 0.872 | 1.801 | | | | |
| Neuroticism | NEU2 | 0.754 | 1.224 | 0.725 | 0.645 | 0.845 | - |
| | NEU3 | 0.829 | 1.720 | | | | |
| | NEU6 | 0.825 | 1.797 | | | | |
| Risk Propensity | RIS10 | 0.879 | 2.441 | 0.885 | 0.810 | 0.928 | 0.432 |
| | RIS3 | 0.899 | 2.682 | | | | |
| | RIS9 | 0.922 | 2.448 | | | | |

Source: Authors (2019).

To verify the discriminant validity of the model, the Cross Loadings Values and Fornell and Larcker Criterion (1981) were analyzed. For the analysis of Cross Loadings, the loads must be higher in the original latent variables than in others (RINGLE et al, 2014). In this research, all calculated loads were higher in their respective latent variables when compared to others (Table 2), a fact that indicates the discriminant validity of the model (CHIN, 1998).

**Table 2 - Cross Loadings Values.**

| Items | Openness to New Experiences | Agreeableness | Conscientiousness | Extraversion | Neuroticism | Risk Propensity |
|---|---|---|---|---|---|---|
| OPE1 | **0.857** | -0.027 | 0.163 | 0.127 | -0.006 | 0.109 |
| OPE2 | **0.726** | -0.025 | 0.178 | 0.035 | -0.002 | 0.016 |
| OPE3 | **0.803** | -0.035 | 0.134 | 0.118 | -0.037 | 0.090 |
| OPE8 | **0.737** | 0.027 | 0.077 | 0.104 | -0.029 | 0.054 |
| AGR1 | -0.010 | **0.846** | -0.045 | -0.104 | 0.047 | -0.086 |
| AGR4 | -0.014 | **0.918** | -0.018 | -0.096 | 0.028 | -0.087 |
| AGR7 | -0.038 | **0.792** | -0.021 | -0.060 | -0.043 | -0.074 |
| CON2 | 0.167 | -0.029 | **0.906** | 0.104 | -0.018 | 0.130 |
| CON4 | 0.143 | -0.059 | **0.819** | 0.102 | -0.002 | 0.112 |

| | | | | | | |
|------|--------|--------|-----------|--------|--------|--------|
| CON8 | 0.102 | 0.017 | **0.760** | 0.069 | -0.027 | 0.080 |
| EXT1 | 0.093 | -0.115 | 0.076 | **0.849** | -0.052 | 0.510 |
| EXT6 | 0.161 | -0.116 | 0.108 | **0.838** | -0.050 | 0.534 |
| EXT8 | 0.108 | -0.042 | 0.103 | **0.872** | -0.118 | 0.618 |
| NEU2 | -0.032 | 0.002 | 0.007 | -0.059 | **0.754** | -0.063 |
| NEU3 | 0.013 | -0.005 | 0.020 | -0.063 | **0.829** | -0.061 |
| NEU6 | -0.049 | 0.047 | -0.080 | -0.095 | **0.825** | -0.051 |
| RIS10 | 0.067 | -0.137 | 0.174 | 0.484 | -0.059 | **0.879** |
| RIS3 | 0.094 | -0.067 | 0.119 | 0.517 | -0.086 | **0.899** |
| RIS9 | 0.118 | -0.067 | 0.082 | 0.717 | -0.057 | **0.922** |

Source: Authors (2019).

For the analysis of discriminant validity by the Fornell and Larcker (1981) criterion, the square roots of the Average Variance Extracted (AVE) values of each construct were compared with Pearson correlations between the latent variables. The square roots of the Average Variance Extracted (AVE) presented higher values than the correlations (Table 3); In this case, discriminant validity has been confirmed (Fornell & Larcker, 1981).

**Table 3 - Discriminant Validity (Fornell and Larcker Criterion).**

| LV | OPE | AGR | CON | EXT | NEU | RIS |
|----|-----|-----|-----|-----|-----|-----|
| Openness to New Experience | **0.783** | | | | | |
| Agreeableness | -0.023 | **0.854** | | | | |
| Conscientiousness | 0.170 | -0.033 | **0.831** | | | |
| Extraversion | 0.141 | -0.103 | 0.113 | **0.853** | | |
| Neuroticism | -0.026 | 0.016 | -0.017 | -0.089 | **0.803** | |
| Risk Propensity | 0.107 | -0.097 | 0.132 | 0.654 | -0.073 | **0.900** |

Note. * The diagonal is the square roots of Average Variance Extracted (AVE). Opening for New Experience (OPE); Agreeableness (AGR); Conscientiousness (CON); Extraversion (EXT); Neuroticism (NEU); Risk Propensity (RIS).
Source: Authors (2019).

**Structural Model Analysis**

For the analysis of the structural model, we calculated the significance of the causal relationships of the Big Five latent variables in Risk Propensity (Table 5) performed a Bootstrapping. Bootstrapping is a form of resampling. In this method, 5000 observations were extracted from the original replacement sample (HAIR et al, 2017). Path coefficients (Table 5) indicate how much one construct relates to another. To verify whether the relationships are significant, Student's T-values were calculated, which should be greater than 1.96 and P-values less than 0.05 (HAIR et al, 2017).

The paths that were related to Risk Propensity accepted were the latent variables Extraversion and Conscientiousness (Table 5). Extraversion obtained a t-value of 25.457 and

significant p-value (0.000) and Conscientiousness obtained a t-value of 2.317 and significant p-value (0.021) confirming hypotheses H9 and H11 (MEERTENS et al. 2008).

**Table 5 - Values of the path coefficients (T).**

| Hypotheses | Relation | Original Sample | T Statistics | P Values | Decision |
|---|---|---|---|---|---|
| H7 | Openness to New Experience -> Risk Propensity | 0.005 | 0.207 | 0.836 | Rejected |
| H8 | Agreeableness -> Risk Propensity | -0.028 | 1.032 | 0.302 | Rejected |
| H9 | Extraversion -> Risk Propensity | 0.642 | 25.457 | 0.000 | Accepted |
| H10 | Neuroticism -> Risk Propensity | -0.015 | 0.524 | 0.600 | Rejected |
| H11 | Conscientiousness -> Risk Propensity | 0.058 | 2.317 | 0.021 | Accepted |

Source: Authors (2019).

To analyze the direct effects of the Big Five latent variables on risk propensity, the Blindfolding technique was used, which allowed the calculation of the Stone-Geisser $Q^2$ value (STONE, 1974; GEISSER, 1974), for the evaluation criterion for predictive relevance. The $Q^2$ calculated for the latent Risk Propensity variable was greater than zero, and indicates that the PLS path model has predictive relevance for this construct (HAIR et al., 2017).

To assess how representative each construct is for the model (Table 6), we calculated the Effect Size ($f2$) or Cohen Indicator, the values 0.02, 0.15 and 0.35, considered small, medium and large. (COHEN, 1988; HAIR et al, 2017). The f2 values for Agreeableness (0.428), Conscientiousness (0.374), Extraversion (0.424) and Risk Propensity (0.550) were considered large effects and for latent variables Openness to New Experiences (0.344) and Neuroticism (0.293) were considered. average effects (COHEN, 1988; HAIR et al,2017).

**Table 6 - Predictive Validity (Q2) and Effect Size (f2).**

| Latent Variable | CV RED (Q²) | CV COM (f²) |
|---|---|---|
| Openness to New Experience | | 0.344 |
| Agreeableness | | 0.428 |
| Conscientiousness | | 0.374 |
| Extraversion | | 0.424 |
| Neuroticism | | 0.293 |
| Risk Propensity | 0.318 | 0.550 |

Source: Authors (2019).

**Student's t-test for independent samples**

To test the hypotheses about the differences between entrepreneurs and managers in the Big Five personality traits and Risk Propensity, the adherent items resulting from structural equation modeling in the Statistical Package for the Social Science (SPSS) version 24.0 were grouped. , in their respective latent variables, by reducing the items to one factor in the Confirmatory Factor Analysis (CFA) and, subsequently, the Student's t-test for independent

samples (Table 7). Student's t-test is a parametric test that allows inferences and statements about related population means, considering the statistical concepts of homogeneity and normal distribution of a sample. Samples above 200 respondents are sufficient to counteract the ill effects of non-normality (HAIR et al, 2017).

**Table 7 - Student's t-test for independent samples.**

| Hypotheses | Latent Variable | Groups | Average | t | Sig. | Decision |
|---|---|---|---|---|---|---|
| H1 | Openness to New Experience | Entrepreneurs | 0,2832 | 8,23 | 0,000 | Accepted |
| | | Managers | -0,277 | | | |
| H2 | Agreeableness | Entrepreneurs | -0,219 | -6,26 | 0,000 | Accepted |
| | | Managers | 0,214 | | | |
| H3 | Extraversion | Entrepreneurs | 0,2567 | 7,4 | 0,000 | Accepted |
| | | Managers | -0,251 | | | |
| H4 | Neuroticism | Entrepreneurs | -0,068 | -1,91 | 0,057 | Rejected |
| | | Managers | 0,0667 | | | |
| H5 | Conscientiousness | Entrepreneurs | 0,3728 | 11,2 | 0,000 | Accepted |
| | | Managers | -0,364 | | | |
| H6 | Risk Propensity | Entrepreneurs | 0,2162 | 6,18 | 0,000 | Accepted |
| | | Managers | -0,211 | | | |

Source: Authors (2019).

Therefore, when considering the t-test values, the averages, and the verification hypotheses, it can be affirmed, regarding the Openness to new experiences, that the Entrepreneurs group obtained a higher average (0.2832) with statistical significance ($p < 0,05$) and the t value was 8.23, which represents a number greater than 1.96 (MALHOTRA, 2006); Thus, we reject the null hypothesis H0 and accept the alternative hypothesis that there is a statistical difference between the groups, and inferring that Entrepreneurs have a higher average Openness to New Experiences than Managers (H1), (ZHAO; SEIBERT, 2006 ANDRADE, 2008; BRANDSTÄTTER, 2010; ANTONCIC, 2013, FIGUEIREDO, 2017).

For the personality trait Agreeableness, the Entrepreneurs group obtained a lower average (-0.219) with statistical significance ($p < 0.05$) and the t-value was -6.26, which represents a number below -1.96 (MALHOTRA, 2006); Thus, we reject the null hypothesis H0 and accept the alternative hypothesis that there is a statistical difference between the groups, and inferring that Entrepreneurs have a lower average in Agreeableness than Managers (H2), (ZHAO; SEIBERT, 2006; ANDRADE, 2008; BRANDSTÄTTER, 2010; ANTONCIC, 2013; FIGUEIREDO, 2017).

For the personality trait Extraversion, the Entrepreneurs group obtained a higher average (0.2567) with statistical significance ($p < 0.05$) and the t value was 7.4, which represents a number higher than 1.96 (MALHOTRA, 2006 ); Thus, we reject the null hypothesis H0 and accept the alternative hypothesis that there is a statistical difference between the groups, and inferring that Entrepreneurs have a higher average in Extraversion than Managers (H3),

(ZHAO; SEIBERT, 2006; ANDRADE, 2008; BRANDSTÄTTER, 2010; FIGUEIREDO, 2017).

For the personality trait Neuroticism, the Entrepreneurs group obtained a lower average (-0.068), but there was no statistical significance (p> 0.05) and the t value was -1.91, which represents a number greater than -1, 96 (MALHOTRA, 2006); Thus, we accept the null hypothesis H0 that the groups are statistically equal and reject the alternative hypothesis that there is a difference between the groups, and cannot infer that Entrepreneurs have a lower average in Neuroticism than Managers (H4).

For the personality trait Conscientiousness, the Entrepreneurs group obtained a higher average (0.3728) with statistical significance (p <0.05) and the t value was 11.2, which represents a number higher than 1.96 (MALHOTRA, 2006 ); Thus, we reject the null hypothesis H0 and accept the alternative hypothesis that there is a statistical difference between the groups, and inferring that Entrepreneurs have a higher average in Conscientiousness than Managers (H5), (ZHAO; SEIBERT, 2006; ANDRADE, 2008; BRANDSTÄTTER, 2010; FIGUEIREDO, 2017).

Finally, for Risk Propensity, the Entrepreneurs group obtained a higher average (0.2162) with statistical significance (p <0.05) and the t value was 6.18, which represents a number greater than 1.96 (MALHOTRA, 2006); Thus, we reject the null hypothesis H0 and accept the alternative hypothesis that there is a statistical difference between the groups, and inferring that Entrepreneurs have a higher average Risk Propensity than Managers (H6), (ZHAO; SEIBERT, 2006; MEERTENS et al. 2008; BRANDSTÄTTER, 2010).

## 5 Conclusion

This study aimed to identify the relationships of personality traits and risk propensity between entrepreneurs and managers in western Amazon. For this, we applied the instruments to measure personality traits of the Big Five (IGPF-5) and Risk Propensity (RPS) model in entrepreneurs and managers. It can be stated that there is a statistical difference in personality traits and risk propensity between entrepreneurs and managers. It was also found that two of the five personality traits of the Big Five model are predictors of Risk Propensity, being Extraversion and Conscientiousness.

Entrepreneurs have a lower degree of Agreeableness, and have higher traits of Extraversion, Conscientiousness, and Openness to New Experiences than Managers. Only the trait Neuroticism did not indicate sufficient statistical significance to confirm the difference. In general, it is confirmed what is advocated in the literature about differences in personality traits.

The research used part of the work of Meertens et al. (2008), who developed an instrument to directly measure Risk Propensity, which contributed to the final result, along with the findings provided by the Big Five. This study provides a reliable tool for measuring risk propensity, as its objective was achieved by measuring the effects of personality traits on the risk propensity of entrepreneurs and managers, revealing the need for further similar studies to be undertaken with the model presented.

*References*

Andrade, Josemberg Moura de. (2008). *Evidências de validade do inventário dos cinco grandes fatores de personalidade para o Brasil.* 2008. 169 f., il. Tese (Doutorado em Psicologia Social, do Trabalho e das Organizações)-Universidade de Brasília, Brasília.

Antoncic, B. , Bratkovic Kregar, T. , Singh, G. and DeNoble, A. F. (2015), Antoncic et al.. *Journal of Small Business Management,* 53: 819-841. doi:10.1111/jsbm.12089

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological review*, 64(6p1), 359.

Brandstätter, H. (1997). Becoming an entrepreneur — A question of personality structure? *Journal of Economic Psychology*, 18(2-3), 157–177. doi:10.1016/s0167-4870(97)00003-2

Brandstätter, H. (2011). Personality aspects of entrepreneurship: A look at five meta-analyses. *Personality and Individual Differences*, 51(3), 222–230. doi:10.1016/j.paid.2010.07.007

John T. Cacioppo, Richard E. Petty & Chuan Feng Kao (1984) The Efficient Assessment of Need for Cognition, *Journal of Personality Assessment,* 48:3, 306-307, DOI: 10.1207/s15327752jpa4803_13

Cacioppo, J. T; Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42, 116–131.

Chadwick, I. C., & Raver, J. L. (2018) Psychological Resilience and Its Downstream Effects for Business Survival in Nascent Entrepreneurship. *Entrepreneurship Theory and Practice*. 104225871880159. doi:10.1177/1042258718801597

Chin, W. W. (1998) The partial least squares approach for structural equation modeling. in Marcoulides, G.A. (Ed.). *Modern methods for business research*. London: Lawrence Erlbaum Associates, p. 295- 236.

Ciavarella, Mark; Buchholtz, Ann K; Riordan, Christine M; Gatewood Robert D., Stokes Garnett.S; (1998). The big five and venture survival: Is there a linkage? *Journal of Business Venturing,* 19(4), 465-483.

Cohen, J. (1988) Statistical Power Analysis for the Behavioral Sciences. 2nd ed. New York: *Psychology Press*.

Eysenck, H.J. (1973). *Eysenck on Extraversion*. New York: Wiley.

Faul, F., Erfelder, E., Buchner, A. e Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, v. 41, 1149-1160.

Figueiredo, C. C.; Avrichir, I.; Barbosa, R. A. P. (2017). A Personalidade de Empreendedores e Gerentes de Loja Medida via Teoria do Big Five. *Revista Administração em Diálogo*, v. 19, n. 3, p. 70-94.

Fornell, C.; Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*. v.18, n. 1, p. 39-50.

Frank, H., Lueger, M., & Korunka, C. (2007). The significance of personality in business start-up intentions, start-up realization and business success. *Entrepreneurship & Regional Development*, 19(3), 227-251.

Gartner, William B. (1988). "*Who Is an Entrepreneur*?" Is the Wrong Question. The University of Baltimore Educational Foundation. Copyright.

Geisser, S. (1974). A Predictive Approach to the Random Effects Model, *Biometrika*, 61(1): 101-107.

Hair, J. F., Hult, G. T. M., Ringle, C. M., And Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2nd Ed., Sage: Thousand Oaks.

Hamel, G. (2006). The why, what, and how of management innovation. *Harvard Business Review*, 84(2), 72–84.

Henseler, J., Ringle, C.M. & Sarstedt, M. (2015*) J. of the Acad. Mark*. Sci. 43: 115.

Henseler, J., Ringle, C.M. Sinkovics, R. R. (2009). *The use of partial least squares path modeling in international marketing. Advances in International Marketing*. v. 20, p. 277-319.

Hogan, J., & Ones, D.S. (1997). Conscientiousness and integrity at work. In Hogan, J.Johnson & S. Briggs (Eds.), *Handbook of Personality Psychology* (pp 849-870). London: Academic Press.

Kaish, S; Gilad, B. (1991). Characteristics of Opportunities Search of Entrepreneurs versus Executives: Sources, Interests, General Alertness. *Journal of Business Venturing,* 6, 45-61.

Kerr, Sari P; Kerr, William R; Xu Tin; (2017). Personality Traits of Entrepreneurs: A Review of Recent Literature (No. w24097). *National Bureau of Economic Research.*

Klein, W.M., And Kunda, Z. (1994). Exaggerated self-assessments and the preference for controllable risks, *Organizational Behavior and Human Decision Processes*, 59, 410-417.

Korunka, C., Frank, H., Lueger, M., & Mugler, J. (2003). The entrepreneurial personality in the context of resources, environment, and the startup process—A configurational approach. *Entrepreneurship theory and practice*, 28(1), 23-42.

Leutner, F; Ahmetoglu, G; Akhtar, R; Chamorro-Premuzic, T; (2014), The relationship between the entrepreneurial personality and the Big Five personality traits. *Personality and Individual Differences,* 63, 58–63.

Malhotra, N, K. (2006), *Pesquisa de marketing: uma orientação aplicada*. 4ª ed. Porto Alegre: Bookman.

Mccrae, R. R. And COSTA, P. T. (1997a). Personality trait structure as a human universal. *American Psychologist*, 52(5), 509 – 516.

Mcdougall, W. (1932), OF THE WORDS CHARACTER AND PERSONALITY. *Journal of Personality*, 1(1), 3–16.

Mcdougall, W. (1930), SECOND REPORT ON A LAMARCKIAN EXPERIMENT. *British Journal of Psychology*. General Section, 20(3), 201–218.

Meertens, R. M. And Lion, R. (2008), Measuring an Individual's Tendency to Take Risks: The Risk Propensity Scale1. *Journal of Applied Social Psychology*, 38: 1506-1520.

Neuberg, S. L; Newsom, J. T. (1993), Personal need for structure: Individual difference in the desire for simple structure. *Journal of Personality and Social Psychology*, 65, 113–131.

Nicholson, N.; Fenton-O'Creevy, M.; Soane, E. and Willman, P. (2002). *"Risk Propensity and Personality."* Working Paper, London Business School, London, U.K.

Nunes, C. H. S. S; Hutz, C. S. (2002). O modelo dos Cinco Grandes Fatores de Personalidade. Em *R. Primi* (Org.), Temas em avaliação psicológica (pp. 40-49). São Paulo: Casa do Psicólogo.

Ringle, C.; Silva, D.; Bido, D. S. (2014) Structural Equation Modeling with the SmartPLS. *Brasilian Journal of Marketing,* v. 13, n. 2, p. 54-71.

Silva, Izabella Brito; Nakano, Tatiana De Cássia. (2011). *Modelo dos cinco grandes fatores da personalidade: análise de pesquisas.* Aval. psicol., Porto Alegre , v. 10, n. 1, p. 51-62, abr.

Stone, M. (1974).Cross-Validatory Choice and Assessment of Statistical Predictions, *Journal of the Royal Statistical Society,* 36(2): pp 111-147.

Zhao, Hao; Seibert, Scott. (2006) The Big Five Personality Dimensions and Entrepreneurial Status: A Meta-Analytical Review. *Journal of Applied Psychology, the American Psychological Association*, Vol. 91, No. 2, 259–27.

Zuckerman, M. (1979) *Sensation seeking: Beyond the optimal level of arousal*. Hillsdale, NJ: Lawrence Erlbaum.