Corellation Between Achievement Motivation and Entrepreneurial Leadership Quality: Meta Analysis

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Abstract—**This article presents a meta analysis of the experimental and survey literature that has examined the effect of achievement motivation, as a part of the big five personality factors, and entrepreneurial leadership quality. This quantitative study review 20 studies based on independent samples (N = 6209). Summary analysis is provided to support the hypothesis in which the achievement motivation has a correlation with entrepreneurial leadership quality on a fairness procedural. Result indicates that the achievement motivation influences the quality of entrepreneurial leadership in a significant value (rc = 0.26). This finding is relevant to all stakeholders (educators, governments, and parents) to make a better decision on the development of entrepreneurial leadership policies.**

Keywords—**achievement motivation, entrepreneurial leadership, meta analysis**

I. INTRODUCTION

Research on the correlation between personality and the quality entrepreneurial leadership has been widely studied as an important object in the science of psychology and entrepreneurship. The importance of the correlation between personality and entrepreneurial leadership can be shown from the statement presented by Low and MacMillan that the entrepreneur's personality type, including the need for achievement, need for autonomy, etc, plays a major role in the early initiation process of new enterprises as an economic power of the State's competitiveness [3].

Since the mid 1980s, the Big Five model personality type has been found as a strong indicator in explaining one's personality. General agreement among personality experts as expressed by Judge, Mouth, Barrick, and Hogan [5] who has developed the use of the terms of extraversion, emotional stability, agreeableness, conscientiousness, and openness to experience as the 5 (five) dimensions of personality.

There are 5 personalities that play a role in forming of entrepreneur profile as the opinion of Begley and Stewart namely risk taking propensity, need for achievement, need for autonomy, self-efficacy, and Locus of control [20].

Need for achievement, which in Maslow's hierarchy lies between the need for appreciation and need for self actualization, is an urge to surpass, excel in relation to the challenges and opportunities. The characteristics of a person with high N-ach are those who show high orientation, such as willing to accept a relatively high risk, the desire to get feedback about their work, the desire to get the responsibility of problem solving. The

Big Five factors, traits, and components can be explained as presented in Table 1.

If connected to the Big Five model, the type of personality as the opinion of Begley and Stewart shows some similarities. For example, the need for achievement in the Begley and Steward model has a meaning in terms of behavior and components of extraversion factor in the Big Five model.

Referring to the five factor dimensions of Big Five model, there are 2 main dimensions which influence the most in determining one's level of entrepreneurship, namely extraversion and neuroticism [10]. The success of an entrepreneurship cannot be separated from his leadership ability. The concept of entrepreneurial leadership, as proposed by Schumpeter, Miller, and Stevenson involves a combination of the concept of entrepreneurship, entrepreneurial orientation, and entrepreneurial management, with leadership [23]. This concept emphasizes the strategic approach in entrepreneurship, thus entrepreneurial initiatives can support the development and creation of company value. As such, entrepreneurship will form the basis of competitive advantage and growth of technology in the era of global economy [10]. Thomas and Mueller stated that the ability to innovate (innovateveness) is recognized as a major characteristic in defining profile [8]. In addition, the entrepreneurial leadership is often associated with the type of transformational leadership [16].

In 2000s, researches conducted by Judge and Bono in , and Ployhart *et. al.* showed a significant corre-lation of extraversion dimensions and transformational leadership qualities [18]. Result of Ployhart's study in Singapore showed that the construction of personality components have different role in predicting the performance of the transformational leadership quality of an entrepreneur. Contrary to the results of Judge and Bono's study, Shao, working with the MBA students in China shows different result due to culture [18].

The difference between the Shao study results with the Judge and Bono study results is interesting to observe. Shao study results show a negative relationship between extraversion dimension and transformational leadership qualities of entrepreneur. Activities that intersect with extraversion dimension also have a negative correlation with inspirational motivation.

The main problem raised in this study is a meta-analysis of a series of individual research results related to how the correlation between achievement motivation and entrepreneurial leadership qualities is. Given that there are differrences in result studies of this correlation, it is interesting to test the hypothesis of whether there is a close relationship between these two variables. Thus, it is expected that the results of this study will benefit stakeholders who intend to develop entrepreneurial

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leadership qualities, both in companies, universities, and community.

II. METHOD

Entrepreneur, according to McClelland, is someone who translates the need for achievement (N-ach) into economic value. In McClelland definition, an entrepreneur is someone who organizes a business unit and/or increases the productive capacity of the business, tends to work hard and does something with innovative ways to replace the traditional way.

Achievement motivation as the quality representation of the N-ach factor would thus affect the quality of one's entrepreneurial. Entrepreneurial leadership is leadership that is characterized by entrepreneur's mindset and action. According to McClelland, when leadership is often associated with the need of power and the need of affiliation which are external, then the need of achievement is more internal [17]. N-ach can be learned through the influence of family during childhood, education, and experience, and not caused by biological descent [15].

The procedure applied in the selection of this meta-analysis study is using secondary data through 3 ways. First, the researcher conducted a research on books of entrepreneurship and leadership to identify the components related to personality, behaviour-forming factor of entrepreneurship, leadership attitude-forming factors, and studies showing the correlation between achievement attitude factors in personality with entrepreneurial leadership. Second, the researcher tracked abstract journals from science direct, etc. which showed the correlation between personality and entrepreneurial behaviour. Third, the researcher refined the search with the most relevant journals on discussion about the correlation between achievement motivation and entrepreneurial leadership quality which some are derived from the journals published by American Psychological Association (APA). The search was focused largely on research published in the 2000s. The selection aims to explore the consistent research state of the art concerning achievement motivation and entrepreneurial and leadership.

Search on personality and entrepreneurial leadership results as much as 25 articles. Based on those 25 articles, 20 articles relevant to the title of the study are selected. The articles are published in 15 groups of journals as the followings: Journal of Engineering and Technology Management, Journal of Business Research, Journal of Economic Psychology, Journal of Business Psychology, Journal of Business ethics, Journal of Vocational Behavior, European Management Journal, European Economic Review, Journal the Social Science, Research in Higher Education Journal, The Leadership Quarterly, Organizational Behavior, and Human Decision Process, Organizational Science, KYKLOS and INFORM.

Important information that is recorded from the results of selected individual research journals include: (1) year of publication, sorted by the earliest studies until recent years, (2) the name of the researcher, (3) the number of samples, (4) profession/occupation of samples, (5) research back-ground, (6) achievement motivation reliability demonstrated in the value of independent variable alpha cronbach achievement motivations, (7) entrepreneurial leadership reliability demonstrated in the value of the dependent variable alpha cronbach entrepreneurial leadership, (8) coefficient of correlation between achievement motivation and entrepreneurial leadership. Any of that information would be given code in a table or bibliography. To process the data and information on the results of these studies, meta analysis technique is used as the approach [24].

The steps of data processing include: (1) calculating measurement errors caused by measurement instruments used, (2) calculating the mean and variance of independent variables reliability that have been corrected, (3) calculating the mean and variance of dependent variables reliability that have been corrected, (4) calculating the mean and variant of correlation between the study and the number of samples, (5) calculating the error of correlations variant, (6) calculating the corrected variant, (7) calculating the composite mean, (8) calculating the actual mean of correlation studies, (9) calculating the squares of variant coefficient, (10) to calculating the variant caused by variations of artifacts; (11) calculating the variant in the actual correlation, and (12) calculating reception interval range with 95% confidence level.

III. RESULT

Sample characteristics of the study that are used as input in this meta-analysis study are presented in Table 1, includ-ing a reference sequence of the journal, the year of the study, researcher name, and status of research subjects.

The publications collected and analyzed are from 20 selected journals, which were 5% from the 1980's, 10% from the 1990's, and the remaining 85% from 2000's. The first journal is 1989 from Professor Edward B. Robert from the MIT Sloan School of Management. The second and third journal are from 1996 and 1998, while the remaining is above the year 2000. Based on data in the publication, the median of the year of publication is between 2004 and 2005, so it is considered sufficiently representative representing the state of the art research.

The analysis of this study includes the number of 6209 people as sample, with the sample mean standard deviation of 310.14 and 285.03. The amount of standard deviation is influenced by a wide range of samples of 1218 people, given the smallest number of samples are as many as 67 people (the journal of the 14th) and the largest sample size was 1285 people (the journal to 18).

The samples' profession varies with the majority of the research sample work as entrepreneurs, businessmen, and peak professional as much as 60 percent, of students as much as 25%, while the remaining for each 5% are workers, students and companies. Geographic area samples from the case studies are also vary, as many as 12 journals taking a sample case study in Europe, 5 Journals of the case studies in Asia, and 3 case studies in American journals.

Reliability of research instruments analyzed are presented in Table 2. Research that includes the reliability of achievement motivation as independent variables, there are 9 studies (45%) while 35% do not include the value of reliability. Reliability coefficient, stated in cronbach lowest alpha which is 0.61 and the highest is 0.98. Thus, the range of reliability

achievement motivation as independent vari-ables was 0.37. Research that includes the reliability of the leadership of entrepreneur as the dependent variable are only 4 studies (20%) while 80% do not include the value of reliability. Instrument reliability on leardership entre-peneurial moves from 0.85 to 0.93 point, so the range of reliability is 0.08.

Judging from the level of significance, 20 journals state that they are at least on minimum 5% significance range. Nevertheless, there are variations in the level of significance. A total of eight studies (40%) include single significance, while the other 60% includes two to three levels of sig-nificance with alpha 0.05, 0.01; up to 0.001.

The following step is to conduct meta analysis. Given that the variables in the social sciences are difficult to be measured [24] then the results should be corrected to reduce measurement error. In Table 4, there are studies that do not report the reliability of measurement instruments. Measurement error correction is only performed on studies that report the research instrument, but the correction applies to all data in this meta-analysis.

Some results of calculations for the meta-analysis listed in Table 4 will be used as a basis for determining the actual correlation coefficient and standard deviation of the real. The correction of measurement errors for the independent variables and dependent variables for each study are presented in columns 4 and 5, where $a = \sqrt{r_{aa}}$

while $b = \sqrt{r_{bb}}$. The steps and results of data correction processing and real coefficients are as follows:

1. correcting to the mean and reliability variance of inde-pendent variables instrument as presented in column 4, where the mean a = 0.88, and variance = 0.06.
2. correcting to the mean and reliability variance of dependent variable instrument as presented in column 5, where the mean b = 0.32, and variant = 0.02.
3. calculating the mean and variance correlation of weighted observations, mean = 0.21 and variance = 51.43.
4. calculating the error of variance correlation (e) = $\{20(1-0.21)^2\}^2$ divided $\{20(472.35-1)\}$ = 0.00194.
5. calculating the corrected variance = 0.65-0.00194 = 0.65118.
6. calculating the combined mean A = (0.88)(0.34) = 0.82.
7. calculating the actual correlation mean of study = 0.21/0.82 = 0.26.
8. calculating the coefficient of variance sum of squares V = ($0.06^2 / 0.88^2$) + ($0.02^2 + 0.94^2$) = 0.005031.
9. calculating the variance artifacts caused variation, $S_2{}^2$ = $0.256^2 * 0.825^2 * 0.005$ = 0.000225.
10. calculating the variance in the actual correlation, Var(ρ) = 0.651-0.000225/$(0.825)^2$ = 0.955.
11. calculating the SD of Var(ρ) = $\sqrt{0.955}$ = 0.98.
12. calculating the range of 95% confidence interval = $0256 \pm (1.96 * 0.98)$ = the value of -1664 to 2176.

In conclusion, due to the weighted mean of the observed correlation which is 0.26 at the value of receipts in the range of confidence interval 95%, the results of these correlations proves that achievement motivation and entrepreneurial leadership has close links. The results of the above calculation are presented in Table 5.

IV. DISCUSSION

From several experiments conducted hydraulic characteristics obtained as shown in Fig. 7. In Fig. 7, note the velocity contours for experiments 1, 3 and 4. For experiment 1, water flows from the two channels, the maximum velocity obtained occurs at the right point of the flow. As for experiment 3, where the water flows from the branch channel, the velocity will decrease at the time was the main channel. Experiment 4, where the water flows from the main channel only, the velocity does not change after the meeting. In Fig. 8, is a form of flow occurs. From this figure it can be seen wide dividing streamline, as shown in Fig. 8a.

The results of this meta-analysis supports the hypothesis of a strong relationship between achievement motivation and entrepreneurial leadership. From the five dimensions of personality, extraversion factor containing with some behaviors, such as assertive, active, and the components include an ambitious attitude and high achievement (N-arch) showed an important role in determining the quality of entrepreneurial leadership.

Achievement motivation will be able to reduce the "pressure" (stress) faced by an entrepreneurial leader from the rapid change of the competitive environment faced, in addition to stress caused by conflict about interests among stakeholders. The ability to face stress, according to Howard, are influenced by personality types A and B, while according to Fry *et. al.*, O'Driscoll and Beehr influenced by the leadership of the appropriate variable [22].

V. CONCLUSION

Some conclusions can be drawn from the results of this meta-analysis study are: Firstly, there is a strong relation-ship between achievement motivation and entrepreneurrial leadership qualities with the r-weighted 0.21, r-corrected 0.26 with the SD 0.955, and it is in the range -1.66 < p < 2176 with 95% confidence interval. Secondly, impact of sampling error is 29.73% with the impact of variation reliability is only about 3.45%. And then, relationships of achievement motivation and entrepreneurial leadership qualities is to be consistent if the measurement to the study is done at the commen-surate level of specification, which is the amount of the increasing number of journals studied, the greater number of N sample to reduce the impact of sam-pling error and respondent characteristics of similar research.

In practice, it can be concluded that the entrepreneurial leadership qualities of a person can be explained and pre-dicted by achievement motivation.

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TABLE 1.
THE BIG FIVE FACTORS, TRAITS , AND COMPONENTS

Big Five Factor	Traits	Components
Extraversion (surgency)	Social, gregarious, assertive, talkative, active	*Ambition* – initiative, surgency, impetuous, likes to be in charge, seeks leadership roles, persuasive *Sociability* – talkative, gregarious, enjoys meeting people *Individuality* – shows off, enjoys taking chances and stirring up excitement
Emotional stability	Calm, even-tempered, self-satisfied, comfortable, unemotional, hardy, stable, confident, effective	*Steady* – event-tempered, steady emotionally *Security* – feels secure about self, not bothered by criticism
Agreeableness (likability, friendliness)	Being courteous, flexible, trusting, good-natured, cooperative, forgiving, short-herated, tolerant	*Cooperative* – like to help others and does thinks for friends, trusting of others *Considerate*-good-natured, cheerful. Forgives other easily
Conscientiousness (conformity, dependability)	Responsible, well-organized, planful, hardworking, achievement-oriented, persevering	*Dependability* – thorough, careful *Industriousness*-strives to do best, does more than planned, hardworking, persistent *Efficiency*-neat and orderly, plans in advance, rarely late for appointment
Openness to experience (intellect)	Being imaginative, creative, cultured, curious, original, broadminded, intelligent, artistically, sensitive	*Intellect* – imaginative, like abstract idea and concepts, analytical and introspective, enjoy philosophical debates *Open* – cultured, like to try new and different thinks, enjoys art, music, literature

TABLE 2.
SAMPLE CHARACTERISTIC OF THE STUDY

Study	Year	Researcher	Sample	
			Number (N)	Characteristic
1	1989	Edward B. R.	129	Businessman
2	1996	Hermann B.	104	SME businessman
3	1998	Nigel Nic	600	Businessman leader
4	2001	Kwaku A. G.	500	Executive
5	2003	Donatus A. O.	90	Entrepreneur
6	2004	Eva Schmitt-R.	320	Student
7	2005	Annebel H.B.	73	Ceo
8	2006	Yonca Gurol	362	Student bussinessman
9	2006	Hong Ki Won	224	Student
10	2006	Lian Shao	200	Student
11	2006	Richard D. A.	646	Eksekutive businessman
12	2007	Gabriel J. By	159	Company
13	2008	Marco Cal	414	Incubator entrepreneur
14	2009	Lale Gumus	163	Worker
15	2009	Bostjan An	160	Entrepreneur
16	2009	Joakim Win	282	Entrepreneur
17	2009	Sarah E. Strang	67	Eksekutive businesswoman
18	2009	Zhen Zhang	1285	Entrepreneur
19	2010	Joyce Koe H. N.	181	Student
20	2010	Hessel Oos	250	Student

TABLE 3.
SUMMARY OF CALCULATION METHODS

Number	Statistical Description	Meta Analysis
1	Number of study	20.00000
2	Number of sample	9447.000
3	Weigthed correlation (r)	0.210000
4	Corrected correlation (r)	0.260000
5	Corrected correlation variance	0.650000
6	Sampling error variance	0.000225
7	True variance	0.955000
8	True standart deviation	0.980000
9	Confidence level 95%	$-1.664 < p < 2.176$

TABLE 4.
CORRELATION ARTIFACT DISTRIBUTION

Year	Researcher	N	r_{aa}	r_{bb}	r_{xy}
1989	Edward B. Robert	129	-	-	0.25
1996	Hermann Brands	359	-	-	0.31
1998	Nigel Nicholson	600	-	-	0.78
2001	Kwaku A. G.	500	0.79	-	0.31
2003	Donatus A. O.	90	-	-	0.43
2004	Eva Schmitt-R	320	0.75	-	0.24
2005	Annebel H. B.	73	-	-	0.28
2006	Yonca Gurol	362	0.61	-	0.30
2006	Hong Ki Won	224	0.98	0.87	0.68
2006	Lian Shao	200	-	-	0.89
2006	Richard D. A.	646	-	-	0.17
2007	Gabriel J. Byrne	159	-	-	0.13
2008	Marco Caliendo	414	-	-	0.15
2009	Lale Gumu	163	0.77	0.93	0.31
2009	Bostjan A.	160	-	-	0.27
2009	Joakim W.	282	-	-	0.35
2009	Sarah E. Strang	67	0.87	-	0.21
2009	Zhen Zhang	4268	0.67		0.09
2010	Joyce Koe H. N.	181	0.77	0.87	0.45
2010	Hessel O.	250	0.79	0.85	0.27
TOT		9447	7.00	3.52	6.87
MEAN		472.35	0.78	0.88	0.34
SD		6346.036	0.11	0.03	0.21

Description:

r_{aa} states reliability achievement motivation

r_{bb} states reliability entrepreneurial leadership

$r_{xy} = r_{ab}$ states correlation coefficient

TABLE 5.
META ANALYSIS WORKSHEET

Year	Researcher	N	A	b	r_{xy} or r_{ab}
1989	Edward B. R.	129	-	-	0.25
1996	Hermann B.	359	-	-	0.31
1998	Nigel Nichol	600	-	-	0.32
2001	Kwaku A. G.	500	0.89	-	0.31
2003	Donatus A. O.	90	-	-	0.43
2004	Eva Schmitt-R	320	0.87	-	0.24
2005	Annebel H. B.	73	-	-	0.28
2006	Yonca Gurol	362	0.78	0.93	0.30
2006	Hong Ki Won	224	0.99	-	0.68
2006	Lian Shao	200	-	-	0.89
2006	Richard D. A.	646	-	-	0.17
2007	Gabriel J. By	159	-	-	0.13
2008	Marco Cali	414	-	-	0.15
2009	Lale Gumus	163	0.88	0.93	0.31
2009	Bostjan A.	160	-	-	0.27
2009	Joakim Win	282	-	-	0.35
2009	Sarah E. Strang	67	0.93	-	0.21
2009	Zhen Zhang	4268	0.82	-	0.09
2010	Joyce Koe H. N.	181	0.88	0.93	0.45
2010	Hessel Oos	250	0.89	0.92	0.27
TOT		9447	7.93	3.71	6.41
MEAN		472.35	0.88	0.93	0.32
SD		6346.036	0.06	0.01	0.19

Description:

r_{aa} states reliability achievement motivation

r_{bb} states reliability entrepreneurial leadership

$r_{xy} = r_{ab}$ states correlation coefficient