e-ISSN 2797 - 9237
Vol. 2, No. 1, June, 2022

The Difference Between 4 Types of Myer Briggs Type Indicator (MBTI) Personality's Function in Ability to Innovate in Family Business

Nadia Damara Putri

Studio Damara
nadiadputri@gmail.com
https://doi.org/10.37715/rmbe.v2i1.3035

***Abstract*— The purpose of this study is to find the difference between 4 types of Myer Briggs Type Indicator (MBTI) function type in ability to innovate in family business. The object examined in this study is the second generation of family business owner in Surabaya. There is a myth that has been going around in family business industry, which says 'the first generation builds, the second generation enjoys, and the third generation destroys', and correlating to that statement, it is indeed not many family business has stay afloat to their third generation. One of the most important factor to keep every business running is innovation. This study studied 120 respondents and the data was collected using a Likert Scale questionnaire. Collected datas were then analyzed on SPSS using ANOVA Test to find out which MBTI Function Type score highest in ability to innovate, and then the difference of ability to innovate between each MBTI Function Type. Furthermore, it is found that there is a difference in between different Myer Briggs Type Indicator (MBTI) Function type in ability to innovate.**

Keywords—*Family Business, Innovation, Myer-Briggs Type Indicator (MBTI).*

1. Introduction

A family business plays an important role in supporting the economics of a country. 80-98% of business in the world is family owned, and it contributed to 64% of Gross Domestic Product (GDP) in the USA, and roughly 75% in other countries (Nugroho, 2016). Family business is also one of the most important sources of accumulating wealth in especially Asian countries, which pillars regional economics of the country, and contributes to at least 50% of the Gross Domestic Product (GDP) of the world's economics and employ the population. According to research by The International Finance Corporation (IFC), which is a part of the World Bank, around 95% of businesses that are registered by law in Indonesia, which is equivalent to 159,000 out of 165,000 business entities, are family businesses. The size of the family business itself in Indonesia varies from small, middle, large, to conglomeration. In many cases in Asia, successors to most family business continue to be the offspring of the family in orderly manner (Rumanko et al., 2021). In order to make the probability of the likelihood for business to keep running and stay competitive, it is necessary for the founder generation to choose the best-fitting successor based on qualification, instead of mere tradition because at the end of the day, the ultimate goals of a business is to create revenue and gain profit. According to Obeidat (2016), innovation is an important force in creating and sustaining business in order to be sustainable and stay competitive. Thus, the survival of a business is very dependent to innovativeness and the leader's ability to innovate. To know which offspring is the best-fitting for the business, it is important to know the strength and weakness of each potential successor and their characteristics. According to Delgado (2021), MBTI assessment is one of the most widely used in the big companies across the world. Thus, using this widely-known tools, the researcher would like to gain information whether there are differences in different MBTI and their ability to innovate.

The result of this research will hopefully provide theoretical benefits for family business owners to get insights on which Myer Briggs Type Indicator (MBTI) Personality is better in ability to innovate in family business in order to qualify the successor of the family business. While for the applicable benefits, this research will be useful for the idiosyncrasy of the family by gaining and in-depth of personality and ability to innovate of the already appointed business successor. The researcher also hopes this thesis will be able to help many family business owners,

e-ISSN 2797 - 9237
Vol. 2, No. 1, June, 2022

especially Indonesia, to be able to ease the process of choosing the best-fitting successor that would make the possibility of the family business score higher in the business competition.

2. Literature Review

2.1 Previous Research

According to previous research done by Kusano et al. (2016) in their paper titled, "Development and Assessment of Self-Agency and the Ability to Innovate and Take Risks", was aimed to address to show disciplines to understand the creative possibilities that exist in entrepreneurship. In this journal, the researcher measured self-agency, the ability to innovate, and the ability to take risk, and all three correlations with each other in the case of post-graduates students in the University of Michigan. The journal was closed with a conclusion that self-agency does gives positive relationship in ability to innovate and ability to take risks.

According to previous research written by Amar and Mullaney (2017) in their paper titled, "Employee Ability to Innovate: How can Organizations Recognize It", was explaining about the process behind many of the available instruments that may predict one's personality for producing innovation. Based on the research that has been Donne, the types of personalities that are more prone to be innovative were also introduced. The journal answered the question of what type of personality is most innovative, according to three types of personality measurement tools, namely, Myer-Briggs Type Indicator (MBTI), The Hogan Personality Inventory, and DISC Personality Assessment.

According to a research done by Duran (2016) titled, "Doing More with Less: Innovation Input and Output in Family Firms", which was aimed to disentangling the puzzling effect that family owned firms invest less in innovation but have an increased conversion rate of innovation input into output and, ultimately, a higher innovation output than non-family firms. From the research, it could be summarized that family firms invest less in innovation projects than do non-family firms. However, this finding does not imply that family firms are less innovative than non-family firms. However, this research was limited because it cannot capture all heterogeneity that exists among family firms across the world.

2.2 Theoritical Background

2.2.1 Myer Briggs Type Indicator (MBTI)

The Myer Briggs Type Indicator (MBTI) is a personality type indicator which classifies individuals into one of sixteen different types. Those sixteen different types of personalities are made of four different attitudes or orientations, each with two different traits. According to Myers (1997 as cited in King et al., 2020) the most significant combination in someone's ability to create innovation is mostly determined by their psychological function types. The personality indicator, which is now known as Myer Briggs Type Indicators (MBTI) has been developed by Katherine Cook Briggs and her daughter, Isabel Briggs Myers since 1940. The first one is two ways of mind, which determines the way we interact with our environment, and further divided into extraverted and introverted. The second one is two ways perceiving, which determines what we use to perceive things in our environment, and is further divided into intuition and sensing. The third one is two ways of judging, which determines how we base and direct our action, and is further divided into thinking and feeling. And last but not least, two ways of tactics, which determines on how we make a decision, and is further divided into judging and perceiving.

2.2.2 Ability to innovate

According to Obeidat (2016) inovation is an important force in creating and sustaining business in order to be sustainable and stay competitive. Effective innovation can vary in every business process, starting from product quality, product development, process or service, or even risk management. Innovation prevents a business from being stagnant and eventually dies from the competition in the market. Innovation is indeed important for all organisations in preserving their competitive advantage. The term innovation is often confused with invention. Invention is defined by New Oxford Dictionary as creating something new that has never existed before. Invention is all about new things, new products, new solutions for a problem we never thought we had before. According to

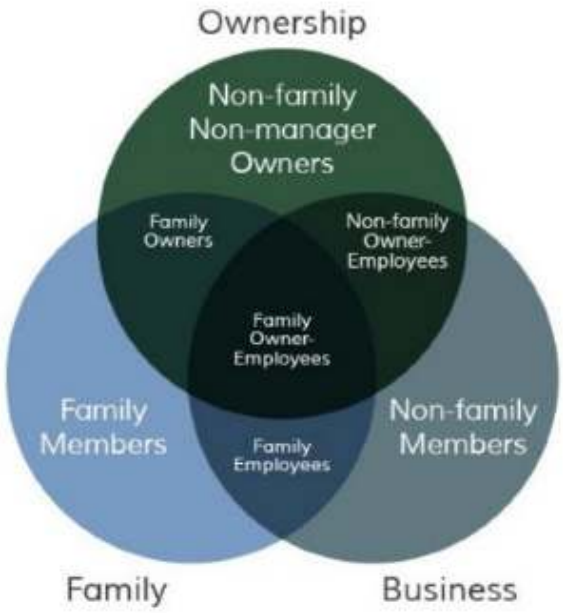
e-ISSN 2797 - 9237
Vol. 2, No. 1, June, 2022

Obeidat (2016), innovation as outcome could be divided into three sections based on its outcome, which are, product innovation, process innovation, and service innovation

According to Kusano (2016), there are two ways to measure ability to innovate, which is direct and indirect measures of the ability to innovate. The direct measures focus on the outcome of an innovation (product, process, and service), while the indirect measures focus on the external characteristics of innovation, for example, the individual's creative personality. In this research, the researcher will be focusing on both of the direct and indirect measure of innovation.

2.2.3 Family Business

While Aronoff and Ward (2011) stated that a business could be considered as a family business when there are two or more family members who supervise the finance of the business. Andreas (2007 as cited in Ing Malelak et al., 2020) classified a business as a family business when a minimum of 25% of the stock ownership is owned by a family member, or less than 25% of the board director is a professional, or non- family member employee. Many researchers have agreed that involvement and participation of family in a business makes the dynamic of business is very much different than the usual business (Chang et al., 2014). To show how the dynamics would be very much different, Poza and Daugherty (2018) has created a subsystem theory where it shows the family business business model and how each subset has its own distinct characteristics, and they are all overlaps, interacts, and interdependent of each other.



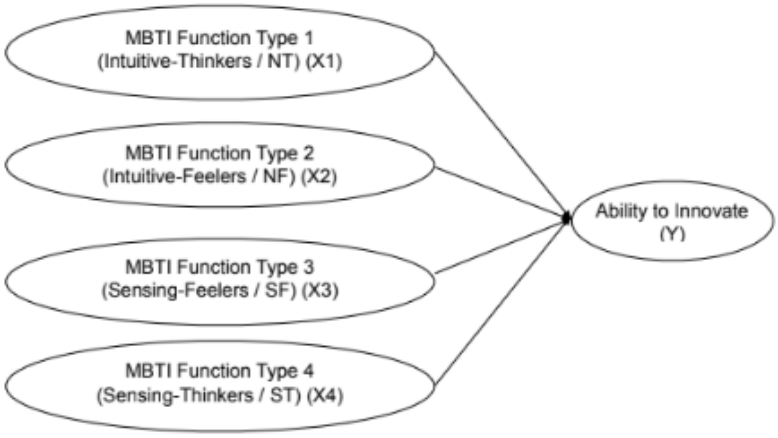
Picture 2.1 Family Business Subsystem Theory by Poza and Daugherty, 2018

2.2.4 Growing Family Business

Family business could fail because more often, the family business as a business entity did not make enough innovation decision needed to ensure their unique selling points in this ever-changing world (Danco, 1980 as cited in Istiatin & Susanti, 2021). According to Ward (1997 as cited in Miller, 2014), a business that does not do risk-taking innovation, would likely to lower their business prospects. According to research by Ward (1997 as cited in Miller, 2014) in a questionnaire, family business owners rank the most powerful challenges to their long-term growth.

e-ISSN 2797 - 9237
Vol. 2, No. 1, June, 2022

2.2.5 Data Analysis Model



Picture 2.2 Research Model

2.2.6 Hypothesis

Based on the background and problem identification that has been stated in the previous section, the researcher has developed hypotheses as follows:

H_0 There is no difference between Myer Briggs Type Indicator (MBTI) Personality Type based on its Function Type in ability to innovate.

H_1 There is a difference between Myer Briggs Type Indicator (MBTI) Personality Type based on its Function Types in ability to innovate.

3. Research Methods

3.1 Type of Research

According to the background of the research, the problem identification, and the objectives of the research that have been stated above, this research will be done with a quantitative approach, which involves the collection of quantifiable data and statistical treatment to test the hypotheses (Ibrahim et al., 2018). Furthermore, according to Sekaran and Bougie (2019), there are three types of data collection method for survey, namely interview, questionnaire, and observation. The researcher uses a self-administered questionnaire method with a prepared set of questions the respondents answer by themselves (Sekaran & Bougie, 2019). Thus, the research instrument used is questionnaire. According to Gosal et al, (2019), this analysing process will be able to reveal the similarity and difference of the object of the research by comparing the facts from the data collected. By using comparative analysis, the data collected will then be grouped together, and clustered according to the some extent similarities in the data, so that the researcher can classify and differentiate between all the clusters.

In this research, the researcher will be using purposive sampling. According to Etikan (2016), purposive sampling is a method that is often used in research which deliberately chooses its subject and object of the research due to the qualities that the participant chooses. In this research, since the population size is unknown, determining the sample size is based on statistical technique, namely distributions of Means. According to Widhiarso (2013), in order to complete distributions of means, we need to have sample more and equal than 30. According to Usmadi (2020), ANOVA is considered robust of the equal variance assumption. There is actually no good basic rule for how unequal sample size needed for heterogeneity of variance to be a problem. But, it would lead to one if the data have both unequal variances and unequal sample sizes. Thus, the researcher will then collect equal sample size in order to maximize the robustness of the variance assumption and collecting 30 samples for each Myer Briggs Type Indicator (MBTI) Personality Function Type, that are broke down into Intuitive-Feeling (NF), Intuitive-Thinking (NT), Sensing-Feeling (SF), and Sensing-Thinking (ST), which added up to 120 samples in total.

3.2 Variables and Operational Variables

Identifying variables in research will be used to help the researcher in determining the data collection method in a research. The variable in this research would be the ability of creating innovation that will be measureed using Likert Scale. In this research, the operational variables are defined in Table 3.1 below:

Table 3.1 *Operational Variables Indicator*

Variable	Definition	Indicator	Source	Questions
MBTI Function Type 1 (Intuitive-Feeling / NF) (X1)	NF Function is indicated if their personality type is one of the following in the indicator:	• INFP • INFJ • ENFP • ENFJ	King et al. (2020)	Will be derived from 16personalities.com
MBTI Function Type 2 (Intuitive-Thinking / NT) (X2)	NT Function is indicated if their personality type is one of the following in the indicator:	• INTP • INTJ • ENTP • ENTJ	King et al. (2020)	Will be derived from 16personalities.com
MBTI Function Type 4 (Sensing-Thinking / ST) (X3)	ST Function is indicated if their personality type is one of the following in the indicator:	• ISTP • ISTJ • ESTP • ESTJ	King et al. (2020)	Will be derived from 16personalities.com
MBTI Function Type 3 (Sensing-Feeling / SF) (X4)	SF Function is indicated if their personality type is one of the following in the indicator:	• ISFP • ISFJ • ESFP • ESFJ	King et al. (2020)	Will be derived from 16personalities.com
Ability to Create Innovation (Y)	Innovation is the tendency of a business to participate, contribute, or support the process of ideation, experiment, and other creative process that will produce new product, new service, and/or new technology.	Innovation Tendency	Marques et al. (2019)	1. I often have new business ideas in my mind. 2. I believe it is important to continuously have innovations for my family business. 3. I strive for constant improvement - however small it is - to improve my family business their products, process, and/or services. 4. I strive to create new value for my family business' market and/or customer. 5. I enjoy coming up with new ideas for products, process, and/or service. 6. I enjoy thinking of ways to improve existing products, processes, and/or service. 7. I often initiate new ideas for my family business 8. I am excited when I am creating innovation in my family business regarding new products, process, and/or service. 9. I am excited to communicate my new innovation ideas to other family business member. 10. I am excited when I am implementing innovation in my family business regarding new products, process, and/or service. 11. I have successfully implemented my innovation in my family business regarding new products, process, and/or service.

e-ISSN 2797 - 9237
Vol. 2, No. 1, June, 2022

3.3 Data Collection Method

The datas then will be used as primary datas, and it will be attained through questionnaires that are done by the researcher (Bungin, 2013). The data collection commenced on 31 May 2021 with a total of 120 (one hundred) correspondents. The researcher will be looking for 30 respondents for each Myer Briggs Type Indicator (MBTI) Function Types, which has been stated in previous chapter, namely NF (Intuitive-Feelers) Function, NT (Intuitive Thinkers) Function, SF (Sensing–Feelers) Function, and ST (Sensing-Thinkers) Function.

3.4 Validity and Reliability

To prove the validity and reliability of the data samples, the researcher will be comparing the data to a set of indicators that has accuracy. Validity test in this research will be comparing the value in the r-table with the calculated r-value in correlated item-total correlation. The question is this research could be claimed valid when the value or calculated r-value is bigger than the value in the r-table (Ghozali, 2018). This research, the measurement tools to know the reliability of the data will be using Cronbach's Alpha Coefficient. According to Namdeo and Rout (2016), Cronbach's alpha is a test reliability technique that requires only a single test administration to provide a unique estimate of the reliability of the analysed data. Cronbach's alpha is the average value of the reliability coefficients one would obtain for all possible combinations of items when split into two half-tests. But for this research, the research will be using the reliability coefficient of 0,7, where it has been tested multiple times to be the rule of thumb of number to determine whether a data is acceptable and reliable (Namdeo & Rout, 2016).

3.5 Data Analysis Method

In this research, for the analytical procedures, the researcher will first conduct a classical assumption test. Afterwards, then the researcher will be using quantitative-descriptive analysis. According to Ghozali (2013), there are four classical assumption tests, which are normality test, autocorrelation test, multicollinearity test, and heteroscedasticity test. However, in this research, the researcher decided to use the normality test. According to Ghozali (2013), there are four classical assumption tests, which are normality test, autocorrelation test, multicollinearity test, and heteroscedasticity test. However, in this research, the researcher decided to use the normality test.

The researcher decided to use the Levene Test due to its measurement that allows more leniency in the data, as long as it is continuous. When the significance value (p) is less or equal than 0,05, it means that the data is not homogenous, while if the significance value (p) is more than 0,05, means that the data is homogenous.

Hypothesis Test is used to know whether there is a difference within the 4 different types of Myer Briggs Type Indicator (MBTI) Function Type and its effect on ability to innovate in family business in Family Business in Indonesia. The steps are, as follows:

1. Hypothesis Creation
   In this research, the researcher will be calculating the mean of each group of MBTI, with the rule as follows:

Table 3.2 *Statistical Hypothesis.*

Hypothesis	Decision Criteria
H0	$\mu1 = \mu2 = \mu3 = \mu4$
H1	$\mu1 \neq \mu2 \neq \mu3 \neq \mu4$

2. Determining its significance value from the data analysed using SPSS.
3. Analysing the data using Independent Samples t-Test to support the hypothesis.
4. Determining whether the hypothesis is correct using the significance test. If the significance value is less than or equal to 0,05, then the hypothesis will be rejected, while if the significance value is greater than 0,05, then the hypothesis will be accepted.

3.6 ANOVA Test

Researcher will be using ANOVA, to compare the four groups of Myer Briggs Type Personality (MBTI) Function Type to its relationship with an ability to innovate. The condition that has to be met if using ANOVA Test as data analyzing method is that the data compared shall be under the assumption of normal distribution and equal variances (Kim, 2014). In condition of abnormal distribution further analysis will be required, using bootstrapping, in order to achieve consistent result even if there is a breach in normality. Also, if in condition of unequal variances, the data will be further analysed using Brown Forsythe F-Test, in order to achieve homogeneity. Then, the data will be then analyzed using Games-Howell Test for the post-hoc test.

4. Result and Discussion

The 120 respondents for this research are aged 20 years and above, domiciled in Surabaya, have been working in a family business as a family member employee or at least 2 years, a family business successor from second generation, and have taken Myer Briggs Type Indicator (MBTI) or knew about it before taking the interview. 62 respondents are in the age group of 19-23 years old (52%), 29 respondents are in the age group of 27-30 years old (24%), 19 respondents are in the age group of 31-34 years old (16%), and 10 respondents are in the age group of 35 years old and above (8%). 81 respondents have been working in their family business for 25-48 Months (68%), 21 respondents have been working in their family business for 49-64 Months (18%), and 18 respondents have been working in their family business for 65 months and above (15%). 33 respondents have less than 4 employees in their family business (28%), 46 respondents have 5-19 employees in their family business (38%), 30 respondents have 20-99 employees in their family business, and 11 respondents have 100 and above employees in their family business.

Below here is the summary of the samples that has been used for this research. Each Myer Briggs Type Indicator (MBTI) Function Type has 30 samples to be studied, totaling in 120 respondents.

Table 4.1. Samples Distribution and Case Processing Summary

Variable	MBTI	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Ability to Innovate	NT	30	100.0%	0	0.0%	30	100.0%
	NF	30	100.0%	0	0.0%	30	100.0%
	SF	30	100.0%	0	0.0%	30	100.0%
	ST	30	100.0%	0	0.0%	30	100.0%

Next, in the table below contains the mean, standard deviation, standard error, minimal, maximal, range, and median of Ability to Innovate in each group of Myer Briggs Type Indicator (MBTI) Function Type.

Table 4.2 Descriptive Result

Variable	**MBTI**	**N**	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**Minimum**	**Maximum**
						Lower Bound	**Upper Bound**		
Ability to Innovate	NT	30	64.2333	9.17524	1.67516	60.8072	67.6594	50.00	77.00
	NF	30	69.4000	5.88745	1.07490	67.2016	71.5984	58.00	77.00
	SF	30	58.2667	10.88477	1.98728	54.2022	62.3311	36.00	77.00
	ST	30	55.9333	12.93467	2.36154	51.1034	60.7632	38.00	77.00

One of the assumptions that must be filled in order to complete an ANOVA Test is that the population has to be normally distributed. Thus, firstly normality test will be done.

Table 4.3 Normality Test

	MBTI	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Ability to Innovate	NT	.168	30	.030	.917	30	.022
	NF	.141	30	.135	.918	30	.023
	SF	.101	30	.200*	.961	30	.333
	ST	.204	30	.003	.888	30	.004

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

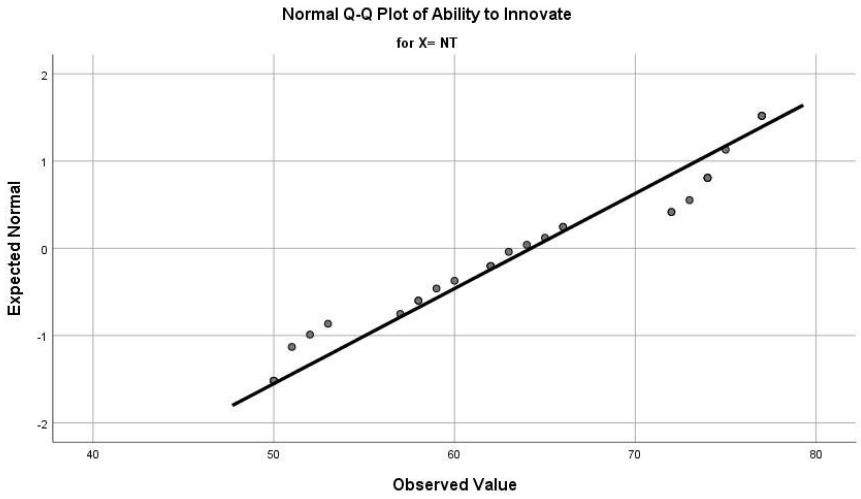
Next, after the normality test has been done, the data has to be evaluated its homogeneity using Levene Test.

Table 4.4 Homogeneity Test

		Levene Statistic	df1	df2	Sig.
Ability to Innovate	Based on Mean	9.599	3	116	.000
	Based on Median	6.021	3	116	.001
	Based on Median and with adjusted df	6.021	3	77.382	.001
	Based on trimmed mean	9.501	3	116	.000

According to the result of homogeneity test in Table 5.4 above, it could be concluded that the F-value 9,599 with p-value 0.000 < 0.05 means H_1 could be accepted and has different value and is heterogenous. So that it did not fulfill the homogeneity assumption, thus Games-Howell Test will be used for post-hoc test.

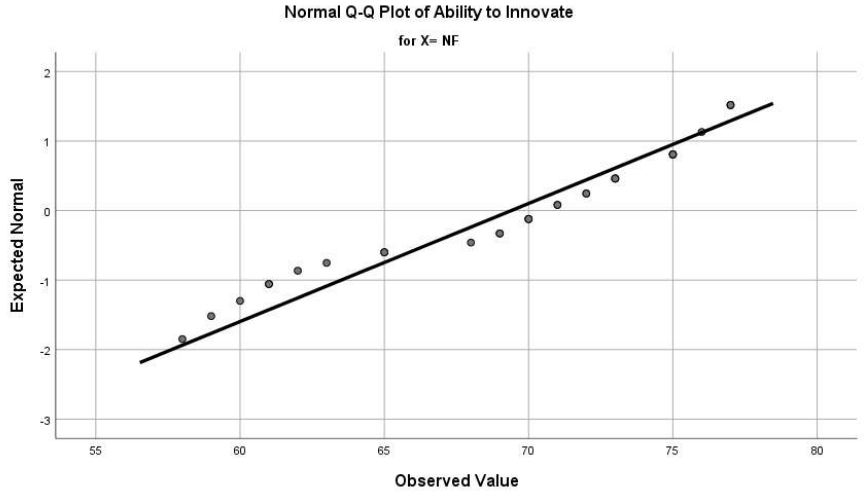
To further show the non-normality of the sample, the researcher decided to do an additional Q-Q Plot to reveal the non-normality of the data (Zubir et al., 2018). In the Picture 5.1 below is the Q-Q Plot to show the non-normality in the NT Groups. It could be seen that the data in NT Group is not normal.



Picture 4.1 Normal Q-Q Plot of Ability to Innovate (NT)

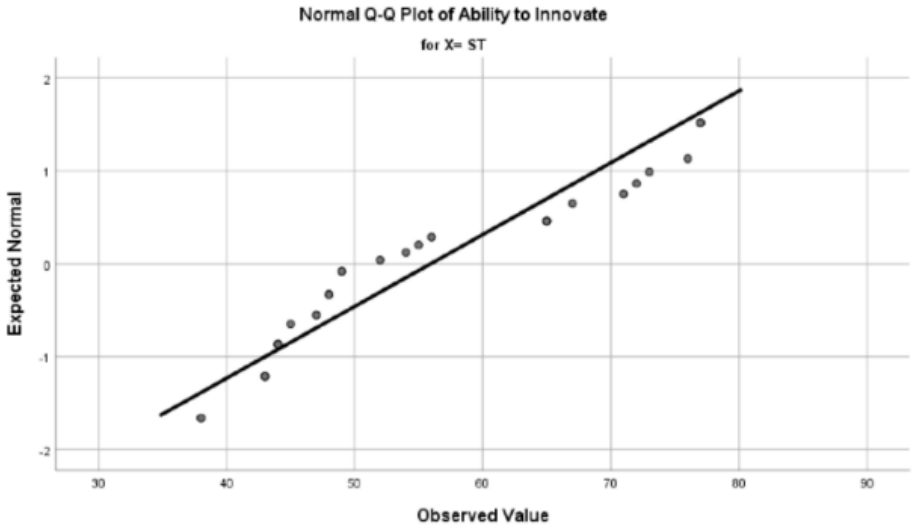
e-ISSN 2797 - 9237
Vol. 2, No. 1, June, 2022

Q-Q Plot to show the non-normality in the NF Groups. It could be seen that the data in NF Group is not normal.

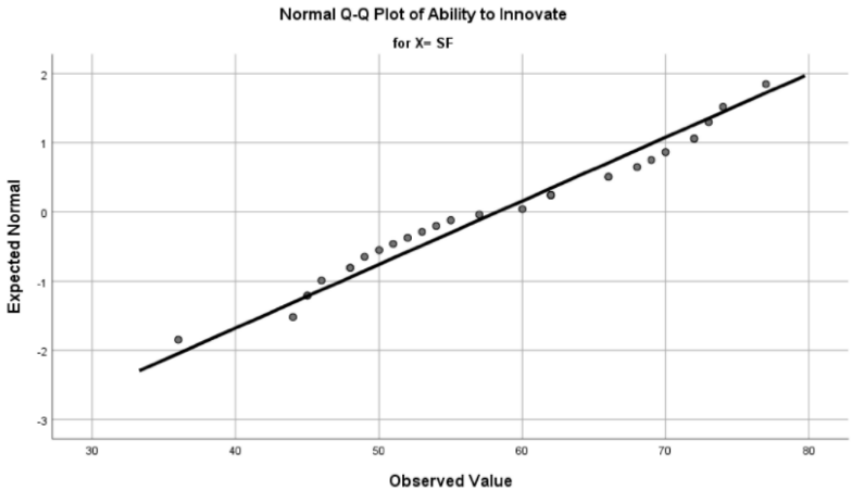


Picture 4.2 Normal Q-Q Plot of Ability to Innovate (NF)

Q-Q Plot to show the non-normality in the ST Groups. It could be seen that the data is not normal.



Picture 4.3 Normal Q-Q Plot of Ability to Innovate (ST)



Picture 4.4 Normal Q-Q Plot of Ability to Innovate (SF)

Table 4.5 Descriptive Test on Ability to Innovate based on MBTI Function Types

Ability to Innovate								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
NT	30	64.2333	9.17524	1.67516	60.8072	67.6594	50.00	77.00
NF	30	69.4000	5.88745	1.07490	67.2016	71.5984	58.00	77.00
SF	30	58.2667	10.88477	1.98728	54.2022	62.3311	36.00	77.00
ST	30	55.9333	12.93467	2.36154	51.1034	60.7632	38.00	77.00
Total	120	61.9583	11.24546	1.02657	59.9256	63.9910	36.00	77.00

Based on this Table 4.5 above, it could be concluded that the highest ability to innovate is held by Myer Briggs Type Indicator (MBTI) Function Type NF group with the mean value of 69.4000, while the lowest ability to innovate is held by Myer Briggs Type Indicator (MBTI) Function Type ST group with the mean value of 55.9333. After knowing the mean value of Ability to Innovate from each Myer Briggs Type Indicator (MBTI) Function Types, the researcher will review back to the homogeneity test that has been done previously to check whether the difference in ability to innovate is significant of not. Since the p-value 0.000 < 0.05, it means that the dependent variable which is the ability to innovate is not homogeneous. Thus, homogeneity variance could not be fulfilled and the researcher will correct the result with Brown-Forsythe Test and post hoc test using Games-Howell Test.

Table 4.6 One Way ANOVA Test

Test of Between-Subjects Effects						
Dependent Variable: Ability to Innovate						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	33314.492[a]	3	1104.831	10.992	.000	.220
Intercept	460660.208	1	460660.208	4553.879	.000	.975
X	3314.492	3	1104.831	10.992	.000	.220
Error	11734.300	116	101.158			
Total	475709.000	120				
Corrected Total	15048.792	119				
a. R Squared = .220 (Adjusted R Squared = .200)						

From the result of One Way ANOVA Test in Table 5.6 below, answers the problem identified in this research, that Myer Briggs Type Indicator (MBTI) Function Types does impacts differently on ability to innovate because the F-value 10,922 with p-value 0.000 < 0.05, which means H1 is accepted with significant difference. The difference value is 22%, and if it was corrected with the standard deviation, the difference value would be 20%. Parameters are descriptive measures of an entire population. However, their values are usually unknown because it

is infeasible to measure an entire population. Thus, from the random sample from the population, a parameter estimates has been created (Field & Gillett, 2010).

Table 4.7 Parameter Estimates

Parameter Estimates							
Dependent Variable: Ability to Innovate							
Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	55.933	1.836	30.460	.000	52.296	59.570	.889
[X=1,00]	8.300	2.597	3.196	.002	3.157	13.443	.081
[X=2,00]	13.467	2.597	5.186	.000	8.323	18.610	.188
[X=3,00]	2.333	2.597	.899	.371	-2.810	7.477	.007
[X=4,00]	0[a]	.	.	.	.	.	.

a. This parameter is set to zero because it is redundant.

From Table 4.7 above, the parameter estimate (B) has been calculated to form the ANOVA equation, which will be as follow:

1. For Myer Briggs Type Indicator (MBTI) Function Type NT group:
   $\hat{Y}1 = 55.933 + 8.3.$
2. For Myer Briggs Type Indicator (MBTI) Function Type NF group:
   $\hat{Y}2 = 55.933 + 13.467.$
3. For Myer Briggs Type Indicator (MBTI) Function Type SF group:
   $\hat{Y}3 = 55.933 + 2.333.$
4. For Myer Briggs Type Indicator (MBTI) Function Type ST group:
   $\hat{Y}4 = 55.933 + 0.$

Where Y is the predicted ability to innovate. With 95% confidence interval before bootstrapping showed that Parameter Estimate (B) for NT Group is between 3.157 to 13.443 where this parameter is significant because p-value $0.002 < 0.05$, means H1 is accepted. Also, with 95% confidence interval for NF Group is between 8.323 to 18.610 where this parameter is significant because p-value $0.000 < 0.05$, means H1 is accepted. With 95% confidence interval before bootstrapping showed that Parameter Estimate (B) for SF Group is between -2.810 to 7.477 where this parameter is not significant because p-value $0.371 > 0.05$, means H0 is accepted. With 95% confidence interval before bootstrapping showed that Parameter Estimate (B) for ST Group could not be calculated because in this ANOVA equation, group ST will be used as the reference.

Because homogeneity test is fulfilled, thus the post hoc test will be using Games-Howell Test.

Table 4.8 Games-Howell Test.

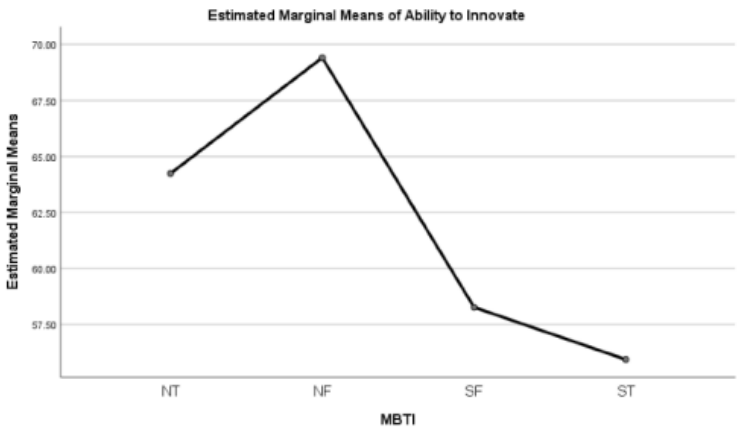
Multiple Comparisons					
Dependent Variable: Ability to Innovate					
Games-Howell					
(I) MBTI	(J) MBTI			Sig.	95% Confidence Interval

		Mean Difference (I-J)	Std. Errror		Lower Bound	Upper Bound
NT	NF	-5.1667	1.99037	.058	-10.4584	.1250
	SF	5.9667	2.59912	.111	-.9141	12.8474
	ST	8.3000*	2.89535	.029	.6169	15.9831
NF	NT	5.1667	1.99037	.058	.1250	10.4584
	SF	11.1333*	2.25935	.000	5.1042	17.1625
	ST	13.4667	2.59466	.000	6.5157	20.4176
SF	NT	-5.9667	2.59912	.111	-12.8474	.9141
	SF	-11.1333*	2.25935	.000	-17.1625	5.1042
	ST	2.3333	3.08644	.874	-5.8377	10.5043
ST	NT	-8.3000*	2.89535	.000	-15.9831	-.6169
	NF	-13.4667*	2.59466	.874	20.4176	-6.5157
	SF	2.3333	3.08644	.029	-10.5043	5.8377

Based on observed means
The error term is Mean Square (Error) = 101.158
*The mean difference is significant at the .05 level

Based on the Games-Howell Test result in Table 5.8 above. it could be concluded that:

1. Differences of Ability to Innovate between NT and NF is -5.1667 with standard deviation of 1.99037. with p value of 0.058 > 0.05. means H0 is accepted that indicates that the differences is not significant.
2. Differences of Ability to Innovate between NT and SF is 5.9667 with standard deviation of 2.59912. with p value of 0.111 > 0.05. means H0 is accepted that indicates that the differences is not significant.
3. Differences of Ability to Innovate between NT and ST is 8.3000 with standard deviation of 2.89535. with p-value of 0.029 < 0.05. means H1 is accepted that indicates that the differences is significant.
4. Differences of Ability to Innovate between NF and SF is 11.1333 with standard deviation of 2.25935. with p-value of 0.000 < 0.05. means H1 is accepted that indicates that the differences is significant.
5. Differences of Ability to Innovate between NF and ST is 13.4667 with standard deviation of 2.59466. with p-value of 0.000 < 0.05. means H1 is accepted that indicates that the differences is significant.
6. Differences of Ability to Innovate between SF and ST is 2.3333 with standard deviation of 3.08644. with p-value of 0.874 > 0.05. means H0 is accepted that indicates that the differences is not significant.



Picture 4.5 Estimated Marginal means of Ability to Innovate

From the Picture 5.10 shows that the marginal means of Ability to Innovate between each Myer Briggs Type Indicator (MBTI) Function Types. where it shows that NF group held the highest ability to innovate. followed by NT. SF. and then lastly. ST. Based on the ANOVA Test above. showed that these differences are significant. which means H1 is accepted. After that. the residual which means the difference between Y and predicted Y which has been explained by the parameter estimate previously. will be calculated using normality test.

Table 4.9 Normality Test on residual

One-Sample Kolmogorov-Smirnov Test		
		Residual for Y
N		120
Normal Parameters[a,b]	Mean	.0000
	Std. Deviation	9.93013
Most Extreme Differences	Absolute	.085
	Positive	.085
	Negative	-.070
Test Statistic		.085
Asymp. Sig. (2-tailed)		.033[c]
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Based on the normality test on the residual using Lilliefors Test in Table 4.9 above. l-value of 0.085 with p-value 0.033 < 0.05. means the residual on the ANOVA Test on Ability to Innovate equation does not have normal distribution. which means H1 is accepted. and it does not fulfill normality test assumption. Thus. the researcher will continue the research by using bootstrapping method in order to meet the normality assumption. Bootstrapping is a re-sampling procedure whereby multiple sub-samples of the same size as the original sample are drawn randomly to provide data for empirical investigation of the variability of parameter estimates & indices of fit (Olanipekun et al., 2017). Thus. bootstrapping will be done so that it will not affect the parameter estimate and keep it consistent even though there is deviance in normality. Bootstrapping will be done 200 times resampling with the confidence interval of 95%.

From the result of the descriptive test after bootstrapping in Table 4.10 below. it could be seen that the mean of the NT group has changed after bootstrapping was done.

Table 4.10 Descriptive Test After Bootstrapping

Descriptive Statistics						
Dependent Variable: Ability to Innovate						
MBTI	(J) MBTI	Statistics	Bootsrap[a]			
			Bias	Std. Errror	95% Confidence Interval	
					Lower	Upper
NT	Mean	64.2333	.2706	1.6467	60.5246	67.0358
	Std. Deviation	9.17524	.16635	.84996	7.17318	10.47048
	N	30	0	5	21	40
NF	Mean	69.4000	.0177	1.0219	67.6120	71.5769
	Std. Deviation	5.88745	-.16432	.53147	4,56111	6.62050

	N	30	0	5	21	41
SF	Mean	58.2667	.0078	2.1016	54.5413	62.7080
	Std. Deviation	10.88477	-.34271	.99281	8.27674	12.52620
	N	30	.0451	5	20	39
ST	Mean	55.9333	.26834	2.3311	51.5385	60.8923
	Std. Deviation	12.93467	0	.98120	10.69196	14.66321
	N	30	-.0339	4	20	39
Total	Mean	61.9583	-.09260	.9930	60.1086	64.0795
	Std. Deviation	11.24546	0	51930	10.15358	12.14836
	N	120	.2706	0	120	120

Based on observed means
The error term is Mean Square (Error) = 101.158
*The mean difference is significant at the .05 level

From the result of Levene Test of Equality of Error Variances in Table 4.11 below. because even after bootstrapping the result is still not significant in the homogeneity test. thus. to further assess it Games-Howell Test will be done.

Table 4.11 Levene Test of Equality of Error Variances

Levene's Test of Equality of Error Variances[a,b]					
		Levene Statistic	df1	df2	Sig.
Ability to Innovate	Based on Mean	9.599	3	116	.000
	Based on Median	6.021	3	116	.001
	Based on Median and with adjusted df	6.021	3	77.382	.001
	Based on trimmed mean	9.501	3	116	.000

Test the null hypothesis that the error variance of the dependent variable is equal across groups
a. Dependent variable: Ability to Innovate
b. Design: Intercept + X

From the Table 4.12 below could be seen the Parameter Estimates after bootstrapping. showed that with 95% confidence interval after bootstrapping. the parameter estimate for NT is between 2.871 to 13.023. where this parameter is significant because p-value 0.010 < 0.05. which means H1 is accepted.

Table 4.12 Tests of Between-Subjects Effects

Tests of Between-Subjects Effects						
Dependent Variable: Ability to Innovate						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3314.492[a]	3	1104.831	10.922	.000	.220

Intercept	460660.208	1	460660.208	4553.879	.000	.975
X	3314.492	3	1104.831	10.922	.000	.220
Error	11734.300	116	101.158			
Total	475709.000	120				
Corrected Total	15048.792	119				

a. R Squared = .220 (Adjusted R Squared = .200)

From the Table 4.13 below. it could be seen the Parameter Estimates after Bootstrapping. And if it is compared to the parameter estimates before bootstrapping. there are some changes in the Standard Error due to the biases made through bootstrapping.

Table 4.13 Bootstrap for Parameter Estimates

Booststrap for Parameter Estimates						
Dependent Variable: Ability to Innovate						
Parameter	B	Bootstrap[a]				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
Intercept	55.933	.045	2.331	.005	51.539	60.892
[X=1,00]	8.300	-.226	2.784	.010	2.871	13.023
[X=2,00]	13.467	.063	2.536	.005	8.620	18.073
[X=3,00]	2.333	.053	3.026	.458	3.966	8.637
[X=4,00]	0[a]	.045	2.331		0	0.

a. Unless otherwise noted. Bootstrap result are based on 200 bootstrap samples

Table 4.14 Bootstrap for Multiple Comparisons

Bootstrap for Multiple Comparisons						
Dependent Variable: Ability to Innovate						
Games-Howell						
(I) MBTI	(J) MBTI	Mean Difference (I-J)	Bootstrap[a]			
			Bias	Std. Error	95% Confidence Interval	
					Lower	Upper
NT	NF	-5.1667	-.2883	1.9560	-9.4143	-1.7339
	SF	5.9667	-.2785	2.8226	.3655	11.7603
	ST	8.3000	-.2255	2.7843	2.8707	13.0227
NF	NT	5.1667	.2883	1.9560	1.7339	9.4143

	SF	11.1333	.0099	2.2988	6.3693	15.3316
	ST	13.4667	.0628	2.5358	8.6197	18.0735
SF	NT	-5.9667	.2785	2.8226	-11.7603	-.3655
	NF	-11.1333	-.0099	2.2988	-15.3316	-6.3693
	ST	2.3333	.0529	3.0259	-3.9656	8.6375
ST	NT	-8.3000	.2255	2.7843	-13.0227	-2.8707
	NF	-13.4667	-.0628	2.5358	-18.0735	-8.6197
	SF	-2.3333	-.0529	3.0259	-8.6375	3.9656

Based on the Games-Howell Test result in Table 5.14 above. it could be concluded that:

1. Differences of Ability to Innovate between NT and NF is -5.1667 with standard deviation of 1.9560. with p-value of 0.058 > 0.05. means H_0 is accepted that indicates that the differences is not significant.
2. Differences of Ability to Innovate between NT and SF is 5.9667 with standard deviation of 2.8226. with p-value of 0.111 > 0.05. means H_0 is accepted that indicates that the differences is not significant.
3. Differences of Ability to Innovate between NT and ST is 8.3000 with standard deviation of 2.7843. with p-value of 0.029 < 0.05. means H_1 is accepted that indicates that the differences is significant.
4. Differences of Ability to Innovate between NF and SF is 11.1333 with standard deviation of 2.2988. with p value of 0.000 < 0.05. means H_1 is accepted that indicates that the differences is significant.
5. Differences of Ability to Innovate between NF and ST is 13.4667 with standard deviation of 2.5358. with p value of 0.000 < 0.05. means H_1 is accepted that indicates that the differences is significant.
6. Differences of Ability to Innovate between SF and ST is 2.3333 with standard deviation of 3.0259. with p-value of 0.874 > 0.05. means H_0 is accepted that indicates that the differences is not significant.

5. Conclusions and Practical Implication

5.1 Conclusions

To reach those objectives. one hypothesis have been developed. that stated there is a difference between Myer Briggs Type Indicator (MBTI) Personality Type that has been categorized based on its Function Types and their ability to innovate. To test the hypothesis. the researcher created a questionnaire and got 159 responses in total to process. Some of the MBTI Function Type Group has been found to exceed the defined sample. which was 30 respondent per MBTI Function Type. thus the researcher eliminated some of the respondent to meet 30 respondents for each MBTI Function Type. which were NT. NF. SF. and ST. resulting in total 120 respondent. The data underwent validity. reliability. and classical assumption test. and after passing all the test stated above. an ANOVA Test is conducted to calculate whether there is differences between each Myer Briggs Type Indicator (MBTI) Function Type Group. Because the data set of the test does not answer the conditions that ANOVA Test requires. which are the data to be normally distributed. and is homogenous is not meet. further test is done. namely bootstrapping and Brown Forsythe Test. Then. after the requirement has been met. the researcher continued to assess the differences between each Myer Briggs Type Indicator (MBTI) Function Type Group using ANOVA Test.

The research has proven that there are differences between each Myer Briggs Type Indicator (MBTI) Personality Type that has been categorized based on its Function Types and their ability to innovate. The result showed that MBTI Function Types that has the highest ability to innovate is NF (Intuitive Feelers). followed by NT (Intuitive Thinkers). and then SF (Sensing Feelers). and then lastly. ST (Sensing Thinkers). We could also see the result of these research that the differences between NT and ST. NF and SF. and NF and ST are all significant. while the result between NT and NF. NT and SF. and SF and ST are not significant. as listed below:

1. Differences of Group 1 (NT) and Group 2 (NF) is not significant.
2. Differences of Group 1 (NT) and Group 3 (SF) is not significant.

3. Differences of Group 1 (NT) and Group 4 (ST) is significant.
4. Differences of Group 2 (NF) and Group 3 (SF) is significant.
5. Differences of Group 2 (NF) and Group 4 (ST) is significant.
6. Differences of Group 3 (SF) and v4 (ST) is not significant.

In conclusion. the research showed that there is differences between Myer Briggs Type Indicator (MBTI) Function Type and their ability to innovate. However. not all the differences in ability to innovate is significant. But because the condition that has to be met in order to accept the hypothesis is for at least one of the mean difference to be significant. it means that indeed the research has successfully answered the initial problem in the research. which was to answer whether there is a difference between Myer Briggs Type Indicator (MBTI) Function type and their ability to innovate.

Lastly. this research has greatly helped the researcher to know the which Myer Briggs Type Indicator (MBTI) scores highest in their ability to innovate and draw conclusion that there is difference in ability to innovate between each Myer Briggs Type Indicator (MBTI) Function Types. This will then be applied in the researcher's family business in sense of knowing all of the potential successors' Myer Briggs Type Indicator and their ability to innovate. Also. the result of this research would be beneficial for academicians who are interested in Myer Briggs Type Indicator (MBTI). innovation. and family business.

5.2 Practical Implication

As stated previously. this paper aims to help family business owner to help choose the best fitting successor to keep the family business afloat in the competition. by keep creating innovation. According to Sullivan (2008). innovation is an important force in creating and sustaining business in order to be sustainable and stay competitive. By creating more innovations. a business should be able to create more revenue and gain more profit. Through the findings from this research. it has been known that there are differences in ability to innovate between each group of Myer Briggs Type Indicator (MBTI) Function Type. Thus. in case of successor selection. it is best for first generation family business to assess the potential successor with a credible tool. namely Myer Briggs Type Indicator (MBTI). Even when a family only have one potential successor for their family business. they could assess their potential successor. With Myer Briggs Type Indicator (MBTI) result. they will be able to know whether they are good in ability to innovate or not. Each has its ow potential strengths that might be beneficial in each process of innovation creation in a management level.

6. References

Amar, A. D., & Mullaney, K. (2017). Employee ability to innovate: How can organizations recognize it. *Procedia Computer Science*, *122*, 494–501. https://doi.org/10.1016/j.procs.2017.11.398

Aronoff, & Ward, J. L. (2011). *Family Business Ownership*. New York: Palgrave Macmillan.

Bungin, B. (2013). *Metodologi penelitian sosial & ekonomi: Format-format kuantitatif dan kualitatif untuk studi sosiologi, kebijakan publik, komunikasi, manajemen, dan pemasaran*. Jakarta: Kencana Prenada Media Group.

Chang, H.-J., Lin, S.-J., & Hou, J.-J. (2014). An investigation of family business from the perspective of dynamic capabilities. *Journal of Chinese Management Review*, *17*(1), 1–14.

Delgado, C. (2021). *The Problem With the Myers-Briggs Personality Test*. Discover Magazine. https://www.discovermagazine.com/mind/the-problem-with-the-myers-briggs-personality-test

Duran, P., Kammerlander, N., van Essen, M., & Zellweger, T. (2016). Doing more with less: Innovation input and output in family firms. *Academy of Management Journal*, *59*(4), 1224–1264. https://doi.org/10.5465/amj.2014.0424

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical and Statistical Psychology*, *63*(3), 665–694. https://doi.org/10.1348/000711010X502733

Ghozali, I. (2013). *Aplikasi analisis multivariate dengan program IBM SPSS 21 update PLS regresi*. Semarang:

Badan Penerbit Universitas Diponegoro.

Ghozali, I. (2018). *Aplikasi analisis multivariate dengan program IBM SPSS 25*. Undip.

Gosal, G. A., Tumbel, A., & Wenas, R. (2019). Analisis perbandingan keputusan pembelian produk Coca-Cola dan Pepsi Cola: Study pada mahasiswa FEB UNSRAT. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi*, *7*(1), 191–200. https://doi.org/10.35794/emba.v7i1.22346

Ibrahim, A., Alang, A. H., Madi, B., & Ahmad, M. A. (2018). *Metodologi Penelitian*. Jakarta: Gunadarma Ilmu.

Ing Malelak, M., Soehono, C., & Eunike, C. (2020). Corporate Governance, Family Ownership and Firm Value: Indonesia Evidence. *SHS Web of Conferences*, *76*, 01027. https://doi.org/10.1051/shsconf/20207601027

Istiatin, I., & Susanti, A. (2021). The Effectiveness of Succession in a Family Business: Case Study on Batik Industry in Indonesia. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, *5*(1), 341–349.

Kim, H.-Y. (2014). Analysis of variance (ANOVA) comparing means of more than two groups. *Restorative Dentistry & Endodontics*, *39*(1), 74. https://doi.org/10.5395/rde.2014.39.1.74

King, S. P., Mason, B. A., Carducci, B. J., Nave, C. S., Mio, J. S., & Riggio, R. E. (2020). Myers-Briggs Type Indicator. In *The Wiley Encyclopedia of Personality and Individual Differences* (pp. 315–319). Wiley. https://doi.org/10.1002/9781118970843.ch123

Kusano, S., Wright, M., & Conger, A. (2016). Development and assessment of self-agency, and the ability to innovate and take risks. *Center for Research on Learning and Teaching Occasional Paper*, *34*, 1–12.

Marques, P. C., Silva, A., & Henriques, E. (2019). *Integrating innovation and technology: A case study*. https://doi.org/https://doi.org/10.6977/IJoSI.201809_5(2).0004

Miller, S. P. (2014). Next-generation leadership development in family businesses: the critical roles of shared vision and family climate. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01335

Namdeo, S., & Rout, S. (2016). Calculating and interpreting Cronbach's alpha using Rosenberg assessment scale on paediatrician's attitude and perception on self esteem. *International Journal of Community Medicine and Public Health*, 1371–1374. https://doi.org/10.18203/2394-6040.ijcmph20161448

Nugroho, R. L. (2016). Family Business: An Entrepreneurial Longer-Term Perspective. *Binus Business Review*, *7*(1), 9. https://doi.org/10.21512/bbr.v7i1.1428

Obeidat, B. Y. (2016). The Effect of Strategic Orientation on Organizational Performance: The Mediating Role of Innovation. *International Journal of Communications, Network and System Sciences*, *09*(11), 478–505. https://doi.org/10.4236/ijcns.2016.911039

Olanipekun, A. O., Xia, B. (Paul), Hon, C., & Hu, Y. (2017). Project Owners' Motivation for Delivering Green Building Projects. *Journal of Construction Engineering and Management*, *143*(9). https://doi.org/10.1061/(ASCE)CO.1943-7862.0001363

Poza, E. J., & Daugherty, M. S. (2018). *Family Business*. Boston: Cengage Learning.

Rumanko, B., Lušňáková, Z., Moravanská, M., & Šajbidorová, M. (2021). Succession as a Risk Process in the Survival of a Family Business—Case of Slovakia. *Journal of Risk and Financial Management*, *14*(10), 458. https://doi.org/10.3390/jrfm14100458

Sekaran, U., & Bougie, R. (2019). *Research methods for business: A skill building approach*. John Wiley & Sons.

Usmadi, U. (2020). PENGUJIAN PERSYARATAN ANALISIS (UJI HOMOGENITAS DAN UJI NORMALITAS). *Inovasi Pendidikan*, *7*(1). https://doi.org/10.31869/ip.v7i1.2281

Widhiarso, W. (2013). APLIKASI MODEL RASCH CAMPURAN DALAM MENGEVALUASI PENGUKURAN HARGA DIRI. *Jurnal Penelitian Dan Evaluasi Pendidikan*, *17*(1), 172–187. https://doi.org/10.21831/pep.v17i1.1367

Zubir, N. S. A., Abas, M. A., Ismail, N., Rahiman, M. H. F., Tajuddin, S. N., & Taib, M. N. (2018). Statistical analysis of agarwood oil compounds in discriminating the quality of agarwood oil. *Journal of Fundamental and Applied Sciences*, *9*(4S), 45. https://doi.org/10.4314/jfas.v9i4S.3

e-ISSN 2797 - 9237
Vol. 2, No. 1, June, 2022