

The Effect of Work Pattern and Need for Achievement on Problem Solving Effectiveness

Widodo Sunaryo¹, Martinus Tukiran²

^{1,2} Pakuan University, Indonesia

¹E-mail: ¹widodosun@gmail.com

Issue Details

Issue Title: Issue 2

Received: 25 March, 2021

Accepted: 27 April, 2021

Published: 15 May, 2021

Pages: 2960 – 2986

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Linguistica Antverpiensia

Abstract:

This research descriptively aims to determine the working patterns (groups or individuals) carried out by company employees in problem-solving, as well as to determine the level of Need for achievement (n-Ach) of company employees. The sample of this research is 249 operational level employees of a private company in Indonesia. The research method in this study is a field experiment. The results of this study are that the group work pattern has a stronger influence on the effectiveness of problem-solving than the effect of the behavioral characteristics of individuals with high n-Ach levels. The high level of n-Ach is a factor that affects the effectiveness of problem-solving. Meanwhile, the low level of n-Ach did not affect the effectiveness of problem-solving. Another finding in this study is that the interaction between the Work Pattern and the n-Ach Level has a strong influence on the effectiveness of problem-solving.

Keywords: Need for achievement, problem-solving effectiveness, work pattern

Introduction

Humans are always faced with problems, both problems related to personal life or problems in the work environment. Problems that arise require an effort or action to solve or finish them. Problems that are not resolved effectively will result in greater losses, obstacles, or other problems. Organizations are always faced with various problems, ranging from strategic to operational ones. Operative level problems occur most often and are faced by workers at the operational level (operative level). In this case, the achievement of organizational goals is determined by the effectiveness of problem solutions performed by operational workers. The following describes examples of this. The success of Japanese companies mainly lies in the factor of developing *workgroup* patterns as a means of increasing work motivation, solving problems, and improving quality continuously (continuous quality improvement). The group's work pattern is manifested in working groups known as the *Quality Control Circle*. McClelland (2005) argues, from a psychological point of view, that the success of Japanese people in the economic field is due to Japanese individuals having a strong drive to work hard in achieving goals or achievements. This encouragement is known as "*Need for Achievement*" (abbreviated as *n-Ach*). Japanese people are known as individuals who have the characteristics of happy to work hard (work-alcoholic) (McClelland, 2005; McClelland, 1987).

China's economic growth was rapid, reaching an average of 8.5% per annum in the early 2000s. Various Chinese industrial products, including apparel, socks, DVD / VCD players, and motorcycles, are examples of China's superior products in the international market. The success of Chinese companies lies in the tradition of family management (the collective working pattern of family members), as well as a culture of working hard to increase productivity. This kind of work culture is a characteristic of individuals with high *n-Ach* levels. The successful companies in the United States, among others, IBM, Hewlett-Packard, and Procter & Gamble developed a work philosophy with the theme "*Respect the Individual*", which essentially seeks to encourage the development of individual abilities and a high appreciation for individual work performance. This work philosophy emphasizes 2 main points, namely (a) individual work patterns, and (b) encouragement to work diligently and take personal responsibility. This work philosophy is an effort to develop a high level of *n-Ach*. Listening to the description above, it can be seen that group work patterns or individual work patterns based on the drive to work hard to achieve success (need for achievement) are the factors that determine the effectiveness of problem-solving, and become a determining factor for the success of company performance.

Since ancient times, the Indonesian nation had a work culture called *cooperation and deliberation for consensus*, the manifestation of which is in the form of working patterns as a group. This work culture is found in all ethnic groups in Indonesia. In Java it is known as *Rembug Deso*, in Tanah Minang it is called *Rapat Adat*, and in Bali, it is carried out through the tradition of village community meetings in *Banjar* (Village Hall). The culture of cooperation and deliberation, as outlined in Pancasila and the 1945 Constitution, should become a culture that embodies the working patterns of Indonesian company employees. When viewed from the list of publicly listed companies on the Jakarta Stock Exchange, it can be seen that up to the beginning of 2006 there were 91% of all public companies experiencing a decline in share prices, and the Composite Stock Price Index (CSPI) dated January 13, 2006, was still below the initial selling price (*"Initial Price Offering"* 10 years ago). Based on data from the "*Industrial Production Index*" (IP Index) of ASEAN countries, it is clear that the level of productivity of the Indonesian manufacturing sector is low among ASEAN countries, and has decreased since 1993. The main cause of the low level of performance as described is because many labor (labor) problems are protracted not being resolved effectively, causing conflicts or labor unrest, which in turn have an impact on lowering the level of labor productivity, especially in large companies use a lot of labor in Indonesia (Tambunan, 2008).

Based on the descriptions above, it can be identified several problems related to the performance of Indonesian companies employees, as the following questions below: Has the culture of deliberation to reach consensus transformed into problem-solving behavior for Indonesian company employees? Has the culture of cooperation been transformed into

a pattern of group work in companies in Indonesia? The working patterns of Japanese, Chinese and US companies are a determining factor for the success of companies. Has this work pattern been implemented by companies in Indonesia? Do the employees of Indonesian companies have high *n-Ach* levels? Does this motivation affect the effectiveness of problem-solving? Do the factors of work patterns and *n-Ach* affect the effectiveness of problem-solving?

Formulation of the Problems.

Based on the identification of problems mentioned above, problem formulation was carried out in this study, as follows:

1. Are there differences in the effectiveness of problem-solving between employees who work in groups and employees who work individually?
2. Are there differences in the effectiveness of problem-solving between employees with high *n-Ach* levels and employees with low *n-Ach* levels?
3. Are there differences in the effectiveness of problem-solving between employees who have a high *n-Ach* level and do group work patterns with employees who have a high *n-Ach* level and perform individual work patterns?
4. Are there differences in the effectiveness of problem-solving between employees who have a low *n-Ach* level and perform group work patterns with employees who have a low *n-Ach* level and do individual work patterns?
5. Is there an interaction effect between Work Patterns on Problem Solving Effectiveness with the *n-Ach* level on Problem Solving Effectiveness?

Theoretical framework and research hypothesis

Theoretical Description.

1. Theoretical Models of Work Behavior in Organizations

The topics discussed in this study are included in the theoretical scope of work behavior in organizations (organizational behavior). Based on theoretical models of work behavior in organizations, it can be explained that the position of variables that affect the work behavior of individuals and groups in organizations are (Kondalkar, 2020; Ludwig, 2015):

- a. Individual work behavior in organizations is influenced by environmental and organizational variables (job design, work setting, etc.), and individual variables (personality, motivation, etc.).
- b. Environmental and organizational variables are factors designed by the organization (they are "*given*"). In the context of this research, these variables are used as "*independent variables*".
- c. Individual work behavior (problem-solving, productivity, job satisfaction, etc.) is a "*dependent variable*" that is influenced by environmental and organizational variables (as "*independent variables*"), and individual variables that function as "*intermediate variables*".
- d. The variables "*intermediate*" or "*intervening*" are variables that can affect the relationship between "*independent variable*" and "*dependent*"

variable". In this case, the influence of the "independent variable" on the "dependent variable" will be strengthened or weakened by the "intervening variable".

Based on the description above, the position of research variables is formulated in a theoretical model, namely that the behavior or effectiveness of problem-solving (as "dependent variable") is influenced by individual work patterns (as "independent variables") and individual *n-Ach* level. (as "intervening or intermediate variable").

2. *Problem Solving.*

In general, the problem faced by employees at work is the occurrence of gaps between goals or objectives the company wants to achieve and the actual performance level of employees. If a problem is not resolved or completed, it will create difficulties or lose opportunities for the organization. Problem-solving and decision making is a continuous process and can be divided into 2 stages (D'zurilla & Goldfried, 1971; Marinova et al., 2018; Snyder & Snyder, 2008). *First*, the process of identifying and formulating the problem at hand, setting the goals to be achieved, and looking for alternative actions to solve the problem. This stage is called the problem-solving process. *Second*, the process of evaluating alternatives for action and determining the best alternative to solve the problem. This stage is called the decision-making process. In this research, the stages are not separated and become a process called problem-solving.

Based on the opinions about the definition of the problem, the stages of problem-solving, and the effectiveness of problem-solving, the following conclusions are drawn:

- a. *The problem* is a gap or difference between the current state and the desired state. The problem that arises in work behavior is that there is a gap between employee performance and the goals to be achieved by the organization. Problems will create difficulties and missed opportunities if they are not resolved or completed.
- b. *Problem solving* (and decision making) is an attempt to eliminate or reduce the gap between employee performance and organizational goals.
- c. *The effectiveness of problem-solving* is the selection of alternative solutions to problems that have the possibility of producing the most optimal level of achieving the goals among alternatives that exist in certain situations.
- d. *Problem Solving Stages* is a series of problem-solving behaviors that are designed systematically, to direct individual thoughts coherently and focus on the subject matter, or in other words, to prevent the possibility of biased thinking and "jump to the conclusion". The stages of problem-solving based on the *Rational Model* are briefly described below.

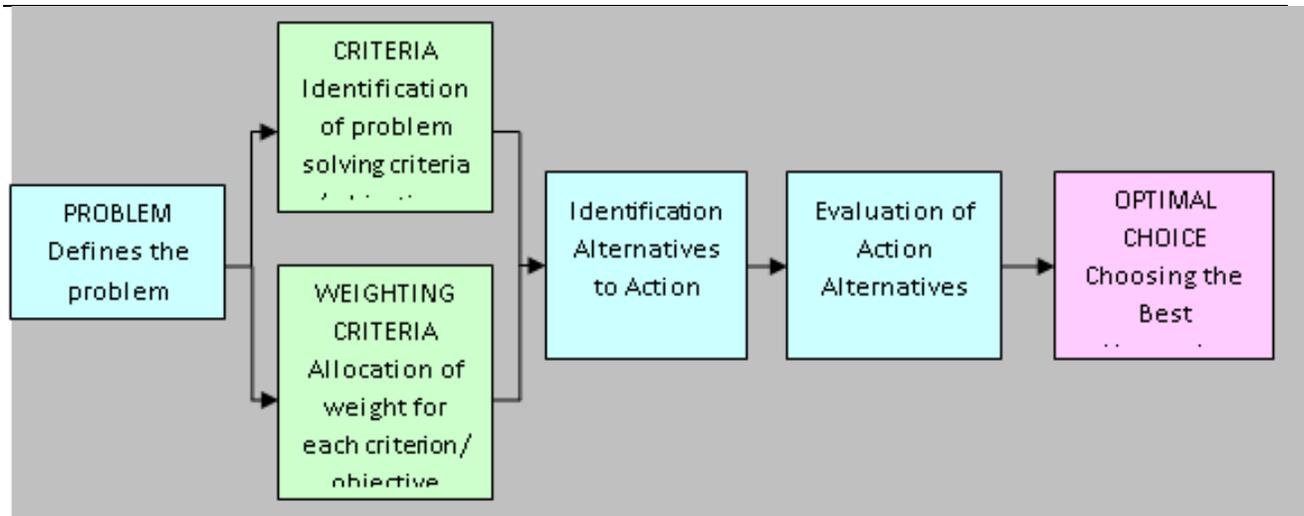


Figure 1. Stage of Problem Solving Based on the Rational Model

3. Classification of Problem Types

Within the organization, there are levels of problems, namely strategic problems, tactical problems, and operational problems. Operational problems have the highest frequency, are short-term (day to day), and have a direct impact on the achievement of organizational goals (Aydın, 2018; Ross, 2017; Schorsch et al., 2017). The most frequent and frequent problems are labor. This problem is faced by employees at the operational level. The classification of labor problems based on the "Input-Process-Output" system approach is as follows:

a. Problems that are included in the *input factors* include:

- 1). *Knowledge* problems, which include problems of knowledge or information about job duties and responsibilities, as well as work systems, methods, and procedures, which employees must have or understand.
- 2). *Skills* problems, which include matters of technical skills and expertise, which are owned and controlled by employees.
- 3). *Personality* problems, which include problems of personal characteristics (interests, talents, temperament, etc.) in employees.
- 4). *Attitude* problems, which include problems with attitudes towards company regulations, attitudes towards superiors, and colleagues.

b. Problems included in *process factors* include:

- 1). *Communication* problems, which include the delivery (and reception) of information, messages, or reports to (or from) superiors and colleagues.
- 2). *Motivation* problems (morale), which include issues of fighting power, work passion, or persistence (tenacity) of employees at work.
- 3). *Leadership* problems, which include problems about organizing, supervising, or directing employees in a workgroup or co-workers.
- 4). *Discipline* issues, which include issues of compliance with company regulations, work procedures, and work time schedules.

c. Problems that include *output factors* include:

- 1). *Service* problems, which include issues of customer service friendliness, reception, or handling of customer complaints.
- 2). *Attendance* problems, which include issues of tardiness and absences due to illness, permission, or no reason.

3). *Turn-Over* problems, which include issues for employees leaving and new employees (entering).

4). *Productivity* problems, which include problems of work results (production volume), cost and material efficiency, or sales results.

Simon expressed the opinion that the achievement of organizational goals lies in the performance of operational employees (operative level) in solving the problems faced. There are so many problems faced by operational employees, so organizational management is required to design and establish work patterns that can encourage employees to carry out problem solving and effective decision-making.

4. *Patterns of Work in the Company.*

The Indonesian nation has a working culture known as *Gotong Royong* (cooperation and mutual assistance) and *Musyawarah* (discussion and consultation between group members) to reach a *consensus* (agreement between group members). This culture is found in all ethnic groups in Indonesia. In Java, the term *Rembug Deso* is known, in Tanah Minang with the *Rapat Adat*, or in Bali, the tradition of meeting villagers in *Banjar* (Village Hall) is known. Based on this, it can be assumed that Indonesian employees tend to adhere to a culture or pattern of working in groups.

Geert Hofstede argues about work patterns that are influenced by the culture of society, which is formulated in the concept of "*Individualism-Collectivism*", namely that individuals in a certain society tend to emphasize certain work patterns. "*Individualism*" is when individuals tend to be more concerned with working individually (individually) than working in groups (collective or group). "*Collectivism*" is when individuals tend to be more concerned with working in groups rather than working individually. "*Individualism-Collectivism*" is a composition of tendencies within an individual. Based on this description, it is concluded that the work pattern can be divided into 2 categories, namely *Group Work Patterns and Individual Work Patterns* (Neff, 2017).

The definition of group work patterns is formulated as a work pattern for several individuals in a workgroup that has elements of joint performance, positive synergy, giving feedback, and complementary to group members. Meanwhile, *Individual Work Patterns* are the tendencies or ways of working individually, based on the abilities possessed by individuals, and resulting in individual performance (Ludwig, 2015).

5. *Rational Model Problem Solving and Working Patterns*

Today, the Rational Model is the model most widely used in organizational practices, both in organizations that prioritize group work patterns or organizations that prioritize individual work patterns. In group work patterns can result in increased performance because the process of problem-solving behavior contains elements of joint performance, synergies are formed, feedback occurs and complementarity occurs between group members. Whereas in individual work patterns, the level of performance or effectiveness of problem-solving varies widely, because it is influenced by

individual differences, or the tendency of individuals to meet their individual needs. Gibson et al. suggest a formulation that individual decision-making methods have the lowest probability of producing quality decisions. Meanwhile, the consensus decision-making method (group decision) has the highest probability of producing quality decisions.

6. *Need for Achievement (n-Ach)*

In this study, the term "*Need for Achievement*" was not translated into Indonesian, with the consideration that the term "*Need for Achievement*" which is abbreviated as *n-Ach* is quoted from the original concept and is a term used in all books, journals, and writing about *n-Ach*. Besides, it is also intended to facilitate the search for information sources and reference-check about *n-Ach*.

The *n-Ach* concept proposed by McClelland(1987) is a development derived from the "*Need*" concept proposed by Murray(1955). Murray argues about "*Need*" and "*Need for Achievement*" as defined below:

A *need* is a construct (a convenient fiction or hypothetical concept) which stands for a force.....in the brain region, a force which organizes perception, appreciation, intellection, conation, and action in such way as to transform in a certain direction an existing, unsatisfying situation. A need is sometimes provoked directly by internal processes of a certain kind.....but, more frequently (when in a state of readiness) by the occurrence of one of a few commonly effective press (environmental forces). *Need for Achievement*: To accomplish something difficult. To master, manipulate, or organize physical objects, human beings, or ideas. To do this as rapidly and as independently as possible. To overcome obstacles and attain a high standard. To excel in oneself. To rival and surpass others. To increase self-regard by the successful exercise of talent.

Based on the above theory, McClelland(1995) conducted various intensive researches and specifically developed the concept of "*Need for Achievement*" (*n-Ach*) based on the elements of "*need*" as described below.

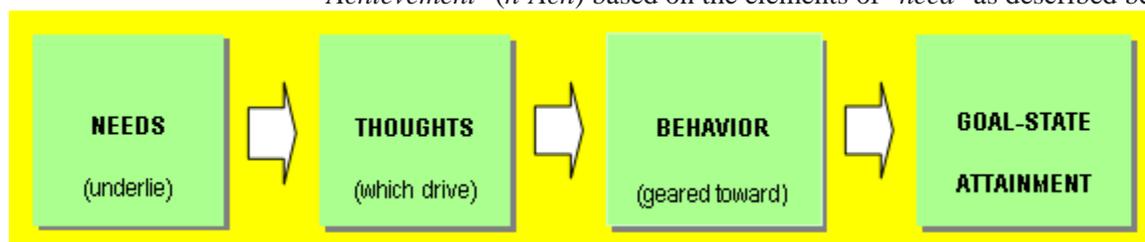


Figure 2. Series of Elements in the Concept of "Need"

Source: McClelland., 1995.

Individuals who have a high level of *n-Ach* (need underlie), that is, have a strong drive to achieve, then their thoughts will be filled with matters of achievement. Furthermore, his thoughts will move (geared toward) the individual to perform behaviors (behaviors) that fulfill or satisfy the *n-Ach* in him (satisfy the need). Individuals with high *n-Ach* level, their thoughts contain things about:

- a. Compete with, or outperform, others who are judged to be performing well
- b. Achieve the self-defined "*standard of excellence*" (SE).
- c. Creating something new, unique, or innovative
- d. Long term plans or career advancements.

The characteristics of thoughts mentioned above, move (geared toward) behaviors that have certain characteristics, namely:

- a. Enjoys situations where he has a personal responsibility to find solutions to the problems at hand.
- b. Takes into account the risks of the action to be carried out, and tends to set goals with a "*moderate*" level (not too difficult and not too easy) to achieve, so that he gains confidence and feels challenged to strive for success.
- d. Have a strong desire to know the level of success that has been achieved. This level of success becomes meaningful experiences and becomes a means of satisfying their needs, which in turn will influence their thoughts and behavior, and so move in a dynamic cycle.

Individuals with a low *n-Ach* level tend to choose goals with a high level of possibility (probability) of achievement (easy to achieve), tend to avoid risks (risks-avoidance), and look for "*external incentives*" (money, reputation, etc.) or other more dominant "*needs*" (for example, "*need for affiliation*").

The systematics of the characteristics of the thoughts and behavior of individuals with high *n-Ach* levels is as shown below.

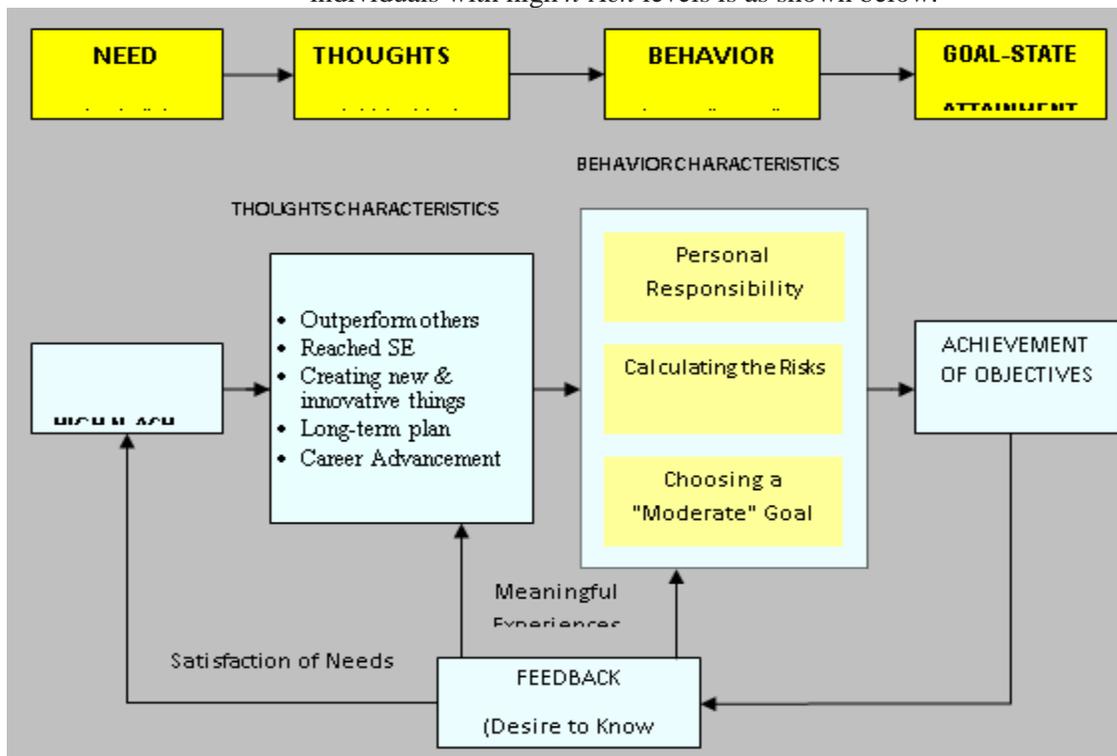


Figure 3. Characteristics of Individual Thought and Behavior "High N-Ach"

Relevant Research Results

Research by Hofstede(1985) dan Hofstede(2017) provides an overview of the tendency of working patterns of various nations in the world based on the "*Individualism-Collectivism Index*". The index is a ratio between the tendency to work individually (individualism) and the tendency to work in groups (collectivism). The higher the "Individualism Index" means the lower the "*Collectivism Index*", or vice versa, as illustrated in the following table.

Table 1. "Individualism-Collectivism Index" in Several Nation

No.	Nation	<i>Individualism-Collectivism Index</i>	Information
1	Indonesia	14	The tendency to work individually is very low (14), and the tendency to work in groups is very high (86)
2	Malaysia	26	Low tendency to work individually (26) and a high tendency to work in groups (74)
3	Japan	46	The tendency to work individually is lower (46) than the tendency to work in groups (54)
4	France	71	High tendency to work individually (71) and low tendency to work in groups (29)
5	USA	91	The tendency to work individually is very high (91) and the tendency to work in groups is very low (9)

According to Robbins & Judge(2019), Kondalkar(2020), Ludwig,(2015), and Vasu et al.(2017) that when compared in terms of the effectiveness of problem-solving in *groups* and *individually*, it can be explained as follows:

1. Group problem solving is more effective when the criteria for assessing accuracy, creativity, and acceptance of the decision are used.
2. Individual problem solving is more effective if the criteria for assessing speed (speed), time consumption, and cost efficiency are used, as well as for decision-making that requires specialization of ability, a special responsibility, contains confidentiality, and a level of high urgency.

Gibson et al.(1991) summarize the various results of research on problem-solving and decision making on group work patterns and individual work patterns, and it is concluded that:

1. In terms of formulating goals, groups are superior to individuals.
2. In terms of looking for alternatives, groups are superior to individuals.
3. In terms of alternative evaluation, groups are superior to individuals.
4. In terms of choosing alternatives, groups are more willing to choose alternatives that contain risks compared to individuals.
5. In terms of implementing decisions, it is easier to assign responsibility to individuals than to groups.

Research on *n-Ach* about problem-solving behavior in organizations illustrates that:

1. Individuals with high *n-Ach* levels have high effort and performance in dealing with jobs that require problem-solving and individual/personal responsibility.

1. Individuals with high *n-Ach* levels always take into account the risks that will be faced, to ensure that an alternative solution to the problem chosen will bring success.
2. Individuals with high *n-Ach* levels tend to set goals or targets that have a moderate level of difficulty, namely goals that are quite challenging to achieve and have a probability level of around 50%. They do not like to achieve goals that are too easy, because they do not pose a challenge, and do not like goals that are too high because they are difficult to achieve and become dependent on the element of fate.

The research results above strengthen the theoretical description of influence the factors of Work Pattern and *n-Ach* on Problem Solving Effectiveness.

Framework of Thinking

Based on theoretical descriptions and relevant research results, a framework for thinking in this study is formulated, as follows:

1. Differences in the Effectiveness of Problem Solving between employees who do Group Work Patterns and employees who do Individual Work Patterns

Problem-Solving through Group Work Patterns has advantages compared to Individual Work Patterns, namely in terms of the problem-solving process (goal formulation, alternative identification, and alternative evaluation), and in terms of the quality of alternative problem solving and decisions chosen (accuracy, creativity, and acceptance the results of decisions).

2. Differences in Problem Solving Effectiveness between Employees with high *n-Ach* levels and employees with low *n-Ach* levels

Employees who have high *n-Ach* levels have a strong urge to work hard and achieve achievements and have the characteristics of *thoughts* and *behavior* that are important assets for effective problem-solving. It can be assumed that employees with high *n-Ach* levels have higher problem-solving effectiveness than employees with low *n-Ach* levels.

3. Differences in Problem Solving Effectiveness between employees who have a high *n-Ach* level and do Individual Work Patterns and employees who have high *n-Ach* levels and do Group Work Patterns

Individuals with high *n-Ach* level, who perform Individual Work Patterns, will be more motivated to realize risk-taking behaviors, set goals that are "moderate", and will work hard to achieve achievement goals, so that these individuals have a probability problem solving is greater, than if they do Group Work Patterns that are not following the characteristics of their thoughts and behavior. In this case, the Group Work Pattern demands more cooperation (not competition), as well as setting goals based on mutual agreement (not based on SE that is set alone or individually).Based on the description above, it can be assumed that employees with a high *n-Ach* level

who perform Individual Work Patterns have a higher problem-solving effectiveness than employees with high *n-Ach* levels who do Group Work Patterns.

4. Differences in Problem Solving Effectiveness between employees who have a low *n-Ach* level and perform Group Work Patterns with employees who have a low *n-Ach* level and perform Individual Work Patterns.

Individuals with low *n-Ach* levels do not have the characteristics of thoughts and behaviors that lead to achievement goals or effective problem-solving. In this case, the Group Work Pattern factor has more influence on the effectiveness of problem-solving than the Individual Work Pattern factor.

5. There is an interaction effect of the Work Pattern factor and *n-Ach* factor on the Effectiveness of Problem Solving.

The effectiveness of problem-solving is influenced by certain working patterns, and the effectiveness of problem-solving is influenced by the *n-Ach* level. In this case, work pattern and *n-Ach* are designed together in this study. Thus, it can be presumed that there is an interaction effect between a certain Work Pattern and *n-Ach* level on the effectiveness of problem-solving.

Research Hypothesis

1. The effectiveness of problem-solving for employees who do Group Work Patterns is higher than for employees who do Individual Work Patterns.

2. The effectiveness of problem-solving for employees who have a high *n-Ach* level will be higher than employees who have a low *n-Ach* level.

3. The effectiveness of problem-solving for employees who have high *n-Ach* levels and perform Individual Work Patterns is higher than employees who have high *n-Ach* levels and perform Group Work Patterns.

4. The effectiveness of problem-solving for employees who have a low *n-Ach* level and perform Group Work Patterns is higher than employees who have a low *n-Ach* level and perform Individual Work Patterns.

5. There is an interaction effect between Work Patterns and *n-Ach* on the Effectiveness of Problem Solving.

Research methodology

Research Purposes

This *descriptive* study aims to determine the work patterns (groups or individuals) of company employees in problem-solving, as well as to determine the *n-Ach* level of company employees. The employees in question are employees at the operational level (operative level). Furthermore, this study *analytically* aims to determine:

1. Which Work Patterns (group or individual) have a higher Problem-Solving Effectiveness?

2. Do employees with a high *n-Ach* level have higher problem-solving effectiveness compared to employees with a low *n-Ach* level?

3. The Effect of Working Patterns and *n-Ach* level on the Effectiveness of Problem Solving by company employees.

Place and Time of Research

This research took place at PT Jakarta Tourisindo, Jakarta, which is a company owned by DKI Jakarta Regional Government, which is engaged in the hotel business. This company has 696 employees and 249 of them are operational level employees. Overall, this research took 6 months, starting from the Research Proposal Compilation stage in July 2006 to the Finalization of Research Results Report in February 2007.

Research Method

This research was conducted directly in the work environment of PT Jakarta Tourisindo, using the Experimental Method, or more specifically "*Field Experiment*" Method (field experiments). This method is the simplest form of experimentation, with the main procedure as in the following figure.

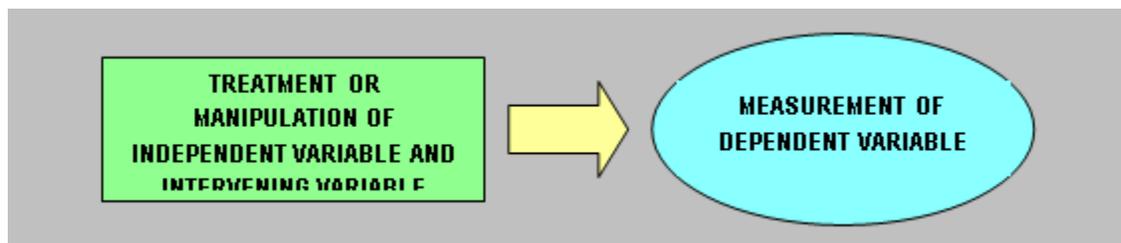


Figure 4. Basic Image of Experimental Procedure (in this study)

In this study, what becomes "*Independent Variable*" is *Work Pattern*, which is classified into *Group Work Patterns* and *Individual Work Patterns*, as "*Intervening Variable*" is *n-Ach* level, and as "*Dependent Variable*" is the *Effectiveness of Problem Solving*. Based on the classification of Work Patterns (Group and Individual Work Patterns) and the high and low levels of *n-Ach* levels of research subjects, a matrix between Work Patterns and *n-Ach* Levels is compiled, as illustrated in the *2 X 2 Matrix* design in the following table.

Table 2. Research Design about the Influence of Work Patterns and *N-Ach* on Problem Solving Effectiveness (PSE)

PATTERN WORK (A) <i>N-ACH</i> (B)	PATTERN WORKGROUP (A1)	PATTERN WORK INDIVIDUAL (A2)
	HIGH <i>N-ACH</i> (B1)	A1B1
LOW <i>N-ACH</i> (B2)	A1B2	A2B2

The research (experiment) was carried out as follows:

1. *The first stage* is to determine the research sample frame and conduct sampling (sampling). Next, sorting the sample (the subjects) into the categories of Work Patterns, namely *Group Work Patterns* and *Individual Work Patterns*.
2. *The second stage* is to measure the *n-Ach* level of research subjects. Measurement of the *n-Ach* level was carried out on all subjects and was carried out individually.
3. *The third stage* is direction and training. At this stage, the subjects in the *Group Work Patterns* category are divided randomly into working groups (4-6 people per group), then given direction and training to build work teams. Subjects in the *Individual Work Patterns* category were given direction and training to build self-confidence and individual work patterns.
4. *The fourth stage* is the process of measuring the effectiveness of problem-solving. The subjects who did *Group Work Pattern* were given assignments (tests) that were done in groups, and the subjects who did *Individual Work Patterns* were given tasks that were done individually.

The experiment was carried out in 3 days. The first day was for the subjects of *Individual Work Patterns*, and the second and third days were for the subjects of *Group Work Patterns*.

Population and Sampling Techniques

The research population is employees at the operational level at PT Jakarta Tourisindo, namely employees who hold positions of Waiter, Waitress, Roomboy, Room Service, Receptionist, Bell-Boy, Operator, Mechanic, Security, and the equivalent, and have high school education or equivalent. Based on this population, the research sample frame was determined, namely 249 operational executing employees. Of these, 60 people were taken to test the instrument, so the sample frame for the study was 189 employees. The research sample was taken as follows:

1. *Random assignments* were made to employees into 2 categories, namely employees who would do *Group Work Patterns* and employees who would do *Individual Work Patterns*. The research sample that can be reached in each category is 67 employees.
2. The 67 employees who carried out *Group Work Pattern*, were again randomly appointed to form groups of 4-6 employees per group. Based on the procedure above, a sample of 134 employees will be obtained, namely, 67 employees who do *Group Work Patterns* and 67 employees who do *Individual Work Patterns*.

Data Collection Technique

1. Determination of Work Patterns

This working pattern is categorized into:

- a. *Group work patterns*, which are conceptually defined as groups or work teams, where group members collaborate, complement, and build synergy among group members, and produce joint performance.
- b. *Individual Work Patterns*, which are conceptually defined as individual working patterns, where individuals work with personal abilities and efforts (independent of others) and produce individual performance.

Operationally, Group Work Patterns, and Individual Work Patterns are employee work patterns that are formed through random assignments in the experimental process. In addition to sorting out employees into categories of work patterns, these employees are also provided with:

- a. Briefing and training to collaborate, complement each other, and build synergy to produce joint performance, for employees who carry out Group Work Patterns.
- b. Briefing and training to foster confidence in his abilities and efforts in producing individual performance.

2. *Variable of Measurement Need for Achievement (n-Ach)*

Conceptually, *n-Ach* is defined as a force (a force) within an individual that drives and is geared toward individual thoughts and behavior to achieve achievement goals. Operationally, the subjects' *n-Ach* level is stated based on the score obtained by the subject in working on an *Edwards Personal Preference Schedule* (EPPS), created by Edwards(1959). EPPS is a "self-report inventory" that measures the relative strength of 15 "needs" in an individual, one of which is "need for achievement". EPPS is prepared based on the concept of "psychogenic needs" put forward by Murray(1955), where the 15 "needs" are paired with each other using the "pair comparison" method. EPPS consists of 225 questions, in which each question is provided with 2 answer choices which must be chosen one by the subject. The lowest score for subjects on one need was 0, and the highest score for subjects on one need was 29.

"Consistency" (abbreviated as *Cons*) is the reliability of the subject's choice of answers to their preferred "need". *Cons 9* is the minimum value. If the subject gets a *Cons* score below 9 in the EPPS, then the subject cannot be used in the study or is *dropped*. The considerations for using EPPS in this study are:

- a. EPPS is designed to measure the strength of "need", based on the "need" concept from H.A. Murray, and developed by D.C. McClelland. This concept becomes the theoretical basis of this research. The use of EPPS is intended to maintain consistency between theory and implementation.
- b. EPPS is designed to use the "forced-choice method" to reduce the possibility of subject answers that are influenced by the "social desirability" factor (answers that are influenced by the will of society or social norms, and not answers that reflect "need" from within individual).
- c. EPPS is a measuring tool for psychological aspects that is easy to work with and has easy scoring and consistency checks on the answers of subjects so that EPPS is suitable to be given to employees at the operational level in large numbers.
- d. EPPS has been widely used for studies on *n-Ach* in various countries (including in Indonesia) and is reported to have evidence of high consistency.

Before being used in this study, EPPS was tested to determine its level of reliability. The trial was conducted on 50 operational employees of PT Jakarta Tourisindo on October 5-14, 2006. The results of the EPPS instrument trial showed that most (88%) of the subjects gave consistent

answers (had a Cons value > 9), then the EPPS can be viewed as a reliable measuring instrument for "needs".

3. Measurement of Problem Solving Effectiveness variables

Conceptually, problem-solving effectiveness is defined as the level of suitability between individually selected problem solving and organizational goals. Operationally, Problem Solving Effectiveness is the subject value of measurement results using the *Problem Solving Effectiveness Test* (Appendix II.B: *Problem Solving Effectiveness Test Question Book*). EPM Test Presentation Procedure is classified into Presentation Procedure for Individual Work Patterns (180 minutes) and Presentation Procedures for Group Work Patterns (180 minutes). Assessment of the subject's answers was carried out using *EPM Test Answers Assessment Guidelines* (Attachments II.C and II.D) and was carried out by 2 assessors. The subject score is the mean score of 2 raters (D'zurilla & Goldfried, 1971; Marinova et al., 2018; Snyder & Snyder, 2008).

Based on the *Input-Process-Output System* approach in employment, a grid for the Problem-Solving Effectiveness Test instrument is designed, as listed in the following table.

Table 3. EPM Test Grid Based on the Input-Process-Output System (36 Questions)

Input Factor	ItemsNo.	ItemsQty.	Process Factor	Items No.	Items Qty.	Output Factor	Items No.	Items Qty.
Knowledge	1, 10, 19, 28	4	Communication	4, 13, 22, 31	4	Service	7, 16, 25, 34	4
Skill	2, 11, 29, 29	4	Spirit	5, 14, 23, 32	4	Attendance	8, 17, 26, 35	3
Behavior	3, 12, 21, 30	4	Discipline	6, 15, 24, 33	4	Turn-Over	9, 18, 27, 36	4
Total		12	Total		12	Total		12

Before being used in the study, EPM Test instrument calibration process was carried out, which aims to measure the level of reliability (agreement) between assessors, the validity of EPM test items, and the reliability of the EPM test, each of which is calculated separately for individual work patterns and patterns. Group Work. The results of the calibration are:

c.1. *EPM Test Calibration on Group Work Patterns.* The inter-rater reliability coefficient calculated using the *Pearson's Product Moment of Correlation* formula, the result is $r_{\text{count}} = 0.903$. Thus, the reliability of inter-rater's assessment on the EPM test in group work patterns is quite high. Testing the validity of EPM Test items in Group Work Patterns obtained the result that all questions (36 questions) EPM Test that was tried on the subject of Group Work Pattern had $r_{\text{count}} > r_{\text{table}}$, which means that each EPM test item was valid to measure the effectiveness of the solution. Problems in Group Work Patterns. Reliability testing of EPM Test on

Group Work Patterns, which was carried out using *Cronbach Alpha* formula, obtained the results of the calculation of reliability coefficient (r_{-11}) = 0.895. This shows that the EPM test is a reliable instrument to measure the effectiveness of problem-solving of the subjects who do the Group Work Pattern.

c.2. *EPM Test Calibration for Individual Work Patterns.* EPM Test Calibration for Individual Work Patterns is carried out using the same procedure and formula. Reliability Testing Inter-Appraisal Assessment of the EPM Test carried out by 20 subjects, who performed Individual Work Patterns, obtained the result of coefficient $r_{-count} = 0.996$. This shows that the level of understanding of EPM Test Assessment Guidelines and understanding between assessors in assessing the answers of the subjects is quite high. Testing the validity of the items on EPM Test items with Individual Work Patterns illustrates that 34 of the 36 EPM Test items have a significant validity coefficient at $\alpha = 0.05$ (5% significance level). Reliability Testing EPM test is intended to test whether the EPM test is a reliable measurement instrument. In this case, a reliability test was carried out on valid EPM Test items (34 questions). The reliability coefficient calculated using the Cronbach Alpha formula is 0.984. It means that the EPM test is an instrument that has high reliability to measure the effectiveness of problem-solving of subjects in Individual Work Patterns.

Based on the results of calibration, an EPM test design consisting of 34 (valid) questions was prepared with a new grid as in the following table.

Tabel 4. EPM Test Grid Table Based on the Input-Process-Output Approach
(Design 34 Questions)

Input Factor	Items No.	Items Qty.	Process Factor	Items No.	Items Qty.	Output Factor	Items No.	Items Qty.
Knowledge	9, 18, 27	3	Communication	3, 12, 21, 30	4	Service	6, 15, 24, 33	4
Skill	1, 10, 19, 28	4	Spirit	4, 13, 22, 31	4	Attendance	7, 16, 24	3
Behavior	2, 11, 20, 29	4	Discipline	5, 15, 23, 32	4	Turn-Over	8, 17, 26, 34	4
Total		11	Total		12	Total		11

Data Analysis Technique

The analysis of research data was carried out in stages, starting from the data description stage, the fulfillment of statistical analysis requirements, and the statistical hypothesis testing analysis stage. The data description stage of research results is a description of the data on the number and classification of the research sample, the measurement results of research variables, the range of subject values (highest to lowest), the average value, and others. This description is needed so that readers can easily understand the results of this research report, and to equalize their perceptions or points of view on the research data.

Fulfillment of the requirements for statistical analysis is done by testing whether EPM measurement data have adequate reliability, and testing whether research data meets data normality and variance homogeneity requirements. Inter-rater reliability testing was carried out using *Pearson's Product-Moment of Correlation* formula. Data Normality Testing was performed using the *Chi-Square* calculation procedure. Homogeneity testing to test variance between samples was carried out using the *Bartlett Test* technique (Malhotra et al., 2017; McDaniel Jr & Gates, 2018; Purwanto & Sulistyasturi, 2017; Siyoto & Sodik, 2015). After the requirements for reliability, normality and homogeneity are met, then statistical hypothesis testing is carried out using the *Two-Ways Analysis of Variance* technique, which is followed by a comparative analysis of the average value (Mean), namely by using the *t-test* formula.

Statistical Hypothesis

1. Statistical Hypothesis 1 (H_0) and Alternative Hypothesis 1 (H_1) are:
 $H_0: \mu_1 = \mu_2$ dan
 $H_1: \mu_1 \neq \mu_2$
2. Statistical Hypothesis 2 (H_0) and Alternative Hypothesis 2 (H_1) are:
 $H_0: \sigma_1^2 = \sigma_2^2$ dan
 $H_1: \sigma_1^2 \neq \sigma_2^2$
3. Statistical Hypothesis 3 (H_0) and Alternative Hypothesis 3 (H_1) are:
 $H_0: \mu_1 = \mu_2$ dan
 $H_1: \mu_1 > \mu_2$
4. Statistical Hypothesis 4 (H_0) and Alternative Hypothesis 4 (H_1) are:
 $H_0: \mu_1 = \mu_2$ dan
 $H_1: \mu_1 < \mu_2$
5. Statistical Hypothesis 5 (H_0) and Alternative Hypothesis (H_1) are:
 $H_0: \int A \cdot X \cdot B = 0$ dan $H_1: \int A \cdot X \cdot B > 0$

Research results and discussion

Description of Research Data

1. Subject Work Patterns

Based on this research design, through *random appointment* by the leadership of PT Jakarta Tourisindo, the research sample (134 employees) was separated into 2 categories, namely the Group Work Patterns category (67 subjects) and Individual Work Patterns category (67 subjects). Furthermore, the subjects in the Group Work Pattern category were also randomly divided into 15 groups consisting of 4-5 subjects per group.

2. N-Ach Level (need for Achievement).

The n-Ach level of 134 research subjects was measured individually using the EPPS instrument. The n-Ach value of the subjects moved from a value of 10 (lowest) to a value of 26 (highest). 6 subjects were canceled because they did not meet consistency requirements in the EPPS. Furthermore, an experimental process in this study used a research sample of 128 employees

(64 subjects in group work patterns and 64 subjects in individual work patterns).

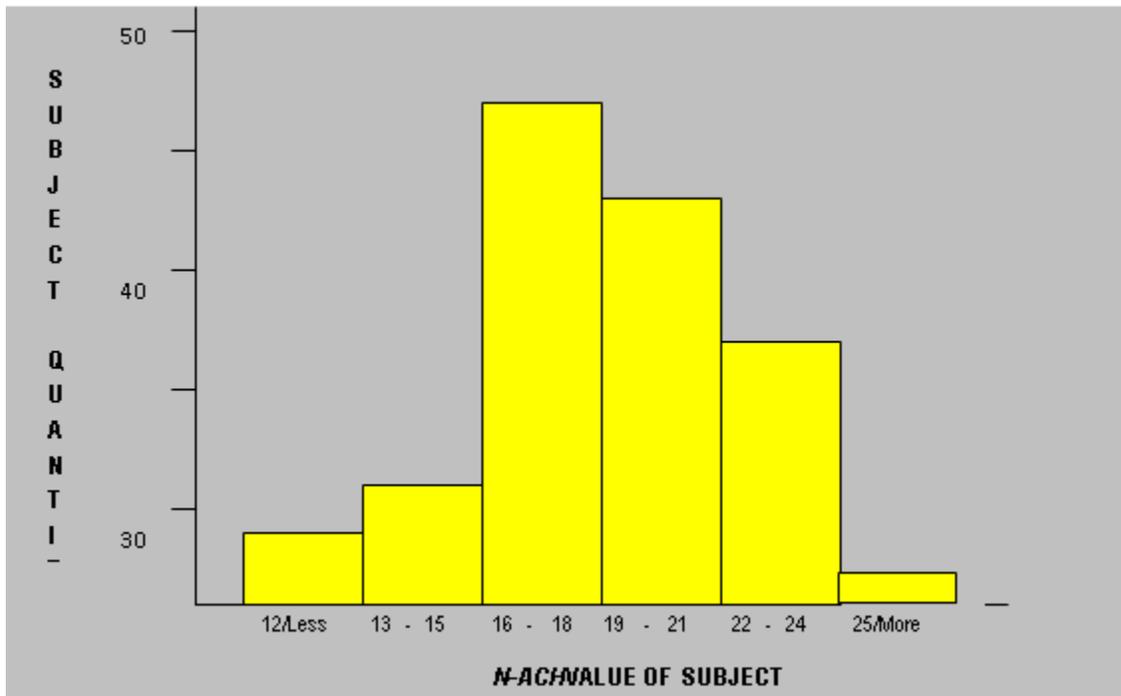


Figure 5. N-Ach Value Distribution of Research Subjects

3. Problem Solving Effectiveness

The level of problem-solving effectiveness of the subjects was measured using the EPM test instrument. The distribution of EPM test values of the study subjects is illustrated in the following histogram.

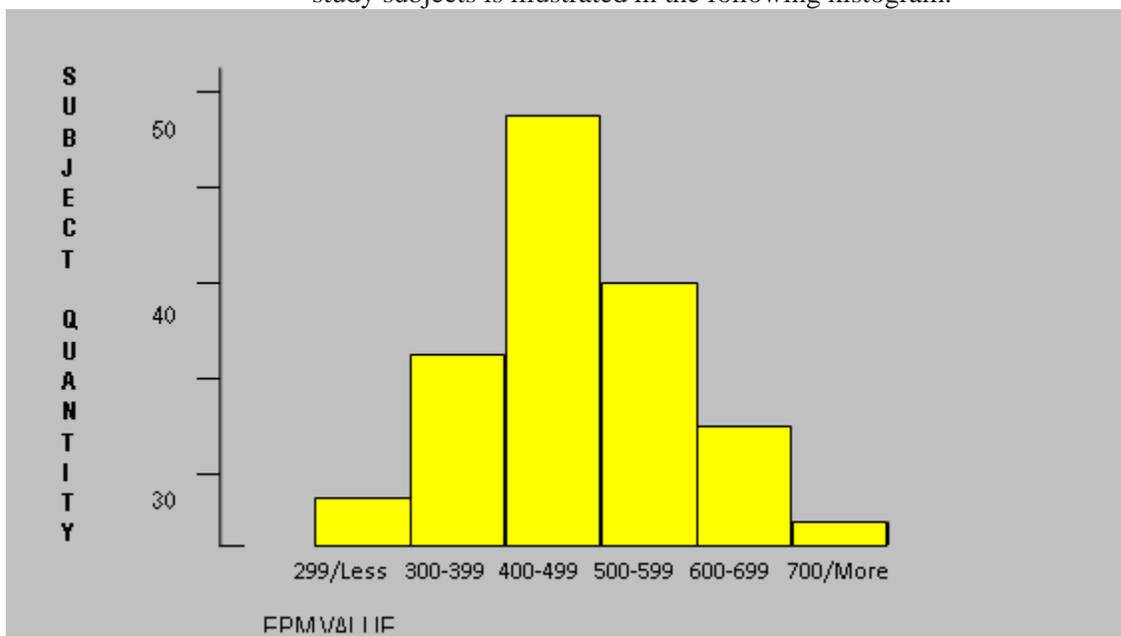


Figure 6. EPM Value Distribution of Research Subjects

Results of Testing Requirements Analysis

The inter-rater reliability coefficient calculated using *Pearson's Product-Moment of Correlation* formula obtained the following calculation results:

1. Reliability Coefficient Inter-Appraisal Assessment of the results of subjects EPM Test assessment with Group Work Patterns is $r_{\text{count}} = 0.975$. This shows that the reliability of this assessment is high.
2. Reliability Coefficient of Inter-Appraisal Assessment of the results of subjects EPM Test assessment with Individual Work Patterns is $r_{\text{count}} = 0.973$. This shows that the reliability of this assessment is high.

Testing the next analysis requirements is to test the normality of data, namely whether data from EPM measurement results follow the distribution of values on the normal curve so that it meets requirements to be analyzed using parametric statistical techniques. The results of the data normality test are as follows:

1. *Results of Normality Testing of n-Ach Measurement Results Data.* Based on calculations using the *Chi-Square* procedure, the *Chi-Square count* is 10.339. While *Chi-Square table* is 11.070, which is at $dk = 128$ and $\alpha = 0.05$. *Chi-Square count < Chi Square table* means that there is no significant difference between research data and the standard normal curve. Thus, data from the measurement of *n-Ach* is data that follows the distribution of values on the normal curve.
2. *Results of Data Normality Testing Results of Problem Solving Effectiveness Measurement.* Based on calculations using the *Chi-Square* procedure, the calculated *Chi-Square value* is 10,185, while *Chi-Square Table* is 11,070 at $dk 5$ and $\alpha = 0.05$. It means that there is no significant difference between the curve from research data and a standard normal curve. Thus, it can be concluded that the values of EPM measurement results follow the distribution of values on the standard normal curve, and data from EPM measurement results in this study qualify for analysis using parametric statistical techniques.

Homogeneity testing in this study was carried out in 2 ways, namely a review of research sample characteristics, and using statistical analysis techniques. Based on the characteristics of the sample, namely from the population of employees who work in a specific business field, namely the hotel business, working at the same level of position, namely operational executors, and with an equivalent level of education, it can be concluded that the sample of this study comes from a homogeneous population.

Homogeneity testing using statistical analysis techniques is carried out using an analytical technique called *Bartlett Test*, which calculated the *Chi-Square value and compares it with Chi-Square Table value*. Based on the calculation results, the calculated *Chi Square value* = 0.0145 and *Chi Square Table* value at $dk 1$ and $\alpha = 0.05$ is 3.481. *Chi Square Count < Chi Squared Table*, which means there is no difference in variance between EPM Test values of the subjects of Group Work Patterns and Individual Work Patterns. Thus, it can be concluded that the subjects of Group Work Patterns and Individual Work Patterns come from populations that have the same or homogeneous variances.

Results of Hypothesis Testing and Discussion

Testing of statistical hypotheses is carried out using the 2 Way Variance Analysis technique, which is comparing the variance between columns (Working Patterns), between rows (*n-Ach* level), and column x row interactions (interactions between Work Patterns and *n-Ach* to EPM). The results of the 2 Way Variance Analysis can be briefly seen in the following table.

Tabel 5. Summary of 2 Way Variance Analysis Results

SOURCES OF VARIANCE	JK	dk	MK= JK X dk	F-count = MKi:MKdlm	F-table(TK 95%)
Total	1.098.454,1	71	-	-	
Between Coloums (A1:A2)	84.700,5	1	84.700,5	9,816*	4,00
Between Lines (B1:B2)	337.910,6	1	337.910,6	39,160*	4,00
Interaction (A X B)	89.077,0	1	89.077,0	10,323*	4,00
In	586.766,0	68	8.628,9	-	

Information: * $F_{\text{count}} > F_{\text{table}}$ Significantly on dk 1 and $\alpha = 0.05$

The results of the analysis above indicate that there is a *significant difference in variance* between column A1 (Group Work Pattern) and column A2 (Group Work Pattern) and column A2 (Individual Work Pattern), between row B1 (high *n-Ach* level) and row B2. (Low *n-Ach* level), and there is a significant interaction effect of AXB (Work Pattern and *n-Ach* level) on Problem Solving Effectiveness. Furthermore, to test Statistical Hypotheses 3 and 4, the testing difference between the *mean value* of EPM test between sections A1B1 and A2B1, and between sections A1B2 and A2B2 (see Research Design, 2X2 Matrix). The result of the calculation is that the mean value of EPM section A1B1 test (subjects with a high *n-Ach* level and performing a group work pattern) is significantly *higher* at $\alpha = 0.05$ compared to the mean value of the A2B1 section (subjects with a high *n-Ach* level) and doing Individual Work Patterns). The mean value of the A1B2 section (subjects with a low *n-Ach* level and doing a group work pattern) *did not have a significant difference* from the mean value of the A2B2 section (subjects with a low *n-Ach* level and doing Individual Work Patterns).

Based on the results of 2-way variance analysis (F-count) and the results of the different analysis in the average value (t-count) between sections, as stated in the calculation results in the *2-Way Variance Analysis Results Summary Table*, it can be concluded that the results of testing statistical hypotheses, namely as follows:

1. In Statistical Hypothesis 1, H_0 is rejected, thus, the findings in this study are that the effectiveness of problem-solving for employees who do group work patterns is *higher* than employees who do individual work patterns.
2. In Statistical Hypothesis 2, H_0 is rejected, thus, the findings in this study are that the problem-solving effectiveness of employees who have a high *n-Ach* level is *higher than* employees who have a low *n-Ach* level.

3. In Statistical Hypothesis 3, H_0 is rejected, in this case, the findings in this study are different from the hypothesis of this study. The findings in this study are that the problem-solving effectiveness of employees who have a high *n-Ach* level and perform Group Work Patterns is *higher* than employees who have high *n-Ach* and do Individual Work Patterns.

4. In Statistical Hypothesis 4, H_0 is accepted, in this case, the findings in this study are that the effectiveness of problem-solving for employees who have a low *n-Ach* level and perform Group Work Patterns is *not different* from employees who have a low *n-Ach* level and perform a pattern. Individual Work.

5. In Statistical Hypothesis 5, H_0 is rejected, thus, the results of research or findings in this study can be concluded that there is a significant interaction effect of the Work Pattern factor and *n-Ach* factor on the Effectiveness of Problem Solving.

Based on the results of the hypothesis test above, there are several interesting findings to be discussed further. These findings are described in the following discussion.

In the theoretical description and hypothesis of this study, it is formulated that individuals who have a high *n-Ach* level enjoy jobs that challenge their abilities, so it is assumed that individuals with high *n-Ach* levels and doing Individual Work Patterns have a higher problem-solving effectiveness than individuals with high *n-Ach* level and perform Group Work Patterns. Findings in this study are that individuals with high *n-Ach* levels and performing Group Work Patterns have a *higher* problem-solving effectiveness than individuals with high *n-Ach* levels and who perform Individual Work Patterns. In individuals with low *n-Ach* levels, there is no difference in the effectiveness of problem-solving between doing Group Work Patterns or Individual Work Patterns. In this case, it appears that:

1. Group work patterns provide a stronger influence on the effectiveness of problem-solving than the influence of individual behavior characteristics with high *n-Ach* levels. This is following the results of Geert Hofstede's research that Indonesian people have a very low tendency to work individually (individualism) and have a very high tendency to work in groups (collectivism) (Hofstede, 1985, 2015, 2017).

2. A high *n-Ach* level is a factor that influences the effectiveness of problem-solving. Meanwhile, the low level of *n-Ach* did not affect the effectiveness of problem-solving. It can be seen that individuals with high *n-Ach* levels have higher problem-solving effectiveness than individuals with low *n-Ach* levels. Meanwhile, individuals with low *n-Ach* levels have low problem-solving effectiveness, either by doing Individual Work Patterns or Group Work Patterns.

Another finding in this study is that interaction between *Work Pattern* and *n-Ach Level* has a strong influence on the effectiveness of problem-solving. In this case, the factors of *group work patterns and high n-Ach levels* interact with each other and have a strong (significant) influence on the effectiveness of problem-solving.

Research Limitations

This study uses an experimental method, specifically using a field experimental method so that we realize some factors cannot be fully controlled, which may influence the results of this study. However, this research has been carried out through testing the experimental process (the principle of random sampling and standardization of Work Pattern training materials) and conducting research instrument trials (testing the validity and reliability of the instruments). Besides, several technical requirements for analysis purposes have been met (testing the normality of measurement results and the homogeneity of research samples). The population of this study has narrow specifications, namely employees who work at the level of operational executive positions in the hotel business. Thus, the generalizability of the results of this study has limitations on the scope of the population with these specifications. This research uses a quantitative approach, using instruments designed to collect quantitative and written data. This approach has limitations in collecting qualitative data from research subjects. For example, what is the subject's attitude or motivation in doing EPPS and EPM Test which are only research studies? Has a subject who scored 400 on the EPM Test taken the test? In this case, for quantitative analysis (statistics), these qualitative aspects can be ignored or considered constant (the same applies to all subjects).

Conclusion, implication, and suggestion*Conclusion*

Overall, the implementation of an experiment in this study can run according to the design (design) of the study, starting from the determination of sample frame, random sampling (the subjects) to carry out group and individual work patterns, to the process of measuring the research variables. Based on a statistical analysis of research data to test the research hypotheses, of the 5 Statistical Hypotheses, 3 H_0 were rejected and 2 H_0 were accepted, or in other words, 3 research hypotheses were accepted and 2 research hypotheses were rejected. Thus, the findings from the results of this study are summarized as follows:

1. The effectiveness of problem-solving for employees who do Group Work Patterns is *higher than* for employees who do Individual Work Patterns.
2. The effectiveness of problem-solving for employees with high *n-Ach* levels is *higher than* for employees with low *n-Ach* levels.
3. The effectiveness of problem-solving for employees with high *n-Ach* levels and performing Group Work Patterns is *higher than* for employees with high *n-Ach* levels and doing Individual Work Patterns.
4. There is no difference in Problem Solving Effectiveness between employees who have a low *n-Ach* level and perform Group Work Patterns with employees who have a low *n-Ach* level and perform Individual Work Patterns.
5. There is an interaction effect of the Work Pattern factor and *n-Ach* factor on the Effectiveness of Problem Solving.

The results of this study more specifically, it can be concluded that the pattern of group work and the high level of *n-Ach* are factors that affect the effectiveness of problem-solving. In this case, the Group Work Pattern and the high *n-Ach* level interact with each other and have a strong influence on the level of problem-solving effectiveness.

Implication

Based on the aforementioned conclusions, it can be further explored that *Group Work Pattern* which is a form of *Gotong-Royong* and *Musyawah*, or a strong tendency to work collectively (collectivism) according to Geert Hofstede's term, appears or exists in the work-life of Indonesian company employees. *N-Ach* is a need, motive, or drive from within the individual that moves the individual's thoughts and behavior to achieve achievement goals. *N-Ach* can manifest into the behavior of working hard to achieve achievement is when individuals with high *n-Ach* levels are in a social environment that provides opportunities or encouragement to perform attainment of achievement goals behavior. The findings in this study illustrate that individuals (operational employees) with high levels of *n-Ach* show achievement-aimed behavior (i.e. high problem-solving effectiveness) in the Group Work Pattern environment, or in other words, the Group Work Pattern environment encourages individuals. with a high *n-Ach* level doing the behavior that aims at achievement.

1. Implications for Company Performance

The implication of the description above is that to improve the performance of operational executing employees, especially in terms of increasing the effectiveness of problem-solving, efforts are needed to create working patterns in groups and develop human resources, namely increasing the *n-Ach* level of employees. Armed with the skills to do Group Work Patterns and the high level of *n-Ach*, it is hoped that operational staff employees will have the willingness and ability to effectively solve operational problems in their work, so that company leaders have more opportunities to concentrate on facing problems. bigger and more strategic. It is expected that an increase in employee performance (operational) will further improve company performance.

2. Implications for Educational Activities

The essence of the description above is that the Group Work Pattern as a manifestation of the culture of *Gotong Royong* and *Musyawah* is a social system in Indonesian society. The high level of *n-Ach*, namely the urge to work hard for achievement, is an aspect of personality that is contained within the individual Indonesian nation. The development of group work patterns and *n-Ach* level is necessary to increase willingness and ability to solve problems effectively for the younger generation. Besides, it is a real effort to overcome or reduce coercive behaviors, acts of violence, drug abuse, and those that are counter-productive, which are developing in today's society. The pattern of working in groups, the urge to work hard for achievement, and effective problem-solving methods (Rational Model), are important assets for young people to face various life problems so that a good quality of life can be obtained.

3. *Implications for Science*

This research is not aimed at obtaining an invention in science, but rather is a test of a theory to obtain information or knowledge that has practical uses (can be put into practice), especially in the work activities of company employees, as described above. The findings in this study, especially regarding the effect of group work patterns on the effectiveness of problem-solving, are expected to increase insight and belief about the importance of a culture of *Gotong Royong* and *Musyawah* to be formulated into knowledge that can be studied well by the younger generation in schools. This research, using the field experiment method, is estimated to be increasingly carried out (and needed) in the field of education, with the following considerations:

1. Many scientific theories, including educational science, are findings or results from research with experimental methods in general. Efforts to improve the national education system in the future require information, proving theories, or testing findings through experimental research activities.

The use of the field experimental method is a real research activity because the researcher deals directly with the research subject, research environment, and problems in the field, which will provide important inputs for research activities and enrich the researcher's insight.

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