# "THE EFFECT of COGNITIVE DIVERSITY WITHIN TOP MANAGEMENT TEAMs (TMTs) TO INNOVATION, MODERATING EFFECT OF DEBATE"

## (The Case of TMTs of Higher Education Institution in Padang)

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# CHAPTER I

# INTRODUCTION

## 1.1 Background of the Research

Innovation becomes a crucial phenomenon because the changes always exist. Kasali (2005) states that there are no other words in management science or business practice that full of magic and mysterious except the words of Change. It's even assumed as something mortal in the world. The world around organization is changing. These changes can sometimes happen slowly, but also very quickly and dramatically. In order to survive, organizations can not afford to change incrementally because the environment is changing. A situation will then be created of a revolutionary nature. In a short time, organizations will have to change their old habits, activities, norms, and values. These organizations are trying to find a new position where they can again reach stability. According to Kessler (1990), characteristics of an organization which thrives on change include flexibility, adaptability to changing markets, openness to new ideas, innovativeness and creativity, a healthy dose of skepticism about past practices and successes, a relentless seeking of information (about itself, its customers, and the changing environment in which it functions), a shared vision which keeps the organization on course and, most important of all, are cognition that no one person has all the answers, that there is much to be learned and that everyone in the organization must contribute to innovation process. When change faced without innovation the organization will be left behind or dies. The development in technology, globalization, change of global workers demography, and change

of socio politics systems have influence internal process of organizations. Organizations demanded to be innovative in order to survive in a competitive age. The organization's ability to be innovative is getting more crucial in the competition during the economic globalization that brings out the new corporation and individual player in global competition, Xu (2011) state that innovative behavior is a strategic activity by which organizations gain and lose competitive advantage.

Innovation can involve the implementation of new combinations of different resources in a firm (Xu, 2011). As an often indefinable output, innovation can be difficult to accurately measure and even more difficult to reliably produce. What constitutes innovation at one organization may simply be called production at another. Where, in one sense, innovation is new ideas and development, in another innovation may be research or process setup. What is clear though is that despite advancements in standardization, innovation is in many ways a specified, tailored approach to creating or modifying the status quo to produce greater and more positive results.

In the context of organization innovation, the cognitions of top management teams shape the way they use the social structure available to them, while the social structures influence the embedded actors' cognitions and ultimately their strategic actions. A firm's social capital constitutes an important source of its innovation, and the cognitive understanding of a firm's management team or its entrepreneurs of innovation also contribute to this initiative. Cognition has been defined as the knowledge structures or mental templates that actors impose on an information domain to give it form and meaning (Xu, 2011). The

process of innovation is influenced by the cognitive mechanisms through which people acquire, store, transform and use information. Innovative activities arise from the actors' actions; therefore, understanding why and how these persons act as they do becomes essential to understanding the innovation process itself. Since minds propel actions, managerial cognition lies at the center of the strategic management process (Stubbart, 1989).

The innovation process, particularly the exploratory innovation processes, benefits from engagement with a diverse range of partners. This engagement invites the integration of different information, knowledge bases, behaviors and ways of thinking. Formal and informal communication between people with different information, skills and values increases the possibility of novel combinations of knowledge (Xu, 2011).

Complementing the theory of rational choice, cognitive science attempts to explain why or how economic decisions happen in an uncertain and subjective world (Xu, 2011). As thinking drives strategy formation, managerial cognition lies at the core of the strategic management process (Stubbart, 1989). Managers take strategic action intentionally to respond to a changing environment. Managerial cognitive structures shape firm growth strategies because the management team's conceptualization and employment of its firm's resource base influence the direction of expansion.

This research will take higher education institutions as an object, because it that expected to produce qualified graduation in each major in order to solve the issues in society and its workplace rationally. So, the output that produced should be have the competences and capability which needed to solve that issues. The

changes in workplace expecting the output of higher education institutions can faster adapt the environment as needed. Beside of the purpose to be fulfill the demand of quality, it also as an effort for existing of its own institutions. High education institutions (HEIs) which can faster change and offer the suitability between the output that produced with the workplace quality demanded will be have big opportunity to be exist and growth compare with the other slow respond institutions. The innovations need implied by higher education institutions to respond that challenges. Both the technically and program innovation, and administration and services innovation need to be elaborated and implemented (Herri, *et al.,* 2010). Obenchain et al,. (2005) look the innovation in higher education institutions from two approaches, which are frequency of innovation and form of innovation. The form of innovation looks from technical innovation and administrative innovation. Technical innovation could be making a new program or new services, renew the old program become a new one and using the new technology for the existing program. While administrative innovation such create organization structure to maintain human resources.

This research is effort to explain the innovation phenomena from approach and perspective of strategic leadership. Base on the upper echelon theory by Hambrick and Mason (1984), innovation of organization in this research context is innovation that implied by higher education institutions then can explain from strategic leadership perspective that have the big influence in formulation, implementation and strategic decision making of higher education institutions. Hambrick and Mason (1984) said that organization is the reflection of strategic leader of that organization. The strategic leaders have the big influence in

determine the direction and organization performance because of their important role in strategic decision. Then Hambrick and Mason (1984) explain that strategic leadership team have more implication in reflecting the organization and determining the organization performance from the single leadership concept.

Base on that upper echelon theory, so the innovation process in higher education institution can be determined by its top management team. Form and type of innovation that will be done to choose that the decision is determine by top management team. Innovation basically is the changes that have been implemented by the organization, have some systematic step (Jong and Hartog, 2003). Innovation start from the opportunity or the issues that should be solve, then continuous by explain the idea, implemented, and finally that innovation become an application for organization (Jong and Hartog, 2003).

The alternatives of innovation decision come when it funneling the idea (Jong and Hartog, 2003). By the composition of top management team, it so possible if each team members have the different idea each other's. The different of idea come because of its cognitive basic, experience and different of basic knowledge (Miller et al.,1998). This diversity should be integrated become an idea for organization to give the advantages for organization.

Look at the upper echelon theory, innovation determined by characteristic of each top management team members (Hambrick and Mason, 1984). From top management team perspective character of each individual aggregated to the form of team characteristic. That characteristic, like composition, diversity, or homogenous between team members can determine the output of organization (Hambrick and Mason, 1984).

The different of cognitive basic in each team members will bring them to the different purpose and basic belief for the relationship of cause-effect (Miller et al., 1998). One of contextual condition that can push the team to be integrated is by the desire for information sharing, responds, and analyzes that information constructively in form of debate between team members (Simon et al, 1999). The high condition of debate possible the team to integration the knowledge between them much better. Simon et al (1999) have showed that debate can push the different of characteristic between the members to do the decision making process well. Because of that this research will use variable debate as moderate variable between the characteristics of diversity in top management team.

The development of research concerning strategic leadership team or top management team still in the explorative step of team characteristic in influencing the organization performance, especially characteristic for top management team diversity. It still not consistence yet from some research of this topic about relationship between diversity of some characteristic of top management team in determine organization performance (Johan, 2012). Some researchers found that as high as the diversity of top management team can increase the organization performance, because rich of knowledge from each different team members, that make team can take the comprehensive decision making process and produce the suitable strategic with the issues that faced by the organization (Bunderson, 2003). While the others researcher found that as high as diversity of top management team will increase the probability for conflict between each team members, so that it decreases the social integration in team that finally can make it's working condition worst and also for organization performance (Miller et al.,1998).

The inconsistences of that founding make it still need more explorative. The research expected to strengthen the founding of previous research, by take top management team of higher education institutions in Padang city become the object of this research. Padang city as the capital of West Sumatera province that have the most quantity of higher education institution in West Sumatera make it suitable to do this research.

This research expected to find the "**the effect of cognitive diversity to innovation by using debate as moderating variable in top management teams of higher education institutions in Padang City".**

## 1.2 Problem Statements

1. How is the effect of cognitive diversity in TMT to the innovation at higher education institutions?
2. How is the effect of debate to the relationship between cognitive diversity and innovation?

## 1.3 Objective of the Research

The research purposed is to test relationship between variables that belief it able to influence level of organization innovation, it is expected to find the effect of cognitive diversity within top management teams to the institution innovation in higher education institutions.

## 1.4 Contributions of Research

The research is expected will contribute to some aspects below,

1. Theoretical contribution

   Theoretically this research expected to give the contribution for the consistency in research of top management team by take the same treatment to each variables according to conceptual definition of each variable.

2. Practical contribution

   The research also expected to give the suggestion for head of higher education institutions in effort they conduct the innovation in their own institution.

## 1.5 Structure of the Research

In order to make it easier and make moderate the forwarding of content, this research is divided into five chapters, they are:

CHAPTER I: Introduction

Elaborating are the background of the problem, formulation of the problem, limiting the problem, research objectives, the benefits of research, and systematic thesis.

CHAPTER II: Literature Review

This chapter contains descriptions of theoretical variables that include the theories that support and underlie the variables used in the research and framework.

CHAPTER III: Research Methods

In this chapter put forward about the research design, population and sample data and data sources, techniques data collection, variables measurement, and data analysis techniques.

CHAPTER IV: Research Findings and Discussion

This chapter presents the results of research, statistical analysis, hypothesis testing, and the discussion.

CHAPTER V: Conclusion

In this chapter contains the conclusions, limitation, and research implication.

# CHAPTER II

# LITERATURE REVIEW

## 2.1 Theoretical Definition

In this session we will describe the theoretical definition of each variable. To make it better understanding about the concept of theory for each variable the author arranged some previous literature to strengthen the concept.

### 2.1.1 Top Management Team

The leadership style and behaviors of top-level Managers have substantial effect on employees and organizational outcomes. Top Management Team (TMT) has been adopted by strategic leadership theories refers to the small group but the most influential executives who have the greatest power to affect the overall strategic direction of an organization (Finkelstein, 1992).

The organizational performance is representative of the action and characteristic of its Top Management Team (Hambrick & Mason, 1984). Roles of top management team is getting crucial due to its relation and responsible for handling the issues in organization for instance strategy and performance that lead to the more complicated challenges from external and internal organization in other words, the organizational performance is representative of the action and characteristic of its top management team (Hambrick & Mason, 1984 ).

### 2.1.2 Upper Echelon Theory

Upper Echelon Theory (Carnella & Monroe, 1997; Hambrick & Manson, 1984) puts the echelon or Top Management Team (TMT) work has definite effect

in entire organization by sharpening the last strategy, influencing business decisions and performance. Hambrick & Mason (1984) also mentioned that leaders make decisions based on his experience, values, reason, and demographic characteristic (position, background, education) and policy of leaders may be a factor on selecting and implementing strategic within that organization. The job of top leader is very complex and requires extensive knowledge of company operations.

Therefore, the company tried to establish a special management team, have the knowledge and able to operate the organization, and able to connect with all stakeholders and competitors. Usually this requires the Top Management Team consist of various people who have a background job, experience, and different education. The more diverse A-team with skills and knowledge are different, the greater the ability to provide effective leadership strategies.

### 2.1.3 Innovation

Organizational scientists do not yet agree on a single definition of innovation. Bantel and Jackson (1989) states three usages of the term: innovation as a process; innovation as discrete items, including products, programs, or services; and innovation as an attribute of organizations.

Innovation is a response to a number of questions where in time your brain tells you the answer (Tim de Jardine,2008). Concerning to the organization, innovations is directly associated to organizational learning, Calantone *et al.* (2002) states learning occur largely through organizational interaction with and observation of the environment. With regard to innovation, customer demand

uncertainty, technological turbulence, and competitive uncertainty are crucial environmental factors. The innovative organization is more likely to have capacity to build and market a technological breakthrough, and the organization is not likely to miss the opportunities created by emerging market demand because it has the knowledge and ability to understand and anticipate customer needs (Calantone *et al.*,2002).

Thompson (1965) defines innovation as the invention, approval, and implementation of new thoughts, procedures, products, or services. Zaltman *et al.* (1973) indicate that it is an idea, practice, or substance artifact apparent as new by the appropriate unit of adoption. Amabile *et al.* (1996) define innovation as the victorious implementation of brilliant ideas within an organization. The-innovation process involves the possession, diffusion, and use of new knowledge (Verona, 1999).

Innovation definition from a collective perspective that is, openness to new ideas as an aspect of a firm's culture. Firm innovativeness is conceptualized from two perspectives. The first views it as a behavioral variable, that is, the rate of adoption of innovations by the firm. The second views it as an organization's willingness to change (Calantone *et al.*,2002).

### 2.1.3.1 Innovation process

In term of innovation process the most important step is the identification of an end application that can fulfill the need for a product , a process, a service or a system in a way that never before existed. The innovators must first define the goals they want to achieve. Generally, once these goals are identified, there are

several different means of achieving them. These goals will be referred to as *functional requirements* (FRs), and the means of achieving the goals will be referred to as *design parameters* (DPs). (Suh, 2010).

One of the major impediments in the innovation process is the belief that invention cannot be systematic and be based on scientific principles. However, the innovation process does not have to be ad hoc. Invention can be made to satisfy a chosen set of functional requirements (FRs) in a systematic way (Suh, 2010).

**2.1.3.2 Innovation continuum**

Suh (2010) constuct the innovation continuum as following,

1. Continuum of Essential Steps

The following steps are part of a general innovation process. The sequence of individual tasks can vary depending on the situation (Suh, 2010)

(1) Identify the need for a new product or process or service or system

(2) Perform basic and/or background research

(3) Create, test, select and revise ideas via funneling

(4) Demonstrate the feasibility of the idea

(5) Seek intellectual property rights (patents, copyrights, trademarks, etc.)

(6) Test the commercial viability of the idea

(7) Find an "angel" who will be willing to invest in #4 and #5

(8) Raise venture capital or find a large company that is willing to take over the idea and develop it

(9) Create or identify a venture company that can manufacture and sell the product

(10) Hire talented people for all functions that the company must perform, including R&D, manufacturing, marketing, sales, purchase, and administration

(11) Raise a large amount of capital through a public offering

(12) Sell the venture company

These steps form an innovation continuum from the inception of an idea to its completion as one or more commercial products. When some of these steps are missing, the probability of success for innovation decreases significantly (Suh, 2010). Once the need for innovation is clearly identified, there must be infrastructure to support the innovation including: a strong foundation for basic research and technological invention; a financial community that is willing to supply the risk capital; and an industry with the necessary expertise to develop and manufacture the invention and the know-how for commercialization. Commercialization requires infrastructure of its own, including: legal expertise, financing, manufacturing, public relations, and human resources.

For innovations that involve advanced technology, strong and leading research universities are needed not only for ideas and scientific expertise but also to teach and train talented people who can man companies that are developing innovative products.

2. Funneling of Ideas

There is one additional requirement related to the innovation continuum: the innovation continuum must be funnel shaped. The innovation process must begin with a large number of ideas. As the innovation process proceeds from basic research to commercialization, only a subset of the most promising ideas will be selected in each subsequent step. Eventually, only the most innovative idea will remain. Therefore, the number of research projects being worked on must always be much larger than the number of development projects, and so forth. Quality of the Steps (or Elements) of an Innovation Continuum When some steps in the innovation continuum are missing, the process of innovation is interrupted, and innovation may never be realized. However, even in the presence of all the steps of the innovation continuum, the quality of each step may affect the outcome. Therefore, the downstream selection of promising ideas and solutions from the preceding step must be done well. There are several things to consider when ideas and solutions are selected. In most innovations, more than one FR must be satisfied. It is important that selected ideas or methods maintain the independence of the FRs. (The independence axiom of axiomatic design theory states that the attempt to satisfy one FR should not affect other FRs). The design should also be robust (as per the information axiom) (Suh, 2010).

3. Quality of the Steps (or Elements) of an Innovation Continuum

When some steps in the innovation continuum are missing, the process of innovation is interrupted, and innovation may never be realized. However, even in the presence of all the steps of the innovation continuum, the quality of each step

may affect the outcome. Therefore, the downstream selection of promising ideas and solutions from the preceding step must be done well. There are several things to consider when ideas and solutions are selected. In most innovations, more than one FR must be satisfied. It is important that selected ideas or methods maintain the independence of the FRs. (The independence axiom of axiomatic design theory states that the attempt to satisfy one FR should not affect other FRs). The design should also be robust (as per the information axiom) (Suh, 2010).

4. Importance of Having a Complete Innovation Continuum

Suh (2010) again states The First Law of Innovation: For innovation to occur, there cannot be any missing steps or links in the innovation continuum. That was can see from the cases of the reason that the Daeduk Science Park of Korea and Kansas City of the United States have not become innovation hubs can be attributed to the fact that they have missing steps or elements in forming the innovation continuum. The Daeduk Science Park has a concentration of research institutes with some 10,000 Ph.D.s, but it lacks venture capitalists, entrepreneurs, and the risk-takers who are willing to convert research results into innovations. Kansas City does not have the research infrastructure. It also lacks entrepreneurs and management talents.

**2.1.3.3 Innovation as a Nucleation Phenomenon**

In addition to the innovation continuum, we also have to consider the question of how innovation hubs. There are two kinds of nucleation: homogeneous nucleation and heterogeneous nucleation. Suh (2010) figured that

meaning as when rain droplets form by condensation of water vapor in the absence of any existing particle, it is called homogeneous nucleation. When there are particles, such as a previously nucleated water particle or an impurity particle in the water vapor, the condensation forms around the existing particle. Such a nucleation is called heterogeneous nucleation. Heterogeneous nucleation requires less energy, since the new surface generated is smaller. Therefore, heterogeneous nucleation occurs much more readily than homogeneous nucleation.

To create an innovation hub, the initial size of the nucleated hub must be larger than a critical size. The reason is that there is a minimum cost of creating the infrastructure of an innovation hub and the overhead cost that each unit of the innovation hub can support is limited. This is analogous to the nucleation that occurs in nature. For example, the homogeneous nucleation of rain droplet occurs, when the nucleated entity is larger than a critical size. Otherwise, the droplet smaller than the critical size will go back to its original state, i.e., water vapor. Once a nucleate formed is larger than the critical size, it grows because the vapor condenses more easily (i.e., energetically more favored) by heterogeneous nucleation on the nucleated particles rather than nucleating a new droplet. This process makes the nucleate that formed earlier grow larger faster than the one formed later.



#### 2.1.3.4 Types of Innovations

Basic types of innovation (Ramadani & Gerguri,2011) are:

• **Incremental Innovation:** Doing more of the same things you have been doing with somewhat better results.

• **Additive Innovation:** More fully exploiting already existing resources, such as product lines extensions and can achieve good results. These opportunities should rarely be treated as high priority efforts. The risks should be small - and they should not take resources away from complementary or breakthrough opportunities.

• **Complementary Innovation:** Offers something new and changes the structure of the business.

• **Breakthrough Innovation (Radical Innovation):** Changes the fundamentals of the business, creating a new industry and new avenue for extensive wealth creation. In order not to have a wrong picture about the innovations that they are connected only with the products and services which are offered by enterprises, a complete list of innovations which help enterprises succeed in improving their competitive position in the market is given below (Ramadani & Gerguri,2011) :

• Operational innovation

• Organizational innovation

• Supply-side innovation

• Core-competence innovation

• Sell - side innovation

• Product and service innovation

• Innovation of innovation

This situation is called as systemic approach of innovation.

### 2.1.3.5 Principles and Strategies of Innovation

Several principles have listed which should be respected by innovators (Ramadani & Gerguri,2011). The principles have grouped in "Do's" and "Don'ts's" in the process of innovation.

1. Do's

- Innovation starts with analysis of opportunities

  It starts with the seven opportunities for innovation. They are: unexpected events, disagreements in the process, requirements of the process and unexpected changes in industry or market structure, demographic changes, changes in perception, importance and knowledge.

- Innovation is a conceptual and perceptual activity

  The second imperative of the innovation is to go out and see, ask and hear. Successful innovators work analytically on the question what should the innovation be like in order to satisfy an opportunity. Afterwards, they go out and see the customers/users and they find out what are their expectations, their values and their needs.

- Innovation, in order to be successful, should be simple and focused

  Innovation should be simple to be succeeded. Everything new gets into trouble: if it is complicated, it cannot be corrected or solved. All the successful innovations are surprisingly simple. In fact, the greatest acknowledgment for an innovation is when people say: This is so obvious. Why did not think of this?"

- Innovation should start as “small”

  Innovation should not be grandiose. It should hold up to something specific, concrete. In the beginning, it requires a little money, some people and a small limited market.

- A successful innovation aims towards leadership

  If an innovation at the very beginning does not aim towards leadership, it is highly probable that it will not be “innovative” enough.

2. Don’ts

- Innovations should not be very "smart"

  Innovations should be led by simple people. Everything that is done in a very "smart" way, either for the designing or the completion, is set to failure by high probability.

- Many things should not be done at a time

  Innovations have a need for concentrated energy and common effort. It also requires that people who effectuate the innovation should have mutual understanding.

- Don't innovate for the future, but for the present

  One innovation can have a long-term impact, but it demands a longer time to reach its maturity. It should be a solution for the problems in the present.

### 2.1.4 The Concept of Diversity

Diversity has been defined in different ways by different authors and scholars Bolo *et al* (2011). Then they stated that according to Jackson *et al.* (2003) diversity is the distribution of personal attributes among interdependent members of a work unit. The majority of upper echelons studies use variations of this broad definition. According to Cox (2001), diversity is the variation of social and cultural identities among people existing together in a defined employment or market setting. These affiliations include gender, race, national origin, religion, age cohort and work specialization, among others.

Diversity can be defined in three different ways: diversity as separation, variety and disparity as pointed by Harrison and Klein (2007). Diversity as separation refers to differences in position or opinion among unit members and reflects horizontal distance along a single continuum in a particular attitude or value. Diversity as variety represents differences in kind or category, primarily on information, knowledge or experience among unit members. Finally, diversity as disparity indicates differences in concentration of valued social assets of resources such as pay and status among group members. The vast majority of upper echelons research defines diversity as variety and looks at team heterogeneity across different demographic characteristics.

#### 2.1.4.1 Top Management Teams (TMTs) Diversity

The role of the firm's TMTs is to organize and direct all the activities of the organization by making and implementing strategic (Castanias and Helfat, 1991) and operational decisions capable of creating rents that cannot be taken

away by competitors (Carmeli & Tishler, 2006). The top management's characteristics (e.g diversities) influence the decisions that they make and therefore the action consider by the organizations that they lead. It occurs because organization characteristics are associated with many cognitive base, values, and perceptions that influence the decision making of top management.

Top management teams consider to the diversities within the members (Finkeilstein,2009). This variable became the issues in some researches before about top management teams. Some researchers mixed some different variables to the some construct, then hypothesis that construct used the same mechanism theory (Johan, 2012).

Based on the Harrison and Klien (2007) approachs which suggest to be classified the conceptualize variables, so each diversity variables of top management teams will define separately.

### 2.1.4.2 Cognitive Diversity

Cognitive diversity defined as differences in belief between top management teams members considering organization purposed (*normative belief/preference*) and the belief to relationship between cause-effect which influence that purposed (*cause-effect belief*) ( Miller *et al.,* 1998). It definition have two dimension, normative belief and cause-effect relationship belief. But, *cause-effect* relationship has close relation to the normative belief. Cause-effect relation always base on normative belief (Miller *et al*., 1998).

More specifically, cognitive diversity refers to variation in beliefs concerning cause-effect relationships and variation in preferences concerning

various goals for the organization (Miller, 1990). Such variation underlies differences in perspectives that tend to endure through time. Because variation in enduring beliefs and preferences tend to create disagreements when specific strategic issues are being considered. The direction of the effects of cognitive diversity, however, is unclear, with some arguments suggesting positive effects while others suggest negative effects. Arguments suggesting positive effects are more prevalent and are presented first.

### 2.1.5 Debate

Debate has the function as the moderator or contextual factor to push the top management team's cognitive diversity to conduct the innovation. Debate was define as open discussion considering to different tasks of top management teams in strategic decision making process (Simons *et al*., 1999). In debate there is the integration of each member that have the different of cognitive, preferences, or the approach that sometime have the contra one another in solving the issues or in the decision making.

## 2.2 Review of Previous Studies

The research about learning organization that effect the firm innovation capability which in turn affects firm performance (Calantone *et al,* 2002).. In this study, a framework for studying learning orientation, innovation capability, and firm performance was developed. The model was tested using data collected from large US firms.

The results of this study suggest that innovation itself is a broad process of learning that enables the implementation of new ideas, products, or processes. Innovation also reflects an appreciation for and desire to assimilate new ideas. Firm innovativeness is positively related to firm performance (coefficient=.24, t = 2.72, P < .01), which confirms the findings of research on new products and diffusion of innovations.

Cognitive diversity among upper-echelon executive by Miller *et al* (1998). Diversity among executives is widely assumed to influence a firm's strategic decision processes, but empirical research on this linkage has been virtually nonexistent. To partially fill the void, the research drew upon three separate studies to examine the impact of executive diversity on comprehensiveness of strategic decision-making and extensiveness of strategic planning. Contrary to common assumptions of researchers and executives, the results suggest that executive diversity inhibits rather than promotes comprehensive examinations of current opportunities and threats, and inhibits rather than promotes extensive long-range planning. In light of the cumulative research showing that firm performance is related to both comprehensiveness and extensiveness, the results provide evidence for an indirect connection between executive diversity and firm performance.

Then Simons *et al* (1999) study examined how top management team diversity variables and debate interacted to influence two measures of company financial performance. Further, it assessed the degree to which decision comprehensiveness mediated those interaction effects. Multi-informant data from the top management teams of 57 manufacturing companies revealed that more

job-related types of diversity interacted with debate to influence financial performance, but a less job-related type (age diversity) did not. Decision comprehensiveness partially mediated those effects.

The observed positive interactive effects of debate and diversity on performance are a particularly critical finding. Although recent studies have focused on process variables as *mediators* of diversity effects, the finding by Simons et al (1999) suggests that the *interactions* of such process variables and diversity are also significant and that process may thus be usefully viewed as a *moderator* of diversity effects. The conclusion to be drawn from these results is that for diversity to benefit a company's bottom line, there must be a process by which the positive aspects of diversity are brought to bear.

Apparently, debate is more likely to be fruitful when it draws on different experiences and perspectives that are relevant to a task rather than on less relevant viewpoint differences. This finding provides some preliminary support for the notion that more job-related forms of diversity have greater potential impact on organizational performance.

The results of this study point to the importance of considering both the potential moderating and the potential mediating roles of team process in the effects of diversity on performance. In particular, the moderating role of debate and the mediating role of decision comprehensiveness can help account for the performance consequences of diversity. Further, the findings demonstrate the utility of treating diversity as a multifaceted construct whose different facets interact with team process to shape performance in different ways.

This study has implications for practitioners. First, it suggests the wisdom of fostering diversity in top management teams, for such diversity is apt to help TMT members' debates become more constructive. Finally, it indicates that group diversity must be fit by appropriate processes for the group to benefit.

Research on a social cognitive perspective for studying the sources of firm innovation by Xu, (2011). In the context of firm innovation, the cognitions of top management teams or an entrepreneur shape the way they use the social structure available to them, while the social structures influence the embedded actors' cognitions and ultimately their strategic actions. Managers and entrepreneurs form collaborative partnerships designed to achieve innovation and competitiveness.

During this dynamic social learning process, cognitive differences influence the formation of social capital and its realized benefits. The impact of social capital on innovation can hardly be evaluated without understanding individual cognitive characteristics first. Depending on the embedded actors' cognitive idiosyncrasies, social capital exerts contingent effects on firm innovation.

This research contributes to a richer understanding of the sources and process of firm innovation and it provides a comprehensive examination of the role of external social capital and internal cognitive structure in firm innovation. Firms face challenges in initiating and sustaining exploration into new domains when their business networks are homogeneous and when their top management team focuses on extremely limited strategic factors. Accordingly, this social-cognitive perspective on firm innovation has broad implications for practitioners

in technology firms and their support networks consisting of venture capitalists, lawyers, accountants, and other policy makers, and it helps managers focus on the specific aspects of their cognitive structures and social capital in the process of innovation.

The study by Knight *et al,* (1999) integrated concepts from upper echelons, group process and social cognition theories to investigate how demographic diversity and group processes influence strategic consensus within the top management team (TMT), where strategic consensus is defined as the degree to which individual mental models of strategy overlap. Data from 76 high-technology firms in the United States and Ireland were used to examine three alternative models. The results showed that while demographic diversity alone did have effects on strategic consensus the overall fit of the model was not strong. Adding two intervening group process variables, interpersonal conflict and agreement-seeking, to the model greatly improved the overall relationship with strategic consensus. For the most part, TMT diversity had negative effects on strategic consensus. The model with superior fit showed both direct and indirect effects of diversity on strategic consensus.

This research makes several important contributions. First, by demonstrating systematic relationships between demographic measures and one measure of executive cognition, it validates an important assumption of upper echelons theory. Second, the results support the contention of other researchers that demographic diversity would be negatively related to consensus. Although not all of our results were as it proposed, the general impact of diversity on strategic consensus was negative. Third, the results indicate that some dimensions

of diversity do influence group processes. Finally, the results suggest that group processes do, in fact, add important information about strategic consensus beyond what demographic measures alone explain.

## 2.3 Hypotheses

### 2.3.1 Cognitive Diversity and Innovation

2.3.1.1 Negative relationship between cognitive diversity and innovation

Cognitive diversity is one type of diversity that difficult to be changed and to be linked up with others individual which have different cognitive base (Chattopahyay *et al*., 1999). Elementary bases of cognitive diversity between each individual is target, what later then result difference belief to *cause-effect* relationship. Difference of cognitive base between each individual in team complicate them to be integrated together to join their knowledge in solving problems which is each member still have different target and motif. By existence of variety of target between its members possible them to shy at synergizing before conducting consolidation of their own target.

That statement have strengthen by Miller *et al.*(1998) research to three different cases, they were study to the top management teams in corporate level from several industry, in business unit level, and in the hospital industry. That three studied showed negative between cognitive diversity and comprehensiveness in decision making and extensiveness of decision making. They states that the team with different basic of cognitive difficult to communicate well, difficult to be integrated, and often place forward politics

behavior one another. Team with different of cognitive need more times and energies to conduct the consolidation purpose (Smith *et al.,* 1994).

Ho: There is negative relationship between cognitive diversity of top management teams to the innovation.

2.3.1.2 Positive Relationship between Cognitive Diversity and Innovation

Diversity in teams is often place as an positive force bring to effective functioning of the team. Diversity supposedly leads to greater variance in ideas, creativity, and innovation, thus generating better group performance (Jackson et al, 1995). It was strengthen by Dahlin (2005) who stated that organizations are increasingly dependent on diverse teams for developing innovative products, making important decisions, and improving efficiency.

Ha: There is positive relationship between cognitive diversity of top management teams to the innovation.

### 2.3.2 Cognitive Diversity and Innovation Moderated by Debate

Debate is the open discussion between the members that constructive about task issues (Simons *et al.*,1999). By applying the debate it can increase the involvement of its each member in team. The member will feel that their ability is considered in team and become an important part in the decision making process (Simon *et al.*, 1999 ). Each member who have the high consideration in a team tend to ready to cooperative and synergize with others member in the team (Bunderson, 2003). Debate also can useful as purpose consolidation tools because

in its process each member can openly explain their own opinion and also can state clear disagreement within the member one another.

Debate has the similar concept with the job conflict which both of them taking as problem and advocacy of part of works (Simons *et al.*, 1999). Job conflict has the big advantages for organization especially in decision making process.

H2 : The relationship between cognitive diversity and innovation is moderated by debate.

## 2.4 Research Framework

Generally, theoretical model of the research show by following framework.

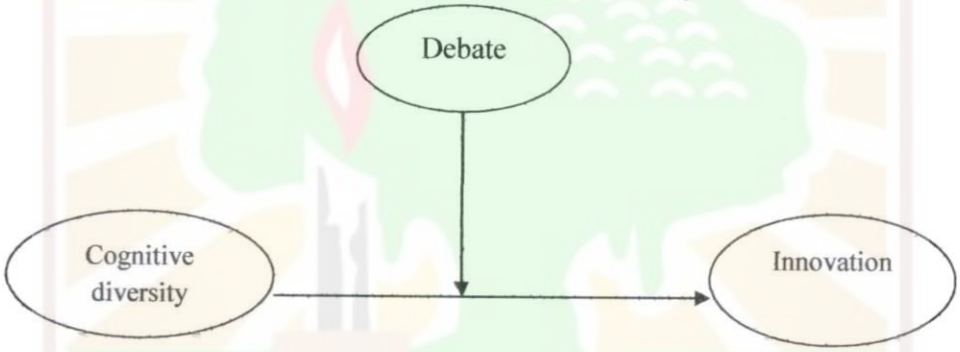



**Figure 2.1**. Research framework

Research framework as figure 2.1 describes the theoretical model of the research. This expected to find the effect of cognitive diversity to the innovation, and what the effect of cognitive diversity to innovation if it is moderated by debate.

# CHAPTER III

# RESEARCH METHOD

## 3.1 Research Design

This research using *cross-sectional explanatory* design in quantitative by *survey* method. *Survey* can do for theory testing purpose and conclusion generalize to the research object (Cooper and Schindler, 2008). Quantitative research mean quantification of the data that get from the research result then the data become the testing data for theory testing that built by research hypotheses.

The advantages of this design is the researcher objectivity when the opinion and researcher's subjective judgment can controlled by result quantification (Cooper and Schindler, 2008). Besides that, this design enable researcher to conduct inference result of to its same case (Kerlinger and Lee, 2000).

## 3.2 Population and Sample

Research will be done at higher education institutions in Padang City. With unit analyze organization or institution. Research population is top management team of higher education institution located in Padang City in the form of University, Faculty, College, Institute and Academy. Every faculty entangled in this research with consideration of management independency. Although in some cases Faculty have to conduct adjustment with its University, but target, goals, resources, and challenges that faced have the differences one another.

Because unknown *sample frame*, hence this research use *non probability* sample method (Cooper and Schindler, 2008) with technique of *purposive sampling*.

Some conditions of sample which should be fulfilled on,

1. The number of top management team at the institution more than two people
2. Have operated more than three years

### 3.3 Source of Data

Data used in this research was both primary source of data and secondary source of data.

1. Primary Data

   Primary data is information obtained first hand by the researcher on the variables of interest for the specific purpose of study (Sekaran, 2003). The primary data in this research will be gathered through questionnaire which given to the members of top management teams of Higher Education Institutions (HEIs) in Padang city. The questionnaire in this research is formulated based on Calantone et al (2002), Simons et al (1999), and Miller et al (1998).

2. Secondary Data

   The secondary data in this research will be gathered through analyzing the reading materials, books, magazines, articles, journals, internet based on content and other literatures that are relevant to the discussed topic about upper echelon theory, top management team, cognitive diversity, debate and innovation. But since limited source of secondary data, primary data dominantly used to analyze this topic.

### 3.4 Data Collection Method

This research is using survey method with data collecting technique by using questionnaire. In general, quantitative approach aim to the examination of theory (Cooper and of Schindler, 2008) which result of analysis have the character of predictive (*inferential*) to population (Kerlinger and of Lee, 2000). This research data consist of primary data. Primary data collected to through spreading of sent over by questionnaire from college institute which becoming research sample.

The questionnaires are containing statement items about cognitive diversity, innovation and debate. Questionnaire (see appendix 1) form of statement with scale 1 until 7 (1 = very disagree - 7 = very agree).

### 3.5 Measurement Variable

#### 3.5.1. Cognitive Diversity

Cognitive diversity at research measured by using operationalization Miller *et al.*, ( 1998) which seeing cognitive diversity from two dimension that are preference purpose (*normative belief diversity*) and confidence to causal connection (*cause-effect belief diversity*). This variable is measured by using four statement items which have been used previously by Miller *et al.*, (1998).

Harrison and Klien (2007) telling that to see level of diversity in team for variable that having the character separation can be conducted by calculating *standard of deviation* from result of respondent answer (Miller *et al.*, 1998).

*Standard of deviation* is calculated by using the following formula.

$$S = \sqrt{\frac{\sum_{i=1}^{N}(xi - \bar{x})}{N}}$$

S = standard deviation

N = amount of population

$x_i$ = member value to i

$\overline{x}$ = mean of member value

As higher the values of *standard deviation* indicate that the diversity is high in team. The value of *standard deviation* by using scale measurement of *likert like* 1 until 7 ranging from 0 until 3 which 0 is minimum diversity whereas 3 is maximum diversity (Harrison and Klein, 2007). This measuring tools have also been used by many researchers to measure company management team diversity (e.g.Smith *et al*., 1994; Hambrick *et al*.,1996; Miller *et al*., 1998; Knight *et al*., 1999; Simons *et al;* 1999 Chou, 2011)

### 3.5.2. Debate

Debate process in team measured by using the questionnaire developed by Simons *et al*. (1999). This variable is identified to pass four statement item that answered by each team member. The answer of its each member then aggregated to be the index of debate in team (Simons et al., 1999).

### 3.5.3. Innovation

Innovation is measured by using indicator that used by Calantone *et al.* (2002). The indicator was adapted by them from previous indicator which developed by Hurt *et al.*(1977), and Hurt and Teigen (1977). This variable consists of six questions item which have validated and used in so many previous study (Calantone *et al.*, 2002). The questions replied by each member which later then it is conducted by aggregated to get team innovation value of index.

## 3.6 Data Analysis Method

### 3.6.1 Validity Testing

#### 3.6.1.1 Content Validity

Content validity purposed to know the suitability between the indicator with the concept that will be measured (Cooper and Schindler, 2008). Content validity testing did by reading the content detail for each indicator and identified the relationship with the concept that will be measured by that indicator. Because of this method is a judgment, so to decrease the bias it will be done by some competences person, they are consist of academicians and practitioner in case of panel discussion.

#### 3.6.1.2 Construct Validity

Validity testing is purposed to establish the goodness of measurement, whether we are, measure the right things or not. According to (Ghozali, 2001) validity test is a tool which is used to measure validation of questioner. Questionnaire is valid if the range is more than 0.30 question of questioner can

describe something that will be measured by questionnaire. Validity test is done by using *Statistical Packages for the Social Sciences* (SPSS) program.

Construct validity test is purposed to see the linkage between indicator and latent variable that can be measured by using the theory and statistical approach (Kerlinger and Lee, 2000). In this research, construct validity test engage as a support for the result of content validity test that have been done by judgment method. An indicator is qualified in construct validity test if the indicator have enough loading factor value and only measure one variable, mean that the indicator is not be a part of indication for other variable (no-cross loading) (Cooper and Schindler, 2008). Loading factor score that will be used in this research is 0.5. That score can be used as a standard to determine which indicator will be used (Hair et al.,2010). This test is well if some indicator theoretically representing one concept, grouping in one group of factor with high loading factor score and there is no cross-loading to the other group of factor (Hair et al.,2010).

### 3.6.2 Reliability Testing

Internal reliability testing is purposed to see how well the items measuring a concept hang together as a set. *Cronbach's Alpha* is a reliability coefficients indicates how well the item in a set are positively correlated to one another. The answer consistency showed by the degree of *Cronbach's Alphas*. The closer the reliability coefficient gets to 1.0 the better (sekaran, 2003). It also strengthens by Hair et al (2010) the minimum cronbach's alpha score that can be accepted is 0.6.

In determination of reliability level of one instrument that can be accepted if value of alpha, exist in range 0.60 – 1.00. To determine the reliability of each statement, it is used computer program SPSS with a *Cronbach alpha* formula.

Reliability test is purposed to analyze the degree of consistency of result that get from measurement tools (Cooper and Schinder.,2008). If the instrumental measurement result is not consistent between one measurement tool and others in one concept, so the condition will make it bias to the testing. This research will use internal consistency measure by seeing the cronbach's alpha from the instrument of that testing. A high cronbach's alpha indicates a high consistency between the indicators in variable testing.

### 3.6.3 Data Analysis

For the analyst of research data, it is using technique of regression. Whether *simple regression, and moderated regression.* Hypotheses Ho and Ha will analyzed by using technique of *simple regression*, while hypothesis 3 analyzed by using technique of *moderated regression* by Baron and Kenny method (1986).

# CHAPTER IV

# RESULT AND ANALYSIS

## 4.1 Data Collecting Method

Research data is collected by spreading the questionnaires that is filled by respondent. The questionnaires distributed directly to respondent by the researchers including the request letter for filling the questionnaires from the management department and also *term of reference* from the researcher. As explained in chapter research method, the respondents consist of top management team in higher education institutions for level of university/institute, faculty, major, study program, colleges, and academy in Padang. That top management team can describe as below.

**Table 4.1**

**Respondent Table**

| No | TMT of HEIs | Respondent |
|---|---|---|
| 1 | University/Institute leaders | a. Rektor<br>b. All leaders on University level/vice Rektor |
| 2 | Faculty Leaders | a. Dean<br>b. All leaders on Faculty level/vice Dean |
| 3 | Department Leaders | a. Head of Department<br>b. Secretary and all the leaders on Department level |
| 4 | College Leaders | a. Head of College<br>b. All leaders on College level |
| 5 | Academy Leaders | a. Head of Academy/ Director<br>b. All leaders in Academy level |

For the first step, the questionnaire spread/sent to each respondent. The amount of questionnaires that spread are 286 pieces for 80 teams. Distribution process did for 4 weeks. After distributed researcher take the questionnaires back directly. This process also did for 4 weeks. From the total amount of questionnaires that distributed, it was respond by 143 respondents from 43 top management teams. For thus, the total response for this research is 53.75% from the numbers of total teams and 50 % from the numbers of total respondents.

The 43 teams who given back the questionnaire, 7 of them eliminated because of the data that filled was not complete and didn't reach the minimum amount of team members required. Five teams didn't respond by all top management team members. But the other 2 teams didn't answer all the questions given in the questionnaires. There for the amount of sample that can be used for analyzed and hypotheses test are 36 teams from 119 respondents.

**Table 4.2**

**Response Rate**

| Questionnare | Number of Qustionnare | Number of Team |
|---|---|---|
| Distributed | 286 | 80 |
| Returned | 143 | 43 |
| Eliminated | 24 | 7 |
| Process | 119 | 36 |
| Response Rate | $\frac{143}{286} \times 100\% = 50\%$ | $\frac{43}{80} \times 100\% = 53.75\%$ |

*Source : primary data*

### 4.2 Respondents Profile

In this part, the researcher revealed the analysis and result related to the respondent characteristics. The respondents of this research are 119. Respondents are the members TMTs from 36 teams of higher education institutions in Padang.

### 4.2.1 Respondents Characteristics Based on Age

From the table 4.3 the respondents are grouped based on age. We can see the range of age range of age 21-30 years old is 3.4%, age 31-40 years old is 21.8%, age 41-50 is 43.7% and ages more than 50 years old is 31.1%. we can assumed that most of respondents are the mature people.

**Table 4.3**

**Respondent Based on Age**

| Age Range | Frequencies | Percent (%) |
|---|---|---|
| 21-30 | 4 | 3.4 |
| 31-40 | 26 | 21.8 |
| 41-50 | 52 | 43.7 |
| >50 | 37 | 31.1 |
| **Total** | 119 | 100 |

Source : Primary Data

### 4.2.2 Educational Level of Respondents

The result of survey shows that respondent can be grouped based on educational level. We can see from 119 respondents, 1.7% respondents who are graduated from diploma degree, 5.1% are bachelor, 57.9% are master, 35.3% are doctoral.

**Tabel 4.4**

**Educational Level of Respondent**

| Recent Education | Number | Percent (%) |
|---|---|---|
| Diploma | 2 | 1.7 |
| Sarjana | 6 | 5.1 |
| Master | 69 | 57.9 |
| Doctoral | 42 | 35.3 |
| **Total** | 119 | 100 |

Source : Primary Data

From the table 4.4, can be assumed that the most respondents are they are who have master and doctoral degree, means that mostly respondent have the better understanding in their own educational background that could be influence the debate in making decision within a team.

### 4.2.3 Respondents Characteristics Based on the Period of Employment in Higher Education

In Table 4.5, from 119 respondents, respondents who work less than 5 years in that higher education as much as 8.4%, 5-9.9 years as much as 14.3%, 10-14.9 years as much as 12.6%, 15-20 years as much as 21.8% and respondent who work more than 20 years are 42.9%. It means that most of respondents have work more than 15 years in their own institution. The length of the respondent's tenure calculated from first time they were working until the end of January 2013 when the questionnaire finished collected.

**Table 4.5**

**Respondents Based on the Period of Employment in Higher Education**

| Period of Employment (Year) | Number | Percent (%) |
|---|---|---|
| <5 | 10 | 8.4 |
| 5-9,9 | 17 | 14.3 |
| 10-14,9 | 15 | 12.6 |
| 15-20 | 26 | 21.8 |
| >20 | 51 | 42.9 |
| **Total** | 119 | 100 |

Source : Primary Data

## 4.3 Descriptive Statistics

Description of each items obtained from field survey is demonstrated in the following sections. The scores each item reflect the level of perceived overall respondents for each item. The items are measured using 7 point likert's scale. The higher the score means the more positive respond of the respondents.

### 4.3.1 Cognitive Diversity

The result on Table 4.11 shows that cognitive diversity is measured by using Likert scale with 4 (four) indicators. The total score is 476 answers. From the table, most of Top Management Teams have the high agreement one another. This consist of 22.48% (107 answers) strongly agree, and 48.95% (233 answers) answer agree for each question indicator, beside that there were 15.13% (72 answers) said neutral answers. Finally there were only 13.44% answer disagree and strongly disagree.

The mean score 2.32 explain that most of respondent answer agree with organizational purpose in the team. Cognitive diversity which defined by Miller et al (1998) as the different belief between Top Management Team in term of organizational purpose (normative belief) and cause-effect belief that influence that organizational purpose. So that it means Top Management Team have the low level of cognitive diversity.

**Table 4.6 Cognitive Diversity**

| No | Indicators | Respondent's Answer | | | | | | | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | | SB | B | AB | N | ATB | TB | STB | |
| 1 | The best way to maximize the firm's long term profitability | 23 | 65 | 19 | 4 | 3 | 2 | 3 | 2.30 |
| 2 | What the firm's goal priorities should be? | 35 | 59 | 12 | 6 | 3 | 3 | 1 | 2.13 |
| 3 | The best way to ensure the firm's long-run survival? | 28 | 57 | 17 | 11 | 2 | 3 | 1 | 2.29 |
| 4 | Which organizational objectives should be considered most important? | 21 | 52 | 24 | 8 | 9 | 4 | 1 | 2.56 |
| | **Total score for each answer** | **107** | **233** | **72** | **29** | **17** | **12** | **6** | |
| | **Percentage (%) for each answer** | **22.48** | **48.95** | **15.13** | **6.09** | **3.57** | **2.52** | **1.26** | |
| | **Total of average mean** | | | | | | | | **2.32** |
| | **Total score** | | | | | | | | **476** |

*Source: Primary Data*

### 4.3.2 Debate

Debate in top management team measured by using 7 (seven) Likert scale with 4 (four) indicator. The total score is 476 answers. From the table, 58.82% top management teams have implemented debate. This percentage consist of 9.87% (47 answers) strongly have implemented, 32.98% implemented and the rest of them 15.97% (76 answers) have already implemented the debate. Overall the score that answer by respondent also give the signal large number of top management team still do not openly to occur debate in their own team, it indicate debate for most of top management team in Padang city still resisted.

**Table 4.7 Debate**

| No | Indicator | | Respondent's Answer | | | | | | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | | STS | TS | ATS | N | AS | S | SS | |
| 1 | In discussions of this issue, executives stated clear disagreement with each other. | 0 | 2 | 6 | 7 | 14 | 56 | 34 | 5.83 |
| 2 | Different executives proposed different approaches to the issue. | 1 | 14 | 6 | 11 | 25 | 55 | 7 | 5.00 |
| 3 | Executives openly challenged each other's opinions. | 5 | 27 | 22 | 12 | 22 | 27 | 4 | 3.97 |
| 4 | Discussions of the issue became heated. | 11 | 33 | 22 | 17 | 15 | 19 | 2 | 3.48 |
| | **Total score for each answer** | **17** | **76** | **56** | **47** | **76** | **157** | **47** | |
| | **Percentage (%) for each answer** | **3.57** | **15.97** | **11.76** | **9.87** | **15.97** | **32.98** | **9.87** | |
| | **Total of average mean** | | | | | | | | 4.57 |
| | **Total score** | | | | | | | | 476 |

*Source: Primary Data*

### 4.3.3 Innovation

Innovation measured by using 7 (seven) Likert scale with 6 (six) indicators. The total score is 714 answers. There were 72.13% higher education institutions in Padang have implemented innovation.

**Table 4.8 Innovation**

| No | Indicators | | Respondent's Answer | | | | | | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | | STS | TS | ATS | N | AS | S | SS | |
| 1 | Our company frequently tries out new ideas | 0 | 2 | 3 | 21 | 21 | 54 | 18 | 5.48 |
| 2 | Our company seeks out new ways to do things | 1 | 2 | 7 | 11 | 19 | 50 | 29 | 5.61 |
| 3 | Our company is creative in its methods of operation. | 0 | 5 | 6 | 15 | 24 | 51 | 18 | 5.38 |
| 4 | Our company is often the first to market with new products and services | 1 | 9 | 16 | 23 | 23 | 37 | 10 | 4.76 |
| 5 | Innovation in our company is perceived as too risky and is resisted. | 0 | 5 | 12 | 20 | 21 | 50 | 11 | 5.11 |
| 6 | Our new product introduction has increased over the last 5 years. | 0 | 9 | 7 | 24 | 24 | 45 | 10 | 5.00 |
| | **Total score for each answer** | **2** | **32** | **51** | **114** | **132** | **287** | **96** | |
| | **Percentage(%) for each answer** | **0.28** | **4.48** | **7.14** | **15.97** | **18.49** | **40.19** | **13.45** | |
| | **Total of average mean** | | | | | | | | 5.22 |
| | **Total score** | | | | | | | | 714 |

*Source: Primary Data*

### 4.4 Instrument Validity Test

Validity test is done to measure the tools that used was correct to identified the variable that will to measured. The basic of validity testing is based on the suitability between conceptual definition and question items and also contextual change. Contextual change is done in order to fit the definition with the changing of the study object which had been done. That fitting is identified from the question item content by doing the content validity, the result of content validity tested by using the data that have collected for identifying the statistics support. Construct validity testing can be used to test the validity statistically.

The content validity is the suitability between conceptual definitions of the variable with the question items. In this testing, context fitting is also done. To evaluate the suitability of that it use the judgment method. This method is expected have the high level of subjectivity. To reduction that subjectivity, the evaluation done by some people in term of panel simultaneously. The evaluation did by two students and one academician. The evaluation result showed that some content did some context fitting from the instrument that have been developed by previous researchers to the research object.

To support the result of content validity, did construct validity testing by base on judgment of testing result statistically. In this research the construct validity testing do by confirmatory factor analysis. This method is extracting the separation of instrument data to some factors. Extraction done with principal component analysis, but the rotation of extraction done by using the varimax rotation method (varimax with Kaiser normalization). The result of testing is valid

if each indicator in the same variable grouping to the same factor (Cooper and Schindler, 2008) with factor loading value is more than cut-off value and didn't happen the cross loading of the factor one and another. Cut-off value that used in this research is 0.5 (Hair et al. 2010).

**Table 4.9**

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.794 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 774.253 |
| | Df | 91 |
| | Sig. | 0.000 |

At the first step, all of indicators which latent did confirmatory testing simultaneously. This step purposed to see the probability of indicators grouping to the factor that confirmed. The result of Kiser Meyer Oklin Measure of Sampling Adequacy as 0.794, mean that the indicators that used in his research grouping well to the three factor of extraction result. This numbers also supported by Bartlett's Test of Sphericity significant testing with $p<0.01$ (significant at level 1%). The result of the first step testing showed in the following table.

**Table 4.10**

**Rotated Component Matrix for Confirmatory Factor Analysis**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| C1 | -0.268 | 0.845 | -0.077 |
| C2 | -0.167 | 0.901 | 0.008 |
| C3 | -0.128 | 0.891 | 0.102 |
| C4 | -0.282 | 0.716 | -0.194 |
| D1 | 0.512 | -0.433 | -0.120 |
| D2 | 0.163 | -0.158 | 0.426 |
| D3 | -0.027 | -0.023 | 0.763 |
| D4 | -0.115 | 0.171 | 0.785 |
| IN1 | 0.789 | -0.107 | -0.129 |
| IN2 | 0.792 | -0.209 | -0.101 |
| IN3 | 0.844 | -0.261 | 0.011 |
| IN4 | 0.710 | -0.107 | 0.273 |
| IN5 | 0.383 | -0.208 | -0.027 |
| IN6 | 0.662 | -0.097 | 0.259 |

The extraction result in table 4.4 showed each indicator that used to measure the cognitive (C1, C2, C3, C4) was grouped to the same factor. Thus, it can take the conclusion that each instrument that used to measure the cognitive is valid and can measure the expected variable. But it's not for the variable debate, not all of indicators grouped to the same factor. Indicator D1 grouped to the factor 2, while indicator D2 grouped to the factor 3. Two others indicator grouped to the same factor at factor 4. Base on indicators grouping, the value of variance explained and factor dominant score, so the indicator that will be used to identify the debate for the next analysis step are indicator D3 and D4. Elimination of other indicators also related to internal argumentation consistency. Some indicators that are not grouping to the same factor have the low level of consistency between

each indicator. The consistence's level between the indicators have positive effect to the testing of relationship between each variables. If internal consistency is high, so the relationship between each variable will be much better.

Indicator for variable innovation also didn't grouping to the same factor. Indicator IN5 grouped to factor 3, while the others indicators grouped to factor 2. By considering to the internal consistency that had discuss before, indicator IN5 is not included to the next step testing.

**Table 4.11**

**Eliminated and Useful Indicators for Next Analysis**

| No | Variable | Indicator Eliminated | Indicator that can be used for next analysis |
|---|---|---|---|
| 1 | Cognitive | - | C1,C2,C3,C4 |
| 2 | Debate | D1,D2 | D3,D4 |
| 3 | Innovation | IN5 | IN1,IN2,IN3,IN4,IN6 |

## 4.5 Reliability Test

Reliability test is done to see the consistency between each indicator that used in this research (Cooper and Schindler, 2008). To identify how high the internal consistency it will use cronbach's alpha score. This score show the accumulation of the indicator ability in measuring the variable in each measurement. The indicator can say reliable if cronbach's alpha scores more than 0.6 (Hair et al, 2010). The result of internal reliability before and after indicator eliminated show in this following table.

**Table 4.12**

**Indicator Reliability Score Before and After Eliminated**

| No | Variable | Cronbach's alpha before eliminated | Cronbach's alpha after eliminated |
|---|---|---|---|
| 1 | Cognitive | 0.893 | Not Eliminated |
| 2 | Debate | 0.352 | 0.611 |
| 3 | Innovation | 0.817 | 0.844 |

Table 4.6 show that all indicators are reliable after eliminated some indicators. Cronbach's alpha score for all variables are more than 0.6. Variable cognitive have cronbach's alpha score as 0.893. For this variable didn't do the elimination of its indicator because there was no problem in the construct validity. Variable debate cronbach's alpha score is 0.611 after eliminated two indicators, before eliminated its score was 0.352. Cronbach's alpha for variable innovation is 0.844, this score also get by eliminate one indicator, while the cronbach's alpha before eliminated was 0.817. The increasing of internal consistency happens to the two variables after the indicators that not valid were eliminated construct especially for variable debate.

### 4.6 Aggregate Data Process

As explained before in chapter III this research unit is teams. The value that used to analyze and test the hypotheses is unit value analysis. Because of that the individual value from each top management team members should made become team value as unit value analysis. Cognitive diversity variable is measured by using standard of deviation to represent unit value analysis. Standard of deviation calculate after did the aggregation to the each indicators of each

respondent. Technique of aggregation that used is average score that is take mean value for the respondent answer from each question items.

For variable innovation and debate the unit value analysis did by two steps with the same method. First step it determine the mean value by calculate the average of score that given by each respondent for each question items. This value will show the aggregation value for individual. Then for next step the mean value of each individual in a team will aggregated by calculate the average score of them. It will get the value of team as unit value then will be used for next analysis step.

### 4.7 Examining Data Analysis

#### 4.7.1 Missing Value Analysis

Missing value test do to check if the data have complete filled or not, it means there is no variable have the empty data. Missing value is the information that is not provide for a subject. Missing value happened because information for an object was not given, hard to find, or that information is not provide (Santoso, 2012). To measure is there any missing value for each variable can done by checked up or using frequency table to see the accurate result. The result show there is no missing value for each research data, so data analysis can continue to the next step analysis without miss of data.

#### 4.7.2 Outliers Analysis

Basically outliers data is the data that really different with the others data. The outliers data can be happened because of missed data input, take the wrong

sample, or there is the extreme data that could not be ignored (Santoso., 2012). Outlier analysis is important because of the existence of different extreme data with the overall data structure can give the impact to the analysis result (Hair et al., 2010).

Outlier analysis is done to the each research variable by using box plot technique. This technique can present the data with extreme value that quietly different from the normal data. By using program SPSS the outlier data can be explained as table below.

**Table 4.13**

**Outlier Data**

| Variable | Outlier Data | Amount |
|---|---|---|
| Cognitive Diversity | 8<br>25<br>33 | 3 |
| Debate | - | 0 |
| Innovation | - | 0 |
| Total | | 3 |

Table 4.13 is explaining that there are 3 data which judge as outlier or extreme data from overall of the research data. So that it means the outlier data proportion of all is 8.3% (3 from 36). Next step that should be done is decided if eliminating or using that data for next analyzing. Santoso (2012) argued that outlier data can be eliminated because the refer data do not represent the real data. It also described by Hair (2010) who stated that outlier data should be retained unless demonstrable proof indicates that they are truly aberrant and do not representative of any observations in the population.

In the variable cognitive diversity detected there are 3 data as outlier data, the data that mentioned are data number 8, 25, and 33. That 3 outliers data in this research is eliminated, because it is predicted will disturb the result of next analysis and did not representing of any observation in the population. Variable debate and innovation don't have any outlier data. So for next analysis it will use 33 data of top management teams.

## 4.8 Classical Assumption

In this research we only construct one of classical assumption test, because of in this research will be used the simple regression technique for analyzing the hypotheses. Beside of that it also causing by the number of independent variable in this research is not more than one, while the multicollinearity and heteroscedasticity will be conducted when its independent variable is more than one.

### *Normality Test*

Normality tests are used to determine whether a data set is well-modeled by a normal distribution or not, or to compute how likely an underlying random variable is to be normally distributed. In this research, data that will be analyzed is the residual data that is error value from the measurement between dependent and independent variable (Hair *et al.*,2010). It was strengthen by Hair *et al.*(2010) said that one of the residual value that commonly using is standardize value. First step that will be do for data normality test is regression between dependent variable to independent variable by saving the result of residual value standardize as a new variable.

Normality test in this research use Kolmogorov-Smirnov Test that will be done to residual/standardize value that had showed before. Data can be said in normal distribution when signification value more than 0.05 ($p>0.05$) (Hair *et al.*,2010). That condition means that there is no clear different between research data distribution (observed) with standard normal distribution (theoretical). If significant value less than 0.05 ($p<0.05$), so the data didn't distributed normally that implied there is significant differentiation between observed and theoretical distribution.

**Table 4.14**

**One-Sample Kolmogorov-Smirnov Test**

| | Standardized Residual |
|---|---|
| N | 33 |
| Kolmogorov-Smirnov Z | 0.658 |
| Asymp. Sig. (2-tailed) | 0.779 |

Table 4.14 show the result that the data is distribute normally. The significance score (Asymp. Sig. 2-tailed) as 0.779 ($p>0.05$) means that there is no significant different between research data distribution and normal distribution fixed rule.

### 4.9 Hypotheses Test

Overall of data testing use the technique of simple regression and moderated regression. This testing did for two model, they are relation model with interaction effect and relation model without interaction effect. Each model tested by using the regression technique that suggested by Baron and Kenny (1986).

The result of descriptive in form of means, standard of deviation and correlation between variables that used in this research will explain in the following table.

**Table 4.15**

**Description of Mean, Standard of Deviation, and Correlation between Variables**

| Variable | Mean | Std. Deviation | IN | C | D |
|---|---|---|---|---|---|
| IN | 5.2315 | 0.62309 | 1 | | |
| C | 0.4743 | 0.32324 | -0.325(*) | 1 | |
| D | 3.6787 | 0.95062 | 0.109 | -0.040 | 1 |

* Correlation is significant at the 0.05 level (1-tailed).

IN: Innovation,

C: Cognitive Diversity,

D: Debate

Table 4.15 above showed that innovation degree of high education institution has the high score as 5.23 from scale 7. Cognitive of top management team members was not too diverse. Maximum diversity score is 3 while the minimum score is 0. From the data we get score of cognitive diversity of top management team as 0.47 that implied that cognitive diversity of them are low. The descriptive table above also explain that there is negative correlation between innovation and cognitive diversity ($\beta$= -0.325).

**First Model of Regression (without debate interaction effect)**

In this test we will test the direct effect cognitive diversity to innovation. This step expected to detect is there relationship between variable cognitive diversity and innovation.

Ho: There is negative relationship between cognitive diversity of top management team and the innovation.

Ha: There is positive relationship between cognitive diversity in top management team and innovation

**Table 4.16**

**Result of Simple Regression Test First Model**

| Variable | β | Significant |
|---|---|---|
| C | **-0.325** | **0.065** |
| F test | **3.658** | **0.065** |
| $R^2$ | **0.106** | |

Table 4.16 show that cognitive diversity have the negative relationship to the innovation with **β= -0.325** in level significant of 0.1 ($p<0.1$) with score of significance 0.065. Cognitive diversity of top management teams influence the innovation as much 10.6 % which showed by $R^2$ score 0.106.

**Second Model Regression (with debate interaction effect)**

In this step we will test the direct effect cognitive diversity to innovation by moderate effect of debate.

H2: The relationship between cognitive diversity and innovation is moderated by debate

**Table 4.17**

**Result of Moderated Regression Second Models**

| Variables | Model 2 | | |
|---|---|---|---|
| | β | Significant | F |
| C | **-0.265** | **0.743** | **1.256** |
| D | **0.115** | **0.718** | |
| C x D | **-0.060** | **0.943** | |

The relationship between variable cognitive diversity to innovation with moderate by debate is not significant with score of significant 0.945 or more than 0.05 and even 0.1. The result is explain that it only 5.7% (100%-94.3%) data belief as systematic manipulation data, and other 94.3% indicate occur by chance. That result is rejected when it follow the rule of significant accepted if it significant score less than 10% ($p<0.1$) or less than 5% ($p<0.05$) as the scientist agreement. So it means debate do not moderating the relationship between cognitive diversity and innovation.

## 4.10 Discussion

### 4.10.1 Relationship between Cognitive Diversity of Top Management Team to Innovation

The research result support the first hypothesis that said cognitive diversity has the negative effect to innovation. This result implied that the team which have the member with different belief in organization first goal will be hard to synergize and integrated their knowledge one another, this condition cause of each member tendency to be defend their own cognitive position to the organization

goal that make the desire not to synergize in integrating the knowledge. This unwillingness happens because as an effect of there is containing the different motif between the members which is have not consolidated yet between the members itself. It also indicates that the top management team with different belief, either normative belief or cause-effect belief will be difficult for them in decision making process, this team will also hard to go forward from one step to the next step in decision making process because existing of opposition between them in term of purpose and cause-effect relationship that belief influence organizational performance.

This result is support the previous finding that done by Miller et al.,(1998) that said cognitive diversity have the negative relationship to comprehensiveness in decision making and extensiveness of decision making. It also support the previous research done by Smith et al.,(1994) stated that team with different basic of cognitive difficult to communicate well, difficult to be integrated, and often place forward politics behavior one another. Team with different of cognitive needs more times and energies to conduct the consolidation purpose. Finally when the team difficult to comprehensive and extensive in decision making, and hard to be integrated will reduce the tendency of team to be innovate, so top management team as representative of their own institution will bring their institution to the less innovation.

Elaborating to inconsistency finding by some researchers who said that the more diverse team member will bring the better organization innovation (e.g. Jackson et al, 1995, Dahlin, 2005). Jackson et al (1995) stated that diversity

supposedly leads to greater variance in ideas, creativity, and innovation, thus generating better group performance.

Then like the same sound Dahlin (2005) stated that organizations are increasingly dependent on diverse teams for developing innovative products, making important decisions, and improving efficiency. Refering to this research finding the previous researchers did not classified what kind of team diversity that effect to organization innovation and performance. So this research make clear that by classification that diverse in term of knowledge and skill will bring to positive organization innovation and performance, and the other side cognitive diversity of team members will give the negative effect to organization innovation and performance. It can be said the answer of inconsistency between the previous finding by some other researchers that said cognitive diversity is give negative effect to comprehensiveness in decision making (Miller et al.,1998), and team with different cognitive need more times and energies to conduct the consolidation purposed (Smith et al., 1994). For the conclusion this research support both of inconsistency finding if its diversity classified well.

### 4.10.2 Moderating Effect on Relationship between Cognitive Diversity to Innovation

Research data did not support the hypothesis 2 that said debate moderating the effect of cognitive diversity to innovation. This implied debate is not influence the linkage cognitive diversity to innovation significantly, when the team have the cognitive diversity debate do not take the role here in term innovation process. It quietly different or not supporting the previous research found that debate reduce

the negative effect between cognitive diversity to team performance that found by Simons et al.,(1999).

This research finding can related to the negative argumentation said by Miller et al (1998) that cognitive diversity in team tend to use different communication way that refers to their cognitive base. The communication that mentioned is the use of language, term, analogy, and assumption. That conditions make worst the team process then output produced also unwell and even aggravated the conflict in the team that tended have happened before.

If it related to Indonesian people characteristic whose quietly affecting by local culture that have high power distance (Hofstede, 2010). In the lower level management team member tend to have weak power compare than upper level management team member that make the impression if debate with boss is not common attitude related to the local culture. So debate tend to be resisted by team because it potentially occurring the conflict between the members, for top management teams in Padang as respondents debate do not push away the team to be integrating each other that can increase the tendency to reduce the cognitive diversity to create the innovation. That why by existing or not, debate do not give the interaction effect between cognitive to innovation. This condition supported by the result data that show the low number of debate occur in top management team in Padang. This reason predicted as causing why the variable debate is not significant in moderating the effect of cognitive diversity to innovation like founding by Smith et al., (1999) that debate give the positive moderating effect.

# CHAPTER V

# CONCLUSION, LIMITATION AND IMPLICATION

## 5.1 Conclusion of the Research

Based on the analysis and discussion conducted previously, then the researcher can draw conclusion as follows:

1. The research is conducted to measure the effect of cognitive diversity to innovation and look the effect if it moderate by debate. The respondents are 119 leaders from 36 top management teams. But during analyze process there were 3 teams judge as outlier data and that were eliminated. So, finally there are only 33 top management teams of higher education institutions in Padang are used in this research.
2. According to the result we find that cognitive diversity in top management team will reduce the tendency to be integrated one another between team members and difficult to make the comprehensive decision to create innovation. Cognitive diversity has the negative effect to innovation.
3. Debate do not moderating the effect of cognitive diversity to innovation.

Based on the research, it is concluded that top management team of HEIs in Padang mostly have implemented the innovation in their own institution. As describe in chapter IV there are still some factor can disturb the innovation process. Top management team of HEIs still have the power distance between

lower level with upper level in term of open out the argument it show from low score of debate, by occurring debate it can reduce the high power distance between top management team. This process need to implement in order debate come constructively in team which able to react the well knowledge integration then will support the better innovation process.

Top management team is important to effort the fitting of team characteristic composition optimally. Optimal in this case means that the composition of top management team characteristic should be homogenous in term of cognitive and diverse in term of knowledge.

**5.2 Limitation of the Research**

This study about top management team of higher education institutions still has some limitations,

1. This research have the limitation as most other top management team research, it is low response of respondents. It 286 questionnaires is dispersed, only 143 questionnaires are returned, then 24 of them are eliminated, so only 119 of them that can be processed, due barriers such as the questionnaires do not answered well by respondents, respondents show unexpected response, too busy, not able to fill out the questionnaire, did not get permission from the head of Higher Education Institutions (HEIs), and questionnaires are returned in a state is not occupied, etc.
2. Questionnaire filling method that is used in this research is self-assessment that done by respondent. This method tend to bias

because sometimes respondent tend to be overvalued in expecting himself. But author try to reduce that effect by given the reverse question for some indicators.

3. The limitation of time and knowledge of the researcher to finish this research.

### 5.3 Suggestion for Further Research

The result of this research is expected to encourage and become references to conduct further research in the future, some suggested topics to be developed in further research:

1. This research result show the different result with previous research as an effect of culture where the respondents take place. So that it need more different contextual exploration to see their condition in this context.
2. For next research it suggested to see the effect from knowledge distance between the team members to support innovation.
3. Further research hopefully to effort the more response from respondent, because previous research about top management team tended to gain low response of the respondent for some reason.

## 5.4 Implication of the Research

From the previous chapter and discussion, this study has implication for Higher Educational Institutions and academics literature like explain below,

1. For Higher Education Institution can imply that when required the leader it as well as to make the optimal composition of top management team member's characteristic. It will support the team in decision making and integrating the knowledge to bring their institution to occur the innovation which next will give the value for existence of that institution.

2. This finding hopefully give the better understanding for top management team of higher education institution especially in Padang and commonly in Indonesia who have the sensitive culture in defines the debate. Debate should be accepted as an open idea within team members in order to reduce the high power distance between them, the next can give the rich information as resources in decision making process to develop institution innovation.

3. It finding also expected to make rich academic literature especially in elaborate the understanding about top management team diversity effect the organizational innovation and performance. As have been discussed before some researchers said that the more diverse team member will bring the better organization innovation (e.g. Jackson et al, 1995, Dahlin., 2005). Where Jackson et al (1995) stated that diversity supposedly leads to greater variance in

ideas, creativity, and innovation, thus generating better group performance. Then like the same sound Dahlin (2005) stated that organizations are increasingly dependent on diverse teams for developing innovative products, making important decisions, and improving efficiency. Refers to this research finding the previous researchers did not classified what kind of team diversity that effect to organization innovation and performance. So this research make clear that by classification that diverse in term of knowledge and skill will bring to positive organization innovation and performance, and the other side cognitive diversity of team members will give the negative effect to organization innovation and performance. It can say as the answer of inconsistency between the previous finding by some other researchers that said cognitive diversity is give negative effect to comprehensiveness in decision making (Miller et al.,1998), and team with different cognitive need more times and energies to conduct the consolidation purposed (Smith et al., 1994). For the conclusion this research is support both of that inconsistency finding if it diversity is classified well.

**APPENDIX I**

**Kuesioner Penelitian**

*Tentang*

**TIM MANAJEMEN PUNCAK PERGURUAN TINGGI DI KOTA PADANG**

Peneliti:

Rahmad Fauzi Hadynata

JURUSAN MANAJEMEN INTERNASIONAL

FAKULTAS EKONOMI

UNIVERSITAS ANDALAS

Padang

2013

Kepada YTH

Padang, Desember 2012

Bapak/Ibu Pimpinan Perguruan Tinggi

Di

Tempat

Dengan Hormat,

Bersama ini kami mendoakan semoga Bapak/ Ibu berada dalam keadaan sehat, sehingga dapat menjalankan tugas dengan baik.

Dengan surat ini kami meminta kesediaan Bapak/ Ibu untuk berpartisipasi dalam membantu penelitian kami tentang "Tim Manajemen Puncak Dan Inovasi di Perguruan Tinggi" dengan cara mengisi kuesioner yang kami berikan. Data yang bapak/ibu berikan semata-mata digunakan untuk tujuan akademis.

Demikianlah surat ini kami sampaikan, perhatian, bantuan dan partisipasi Bapak/Ibu merupakan kontribusi berharga bagi kami dan bagi perkembangan ilmu pengetahuan di Indonesia. Atas partisipasi Bapak/Ibu kami ucapkan terima kasih.

Pembimbing

Prof. Dr. Herri, SE, MBA

**Kuesioner Penelitian**

**BAGIAN 1**

**Data diri responden**

Nama :

Jabatan struktural* :

Usia* : Tahun

Lama bekerja pada institusi ini : Tahun

Upah/Gaji (Optional) : Rp.

**Latar belakang pendidikan**

Dari jurusan mana anda berasal* : (Tuliskan)

Tingkat pendidikan tertinggi anda* 1. Diploma 2. Sarjana 3. Master 4. Doktor

***wajib diisi***

**BAGIAN 2**

Pada bagian ini anda diharapkan menjawab beberapa pertanyaan. Setiap jawaban anda tidak bersifat benar atau salah, oleh karena itu kami mengharapkan anda menjawab pertanyaan tersebut berdasarkan pendapat dan fenomena yang sebenarnya.

**Berilah tanda silang (x) atau cek (√) pada jawaban yang menggambarkan kondisi pada institusi anda. Jika jawaban anda keliru, maka berilah tanda (=) pada bagian yang keliru, kemudian jawab kembali pertanyaan tersebut dengan jawaban yang benar.**

Jawablah pertanyaan di bawah ini dengan menggunakan skala berikut:

| 1 (STB) | 2 (TB) | 3 (ATB) | 4 (N) | 5 (AB) | 6 (B) | 7 (SB) |
|---|---|---|---|---|---|---|
| Sangat Tidak Bersepakat | Tidak Bersepakat | Agak Tidak Bersepakat | Netral | Agak Bersepakat | Bersepakat | Sangat Bersepakat |

**Contoh:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cara terbaik untuk memaksimalkan keuntungan jangka panjang institusi? | **1** | **2** | **3** | **4** | **5** | **X 6** | **7** |

**Artinya**: dalam proses pengambilan keputusan, anggota-anggota di dalam tim manajemen puncak anda bersepakat mengenai cara terbaik untuk memaksimalkan keuntungan jangka panjang institusi.

**A. Diversitas Kognitif**

**Pertanyaan:** *(Mohon dibaca)*

Proses pengambilan keputusan melibatkan diskusi, debat, dan perbedaan pendapat antar anggota-anggota tim manajemen puncak. Seberapa kuat anggota-anggota di dalam tim manajemen puncak bersepakat atau tidak bersepakat satu sama lain dalam proses pengambilan keputusan tersebut mengenai:

| | STB | TB | ATB | N | AB | B | SB |
|---|---|---|---|---|---|---|---|
| Cara terbaik untuk memaksimalkan pertumbuhan jangka panjang organisasi | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Apa yang seharusnya menjadi tujuan utama organisasi | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Cara terbaik untuk memastikan kelangsungan hidup jangka panjang organisasi | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Tujuan organisasi yang mana yang seharusnya paling penting untuk dipertimbangkan | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

*Kuesioner ini dikembangkan oleh Miller et al (1998)*

**Jawablah pertanyaan selanjutnya dengan menggunakan skala berikut:**

| 1 (STS) | 2 (TS) | 3 (ATS) | 4 (N) | 5 (AS) | 6 (S) | 7 (SS) |
|---|---|---|---|---|---|---|
| Sangat Tidak Setuju | Tidak setuju | Agak Tidak Setuju | Netral | Agak Setuju | Setuju | Sangat Setuju |

**B. Debat**

**Sejauh mana anda setuju atau tidak setuju dengan pernyataan di bawah ini berdasarkan fenomena di Institusi anda**

| | STS | TS | ATS | N | AS | S | SS |
|---|---|---|---|---|---|---|---|
| Di dalam diskusi proses pengambilan keputusan, jika terjadi ketidaksepakatan, para eksekutif menyatakannya secara jelas dan terbuka | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Eksekutif yang berbeda mengajukan pendekatan yang berbeda dalam proses pengambilan keputusan | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Para eksekutif secara terbuka menantang pendapat eksekutif lainnya dalam proses pengambilan keputusan | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Diskusi dalam proses pengambilan keputusan menjadi panas | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

*Kuesioner ini dikembangkan oleh Simons et al (1999)*

**C. Innovation**

**Sejauh mana anda setuju atau tidak setuju dengan pernyataan di bawah ini berdasarkan fenomena di Institusi anda**

| | STS | TS | ATS | N | AS | S | SS |
|---|---|---|---|---|---|---|---|
| Institusi kami sering mencoba ide-ide yang baru | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Institusi kami berusaha mencari cara-cara baru untuk melakukan sesuatu dalam proses kegiatan institusi | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Institusi kami kreatif dalam metode operasionalisasi | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Institusi kami sering menjadi yang pertama dalam menawarkan program studi, fasilitas, dan layanan baru | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Di dalam institusi kami inovasi dianggap terlalu berisiko dan dihindari | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Pengenalan program baru kami meningkat dalam 5 tahun terakhir | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

*Kuesioner ini dikembangkan oleh Calantone et al (2002)*

## APPENDIX II

## DESCRIPTIVE STATISTICS OF ITEMS RESPOND

**Statistics**

| | | C1 | C2 | C3 | C4 | D1 | D2 | D3 |
|---|---|---|---|---|---|---|---|---|
| N | Valid | 119 | 119 | 119 | 119 | 119 | 119 | 119 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Statistics**

| | | D4 | IN1 | IN2 | IN3 | IN4 | IN5 | IN6 |
|---|---|---|---|---|---|---|---|---|
| N | Valid | 119 | 119 | 119 | 119 | 119 | 119 | 119 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

### 1. Cognitive Diversity

### Descriptives

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| C1 | 119 | 1.00 | 7.00 | 2.3025 | 1.23888 |
| C2 | 119 | 1.00 | 7.00 | 2.1261 | 1.19713 |
| C3 | 119 | 1.00 | 7.00 | 2.2857 | 1.20129 |
| C4 | 119 | 1.00 | 7.00 | 2.5630 | 1.33174 |
| Valid N (listwise) | 119 | | | | |

### Frequency Table

**C1**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 23 | 19.3 | 19.3 | 19.3 |
| 2.00 | 65 | 54.6 | 54.6 | 73.9 |
| 3.00 | 19 | 16.0 | 16.0 | 89.9 |
| 4.00 | 4 | 3.4 | 3.4 | 93.3 |
| 5.00 | 3 | 2.5 | 2.5 | 95.8 |
| 6.00 | 2 | 1.7 | 1.7 | 97.5 |
| 7.00 | 3 | 2.5 | 2.5 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

C2

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 35 | 29.4 | 29.4 | 29.4 |
| 2.00 | 59 | 49.6 | 49.6 | 79.0 |
| 3.00 | 12 | 10.1 | 10.1 | 89.1 |
| 4.00 | 6 | 5.0 | 5.0 | 94.1 |
| 5.00 | 3 | 2.5 | 2.5 | 96.6 |
| 6.00 | 3 | 2.5 | 2.5 | 99.2 |
| 7.00 | 1 | .8 | .8 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

C3

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 28 | 23.5 | 23.5 | 23.5 |
| 2.00 | 57 | 47.9 | 47.9 | 71.4 |
| 3.00 | 17 | 14.3 | 14.3 | 85.7 |
| 4.00 | 11 | 9.2 | 9.2 | 95.0 |
| 5.00 | 2 | 1.7 | 1.7 | 96.6 |
| 6.00 | 3 | 2.5 | 2.5 | 99.2 |
| 7.00 | 1 | .8 | .8 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

C4

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 21 | 17.6 | 17.6 | 17.6 |
| 2.00 | 52 | 43.7 | 43.7 | 61.3 |
| 3.00 | 24 | 20.2 | 20.2 | 81.5 |
| 4.00 | 8 | 6.7 | 6.7 | 88.2 |
| 5.00 | 9 | 7.6 | 7.6 | 95.8 |
| 6.00 | 4 | 3.4 | 3.4 | 99.2 |
| 7.00 | 1 | .8 | .8 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

## 2. Debate

### Descriptives

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| D1 | 119 | 2.00 | 7.00 | 5.8319 | 1.15948 |
| D2 | 119 | 1.00 | 7.00 | 5.0000 | 1.48438 |
| D3 | 119 | 1.00 | 7.00 | 3.9748 | 1.69976 |
| D4 | 119 | 1.00 | 7.00 | 3.4790 | 1.67154 |
| Valid N (listwise) | 119 | | | | |

### Frequency Table

**D1**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 2.00 | 2 | 1.7 | 1.7 | 1.7 |
| 3.00 | 6 | 5.0 | 5.0 | 6.7 |
| 4.00 | 7 | 5.9 | 5.9 | 12.6 |
| 5.00 | 14 | 11.8 | 11.8 | 24.4 |
| 6.00 | 56 | 47.1 | 47.1 | 71.4 |
| 7.00 | 34 | 28.6 | 28.6 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

**D2**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 1 | .8 | .8 | .8 |
| 2.00 | 14 | 11.8 | 11.8 | 12.6 |
| 3.00 | 6 | 5.0 | 5.0 | 17.6 |
| 4.00 | 11 | 9.2 | 9.2 | 26.9 |
| 5.00 | 25 | 21.0 | 21.0 | 47.9 |
| 6.00 | 55 | 46.2 | 46.2 | 94.1 |
| 7.00 | 7 | 5.9 | 5.9 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

D3

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 5 | 4.2 | 4.2 | 4.2 |
| 2.00 | 27 | 22.7 | 22.7 | 26.9 |
| 3.00 | 22 | 18.5 | 18.5 | 45.4 |
| 4.00 | 12 | 10.1 | 10.1 | 55.5 |
| 5.00 | 22 | 18.5 | 18.5 | 73.9 |
| 6.00 | 27 | 22.7 | 22.7 | 96.6 |
| 7.00 | 4 | 3.4 | 3.4 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

D4

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 11 | 9.2 | 9.2 | 9.2 |
| 2.00 | 33 | 27.7 | 27.7 | 37.0 |
| 3.00 | 22 | 18.5 | 18.5 | 55.5 |
| 4.00 | 17 | 14.3 | 14.3 | 69.7 |
| 5.00 | 15 | 12.6 | 12.6 | 82.4 |
| 6.00 | 19 | 16.0 | 16.0 | 98.3 |
| 7.00 | 2 | 1.7 | 1.7 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

## 3. Innovation

### Descriptive

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| IN1 | 119 | 2.00 | 7.00 | 5.4790 | 1.12633 |
| IN2 | 119 | .00 | 7.00 | 5.6050 | 1.31625 |
| IN3 | 119 | 2.00 | 7.00 | 5.3782 | 1.26887 |
| IN4 | 119 | 1.00 | 7.00 | 4.7563 | 1.46696 |
| IN5 | 119 | 2.00 | 7.00 | 5.1092 | 1.31992 |
| IN6 | 119 | 2.00 | 7.00 | 5.0000 | 1.35921 |
| Valid N (listwise) | 119 | | | | |

## Frequency Table

**IN1**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 2.00 | 2 | 1.7 | 1.7 | 1.7 |
| | 3.00 | 3 | 2.5 | 2.5 | 4.2 |
| | 4.00 | 21 | 17.6 | 17.6 | 21.8 |
| | 5.00 | 21 | 17.6 | 17.6 | 39.5 |
| | 6.00 | 54 | 45.4 | 45.4 | 84.9 |
| | 7.00 | 18 | 15.1 | 15.1 | 100.0 |
| | Total | 119 | 100.0 | 100.0 | |

**IN2**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | .00 | 1 | .8 | .8 | .8 |
| | 2.00 | 2 | 1.7 | 1.7 | 2.5 |
| | 3.00 | 7 | 5.9 | 5.9 | 8.4 |
| | 4.00 | 11 | 9.2 | 9.2 | 17.6 |
| | 5.00 | 19 | 16.0 | 16.0 | 33.6 |
| | 6.00 | 50 | 42.0 | 42.0 | 75.6 |
| | 7.00 | 29 | 24.4 | 24.4 | 100.0 |
| | Total | 119 | 100.0 | 100.0 | |

**IN3**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 2.00 | 5 | 4.2 | 4.2 | 4.2 |
| | 3.00 | 6 | 5.0 | 5.0 | 9.2 |
| | 4.00 | 15 | 12.6 | 12.6 | 21.8 |
| | 5.00 | 24 | 20.2 | 20.2 | 42.0 |
| | 6.00 | 51 | 42.9 | 42.9 | 84.9 |
| | 7.00 | 18 | 15.1 | 15.1 | 100.0 |
| | Total | 119 | 100.0 | 100.0 | |

**IN4**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 1.00 | 1 | .8 | .8 | .8 |
| 2.00 | 9 | 7.6 | 7.6 | 8.4 |
| 3.00 | 16 | 13.4 | 13.4 | 21.8 |
| 4.00 | 23 | 19.3 | 19.3 | 41.2 |
| 5.00 | 23 | 19.3 | 19.3 | 60.5 |
| 6.00 | 37 | 31.1 | 31.1 | 91.6 |
| 7.00 | 10 | 8.4 | 8.4 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

**IN5**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 2.00 | 5 | 4.2 | 4.2 | 4.2 |
| 3.00 | 12 | 10.1 | 10.1 | 14.3 |
| 4.00 | 20 | 16.8 | 16.8 | 31.1 |
| 5.00 | 21 | 17.6 | 17.6 | 48.7 |
| 6.00 | 50 | 42.0 | 42.0 | 90.8 |
| 7.00 | 11 | 9.2 | 9.2 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

**IN6**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid 2.00 | 9 | 7.6 | 7.6 | 7.6 |
| 3.00 | 7 | 5.9 | 5.9 | 13.4 |
| 4.00 | 24 | 20.2 | 20.2 | 33.6 |
| 5.00 | 24 | 20.2 | 20.2 | 53.8 |
| 6.00 | 45 | 37.8 | 37.8 | 91.6 |
| 7.00 | 10 | 8.4 | 8.4 | 100.0 |
| Total | 119 | 100.0 | 100.0 | |

## APPENDIX III

# VALIDITY, RELIABILITY, AND NORMALITY TESTING

## 1. VALIDITY TESTING

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .794 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 774.253 |
| | Df | 91 |
| | Sig. | .000 |

**Rotated Component Matrix[a]**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| K1 | -.268 | .845 | -.077 |
| K2 | -.167 | .901 | .008 |
| K3 | -.128 | .891 | .102 |
| K4 | -.282 | .716 | -.194 |
| D1 | .512 | -.433 | -.120 |
| D2 | .163 | -.158 | .426 |
| D3 | -.027 | -.023 | .763 |
| D4 | -.115 | .171 | .785 |
| IN1 | .789 | -.107 | -.129 |
| IN2 | .792 | -.209 | -.101 |
| IN3 | .844 | -.261 | .011 |
| IN4 | .710 | -.107 | .273 |
| IN5 | .383 | -.208 | -.027 |
| IN6 | .662 | -.097 | .259 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

## 2. REABILITY TESTING

### A. Cognitive diversity (C1, C2, C3, C4)

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 119 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 119 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .893 | .895 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| K1 | 6.9748 | 10.720 | .798 | .655 | .849 |
| K2 | 7.1513 | 10.757 | .833 | .706 | .837 |
| K3 | 6.9916 | 11.042 | .782 | .659 | .856 |
| K4 | 6.7143 | 11.121 | .657 | .444 | .905 |

## B. Debate (D1, D2, D3, D4)

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 119 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 119 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .352 | .305 | 4 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| D1 | 5.8319 | 1.15948 | 119 |
| D2 | 5.0000 | 1.48438 | 119 |
| D3 | 3.9748 | 1.69976 | 119 |
| D4 | 3.4790 | 1.67154 | 119 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| D1 | 12.4538 | 11.504 | -.039 | .081 | .472 |
| D2 | 13.2857 | 8.952 | .156 | .027 | .322 |
| D3 | 14.3109 | 6.199 | .408 | .227 | -.035[a] |
| D4 | 14.8067 | 7.666 | .225 | .252 | .240 |

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

## Debate ( D3, D4 / after eliminated 2 items)

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .611 | .611 | 2 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| D3 | 3.4790 | 2.794 | .440 | .193 | .[a] |
| D4 | 3.9748 | 2.889 | .440 | .193 | .[a] |

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

## C. Innovation (IN1, IN2, IN3, IN4, IN5, IN6)

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 119 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 119 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .817 | .821 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| IN1 | 25.8487 | 24.113 | .638 | .529 | .779 |
| IN2 | 25.7227 | 22.541 | .654 | .591 | .772 |
| IN3 | 25.9496 | 21.608 | .782 | .655 | .744 |
| IN4 | 26.5714 | 21.959 | .606 | .472 | .783 |
| IN5 | 26.2185 | 26.494 | .310 | .112 | .844 |
| IN6 | 26.3277 | 23.409 | .546 | .374 | .796 |

## Innovation after eliminated IN 5

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .844 | .848 | 5 |

## 3. NORMALITY TEST

# NPar Tests

**One-Sample Kolmogorov-Smirnov Test**

| | | Standardized Residual |
|---|---|---|
| N | | 33 |
| Normal Parameters[a,,b] | Mean | .0000000 |
| | Std. Deviation | .96824584 |
| Most Extreme Differences | Absolute | .115 |
| | Positive | .086 |
| | Negative | -.115 |
| Kolmogorov-Smirnov Z | | .658 |
| Asymp. Sig. (2-tailed) | | .779 |

a. Test distribution is Normal.

b. Calculated from data.

## APPENDIX IV

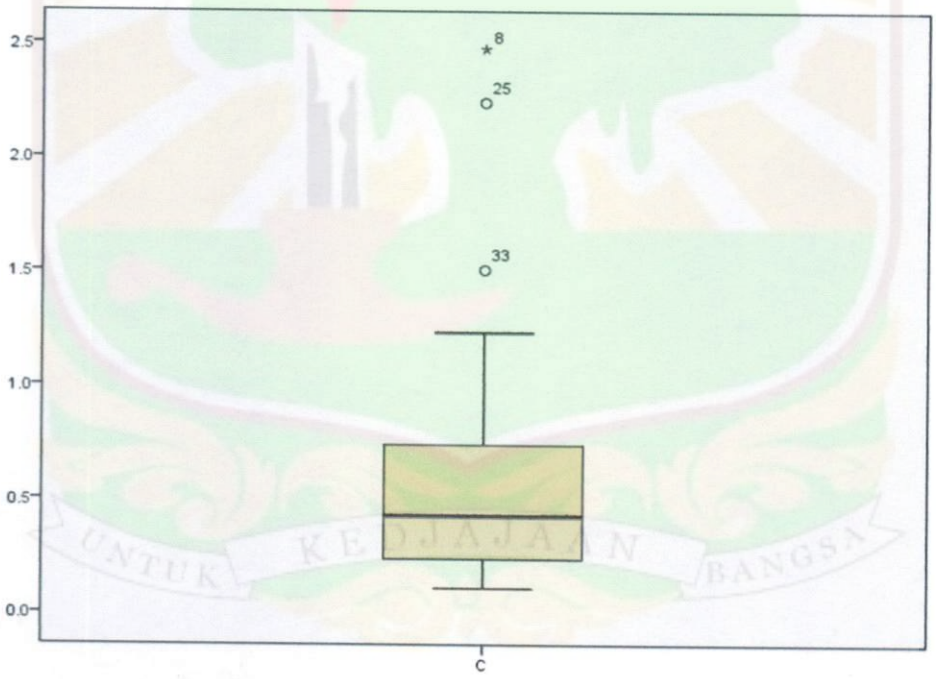
## OUTLIERS ANALYSIS

## BOX PLOT TECHNIQUE

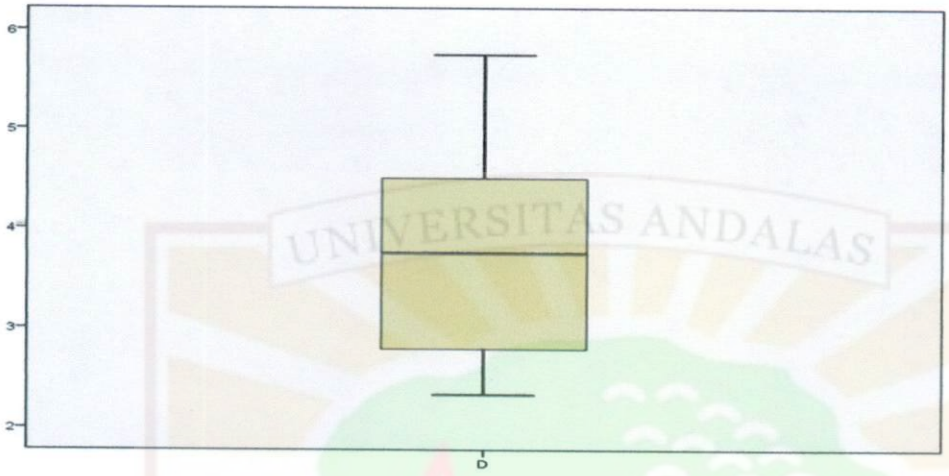
**Case Processing Summary**

| | Cases | | | | | |
|---|---|---|---|---|---|---|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| C | 36 | 100.0% | 0 | .0% | 36 | 100.0% |
| D | 36 | 100.0% | 0 | .0% | 36 | 100.0% |
| IN | 36 | 100.0% | 0 | .0% | 36 | 100.0% |

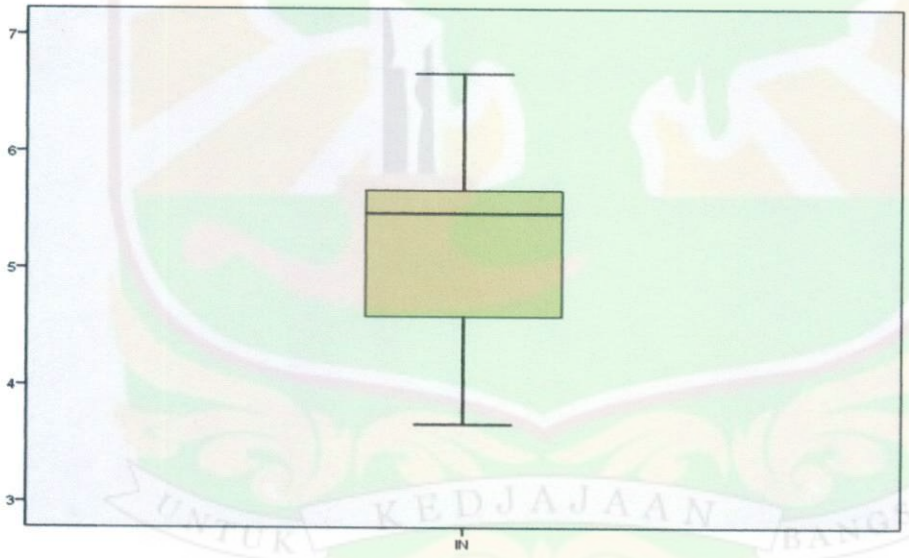
### 1. Cognitive Diversity



## 2. Debate




## 3. Innovation



**APPENDIX V**

## HYPOTHESES TEST

### 1. Cognitive Diversity to Innovation

## Regression

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| IN | 5.2315 | .62309 | 33 |
| C | .4743 | .32324 | 33 |

**Correlations**

| | | IN | C |
|---|---|---|---|
| Pearson Correlation | IN | 1.000 | -.325 |
| | C | -.325 | 1.000 |
| Sig. (1-tailed) | IN | . | .033 |
| | C | .033 | . |
| N | IN | 33 | 33 |
| | C | 33 | 33 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | C[a] | . | Enter |

a. All requested variables entered.

b. Dependent Variable: IN

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | |
|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 |
| 1 | .325[a] | .106 | .077 | .59871 | .106 | 3.658 | 1 |

a. Predictors: (Constant), C

**Model Summary**

| Model | Change Statistics | |
|---|---|---|
| | df2 | Sig. F Change |
| 1 | 31 | .065 |

**ANOVA[b]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1.311 | 1 | 1.311 | 3.658 | .065[a] |
| | Residual | 11.112 | 31 | .358 | | |
| | Total | 12.424 | 32 | | | |

a. Predictors: (Constant), C

b. Dependent Variable: IN

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 5.529 | .187 | | 29.558 | .000 |
| | C | -.626 | .327 | -.325 | -1.913 | .065 |

a. Dependent Variable: IN

## 2. Moderated Regression Analysis

# Regression

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| IN | 5.2315 | .62309 | 33 |
| DK | .4743 | .32324 | 33 |
| D | 3.6787 | .95062 | 33 |
| DxC | 1.7331 | 1.22213 | 33 |

**Correlations**

| | | IN | DK | D | DxC |
|---|---|---|---|---|---|
| Pearson Correlation | IN | 1.000 | -.325 | .109 | -.273 |
| | DK | -.325 | 1.000 | -.040 | .925 |
| | D | .109 | -.040 | 1.000 | .280 |
| | DxC | -.273 | .925 | .280 | 1.000 |
| Sig. (1-tailed) | IN | . | .033 | .273 | .062 |
| | DK | .033 | . | .414 | .000 |
| | D | .273 | .414 | . | .057 |
| | DxC | .062 | .000 | .057 | . |
| N | IN | 33 | 33 | 33 | 33 |
| | DK | 33 | 33 | 33 | 33 |
| | D | 33 | 33 | 33 | 33 |
| | DxC | 33 | 33 | 33 | 33 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | DxC, D, DK[a] | . | Enter |

a. All requested variables entered.

b. Dependent Variable: IN

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .339[a] | .115 | .023 | .61574 |

a. Predictors: (Constant), DxC, D, DK

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1.429 | 3 | .476 | 1.256 | .308[a] |
| | Residual | 10.995 | 29 | .379 | | |
| | Total | 12.424 | 32 | | | |

a. Predictors: (Constant), DxC, D, DK

b. Dependent Variable: IN

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | |
|---|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Zero-order | Partial | Part |
| 1 (Constant) | 5.249 | .774 | | 6.785 | .000 | | | |
| DK | -.511 | 1.543 | -.265 | -.331 | .743 | -.325 | -.061 | -.058 |
| D | .076 | .208 | .115 | .364 | .718 | .109 | .067 | .064 |
| DxC | -.030 | .425 | -.060 | -.072 | .943 | -.273 | -.013 | -.013 |

a. Dependent Variable: IN