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**GROUP PROCESS VARIABLES AS FACILITATORS OF
COGNITIVE DIVERSITY IN THE KNOWLEDGE
ORGANIZATIONS**

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Tiivistelmä

Ruben Palmroth: Ryhmäprosessimuuttajat kognitiivisen monimuotoisuuden edistäjinä tieto-organisaatioissa
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Organisaatioissa on kehittämisen varaa inhimillisen pääoman hyödyntämisessä nykyajan tietoyhteiskunnan vaatimusten täyttämiseksi. Lisäarvoa luodaan yhä enemmän innovaation avulla, vaikka uusia kone- ja syväoppimisteknologioita otetaankin käyttöön. Ihmisten rooli säilyy merkittävänä, joten heidän ainutlaatuisista kognitiivista potentiaaliaan on hyödynnettävä innovaatiokilpailussa menestymiseksi.

Tutkimuksen tavoitteena on analysoida tiimien sisäistä ja niiden välistä diversiteettiä ja sen vaikutuksia organisaatioiden suorituskykyyn luovuuden kasvun kautta. Käsitteenä käytettiin kognitiivista diversiteettiä, joka eroaa pääsääntöisesti demografisia tekijöitä painottavasta diversiteetistä. Se nimittäin keskittyy erilaisiin näkemyksiin, arvoihin, ajattelutapoihin ja muihin luovuuden ja päätöksenteon kannalta tärkeisiin tekijöihin. Työn alussa käsitellään päätöksentekoon liittyviä heuristiikkoja ja muutamia kognitiivisia vinoumia, joita monimuotoiset perspektiivit voivat ehkäistä.

Tutkimuksessa analysoitiin ryhmäprosessimuuttajia. Tutkimusosiossa keskityttiin tehtäväperusteisen konfliktin, luottamuksen ja sosiaalisen informaatioprosessoinnin vaikutukseen ryhmän luovuuteen.

Tutkimus toteutettiin kirjallisuuskatsauksen ja puolistrukturoidusta teemahaastattelusta kerätyn aineiston avulla. Aineisto analysoitiin teoriaohjaavan laadullisen sisällönanalyysin avulla, jossa teoriaa käytettiin apuna aineiston tulosten tulkinnassa.

Tutkimuksen tulosten perusteella voidaan päätellä luottamuksella, tehtäväperusteisilla konflikteilla ja sosiaalisella informaationprosessoinnilla olevan merkittävä rooli kognitiivisen diversiteetin kanssa. Tutkimus toi esille mitä käytännön ongelmia kognitiivisen diversiteetin hyödyntämisessä on. Aito kuulluksi tuleminen, kaikkien tasavertainen osallistaminen sekä sovittelijan käyttö nousevat tuloksista keskeisinä tekijöinä sen tuomien haasteiden ratkaisijoina tieto-organisaatioissa. Aito osallistaminen luo sitoutuneisuutta tavoitteisiin, mikä on edellytys luovuudelle. Osallistamisen edistämiseksi pitää varata aikaa pitkäjänteisille ja spontaaneille keskusteluille projektien tavoitteista sen sijaan että painotetaan pelkästään lyhyitä ja tehokkaita vaikuttavia raportointeja.

Erilaisista perspektiiveistä koituvia konflikteja taas tulee estää ulkopuolisen sovittelijan voimin, sillä vaikka luottamus henkilöiden välillä on avuksi, ei se yksinään riitä. Nykyajan etätyöympäristössä luottamusta voidaan edistää lisäämällä henkilöstön välisiä kasvokkaisia kohtaamisia. Luottamus lisää myös osallistamisen kannalta tärkeää psykologista turvallisuutta. Ylipäänsä tiimityöskentely ja interpersonaaliset taidot ovat välttämättömiä yhä monimuotoisemmassa työympäristössä.

Kuten ilmenee, työstä tuli laaja kokonaisuus. Tulokset tuovat esiin useita erilaisia toisiinsa kytköksissä olevia tekijöitä. Niitä on hankalaa pelkistää yhdeksi tiiviiksi kokonaisuudeksi. Kaikkia niitä kuitenkin yhdistää henkilöstön sitouttaminen yhteisiin tavoitteisiin, mitä voidaan pitää kognitiivisen diversiteetin aidon hyödyntämisen edellytyksenä.

Avainsanat: Kognitiivinen monimuotoisuus, luovuus, ryhmäprosessin muuttajat, innovaatio, strategiset päätökset, kognitiiviset vinoumat, heuristiikat, päätöksenteko, tehtäväperusteinen konflikti, sitoutuminen, sosiaalinen tiedonkäsittely, pätevyysperusteinen luottamus, tieto-organisaatiot, sisäinen motivaatio, kognition tarve.

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TABLE OF CONENT

| | |
|--|----|
| 1. INTRODUCTION | 5 |
| 1.1 Study background | 5 |
| 1.2 Research task..... | 7 |
| 1.3 Research limitations and concepts | 7 |
| 2. LITERATURE REVIEW | 9 |
| 2.1 Heuristics and biases | 9 |
| 2.1.1 Differences in heuristics and biases between entrepreneurs and managers | 10 |
| 2.1.2 Cognitive biases and couple examples of them | 11 |
| 2.1.3 Cognitive Diversity..... | 18 |
| 2.2.2 How cognitive diversity approach differs from the traditional focus..... | 20 |
| 2.2 Successful implementation of Cognitive diversity on innovation | 21 |
| 2.2.1 The relationship between cognitive diversity and third factors on decision making. | 22 |
| 2.2.2 Strategic comprehensiveness and extensiveness | 23 |
| 2.2.3 Task conflict improves decisions and performance..... | 24 |
| 2.2.4 Trust allows and encourages sustainable disagreement and better decision making. | 25 |
| 2.3 Need for cognition personality factor with other situational factors influences diversity’s role on team performance. | 27 |
| 2.3.1 Information elaboration as a crucial group process influencing complex decisions | 28 |
| 2.3.2 Openness to experience and firm performance | 30 |
| 2.3.3 Effects of Team Intrinsic motivation and transformational leadership on cognitive diversity and creativity | 30 |
| 2.4 Literature review conclusions | 33 |
| 3. METHODOLOGY..... | 36 |
| 3.1 Research method..... | 36 |
| 3.1.1 Qualitative research..... | 36 |
| 3.2 Data collection | 38 |

| | |
|---|----|
| 3.3 Qualitative content analysis | 39 |
| 3.4 Reliability of data collection | 41 |
| 4. FINDINGS | 42 |
| 5. DISCUSSION AND CONCLUSIONS | 46 |
| 5.1 Discussion | 46 |
| 5.2 Conclusions..... | 46 |
| 5.3 Further research and limitations..... | 48 |
| 6. REFERENCES..... | 49 |
| Lähdeluettelo..... | 53 |
| Appendix..... | 56 |

1. INTRODUCTION

1.1 Study background

The amount of available information has grown tremendously during the last couple of decades. This has been due to the proliferation of digital technologies and the internet. Smartphones and social media have been among the biggest factors. In fact, the amount of digital information available on the internet and various intranets often cause information overload (Alhabashneh, Iqbal, Doctor & James, 2017). It is not hard to reason that this overload can make our thinking seek shortcuts or use heuristics, because it is impossible to rationally analyse all of the information. Does this mean that intuitive thinking is more useful? Intuition has been one of the most controversial terms in psychology (Salonen, 2017), probably due to its unconscious nature. However, when information is free and omnipresent, time that has before gone to procure it, can now be transferred into proper reasoning and communication. In spite of this, the increased use of heuristics will inevitably cause severe biases. This is why we need to know about them and minimize them with cognitive diversity.

Before widespread web technology, upper-level managers were the gatekeepers of information, but now when everyone has access, there might be more benefits in socially processing the information. Pesonen (2022) in his article “Argumentation, cognition, and the epistemic benefits of cognitive diversity”, argues about the benefits of cognitive diversity in creating the most accurate beliefs in organizations. That article was what increased my interest in this concept and made me research the subject further, because it expresses how holding correct beliefs allows leaders to focus on the right path. Consequently, making best use of their strategies. Taking advantage of cognitive diversity is what seems to be an effective way to achieve this.

By strategy I mean determining the right path to get to the organization’s goals. In this paper I don’t necessarily examine cognitive diversity’s effect on problem solving. It has been shown that it is best leaved to individuals (Phillips, 2009). What I investigate is more about the input such as the different ideas and how this diversity increases our innovative abilities. Diversity, although perhaps the most potent force driving innovation, remains enigmatic and inadequately comprehended in scientific

discourse. (Turkmen, 2013). Human attention is limited so only by the help of other people can we perform our best and get to consider things we have not thought about before.

In general, decisions have been taken within a hierarchical structure. Senior managers have made the strategic choices and lower managers have been responsible for its operational implementation in the different units. Leaders have the vision and know what to do (do the right things), while managers do the things right, as the pioneer of management in the old days, Peter Drucker, is sometimes said to have said. But in modern times of radical and intense change, doing the right things is not so easy. One person, or even a small, especially homogeneous group, may not be enough to make the quickest and most optimal decisions. I therefore believe that by drawing on people's different experiences, perceptions, decision-making styles and skills, organisations can better respond to the demands of the environment.

Instead of leaders and managers imposing rules that narrow the scope of employees and make work monotonous, I propose that cognitive diversity should allow teams more freedom to use their own cognitive and creative abilities. The reliance on creativity and innovation as pivotal drivers of competitive advantage is undeniable. It necessitates that organizations wholeheartedly embrace diverse workgroups to effectively tackle intricate, interdependent tasks that surpass the capabilities of a solitary individual. To meet these imperatives, organizations must establish flatter and more decentralized structural frameworks that revolve around diverse workgroups, fostering interconnectivity among individuals from diverse functional backgrounds and geographically dispersed locations worldwide. (Turkmen, 2013)

In other words, sharing perspectives with others would result in new ideas for implementation and new innovation. Individual people and groups with similar cognitive processes are in threat for distortions and bias. This fact is important to notice especially in upper managerial teams. To reduce this managerial bias, this theory suggests that a wide range of information from different sources is needed to ensure that the right decisions are made. It might therefore be beneficial to have a management team that is diverse in its thinking and beliefs, or at least one where argumentation, ideation and questioning are not frowned upon. In other words, it should not succumb to groupthink and conformism, but should constantly move forward dynamically with and even be ahead of the situation around it. The focus of this paper is to describe this concept and evaluate cognitive diversity's meaningfulness in enhancing the strategic decision-making through attitudes, skills, beliefs, values and knowledge in contemporary complex business environment.

However, research shows that diversity is not trouble free but can cause conflicts between people and even make decision-making more difficult and slower (Miller, Burke & Glick, 1998). Therefore, in this work I will investigate both positive and negative effects of cognitive diversity on groups.

1.2 Research task

The task of this research is to give an overview of the group processes and variables that allow the benefits of diversity to take place in knowledge organizations. Which factors support diversity's implementation, and which don't and even weaken it. I also write about cognitive biases because they are ultimately what it prevents. I will focus on task conflict, trust and information elaboration and what their role is in generating creativity and helping with strategic decisions in organization's practices. I want to contribute to research in this area and make the obscure and ambiguous notions and systems more easily understood. This I believe will make the concept more attractive for further studies. I also want to make people little bit more aware of this concept so that they can think and maybe get new ideas and learn something.

1.3 Research limitations and concepts

I assume cognitive diversity and therefore this paper focuses on companies that work in high knowledge and uncertain environment. I tried to write this objectively but there is no hiding the fact that I and other researchers find this concept attractive and at least subliminally if not visibly wish there to be linkages to positive performance outcomes in organizations with it. In current discourse, diversity has been used primarily as a vehicle for ideological agenda (Schalin, 2021). However, there is more than the mere ethical aspect in diversity. It is supposed that it can also cause concrete performance benefits. As the regulatory framework for ESG and diversity in particular in the social category develops, companies need to understand the best practices regarding the use of it. For example, UK's Financial Conduct Authority in April 2022, finalized new rules where UK and overseas companies with equity shares admitted to premium or standard listing on the UK Official List, are obligated along with other listing obligations to conform to diversity of board requirements. These requirements focus on demographical diversity such as gender and minority ethnic backgrounds. (Jacoby, Morris, Natoff & Stroud, 7/2022)

This study however focuses not on obligating companies to submit to this idea but on giving a broader scope, where not only demographical differences are taken into consideration and where the possible concrete performance benefits for organizations are regarded. I believe that, at least idealistically,

driving diversity in organizations should happen organically from within and not through regulations from without.

All this said, in accordance with the common academical understanding that educational research cannot be value-free, this study is not an exception and is not free from subjective or even ideological bias. This is also influenced by the fact that this is not an empirical experiment but instead more akin to social sciences in where complete objectivity is not possible or even required. (Gary & Holmes, 2020)

This is about getting to understand a particular theory and different concepts of my discipline and generating research material to find out whether its results align with the underlying theory. Concepts I work with are cognitive biases and heuristics, cognitive diversity, group process variables such as task conflict, social information elaboration, competence-based trust and creativity and decision making. I also write about some factors that could be considered fundamental such as intrinsic motivation, need for cognition, openness to experience and transformational leadership. These are all factors that are assumed to contribute to the benefits of cognitive diversity in knowledge organizations.

2. LITERATURE REVIEW

2.1 Heuristics and biases

In the first part of literature review, I go through heuristics and biases, and couple examples of the latter. I examine a little bit why and how people use them and what are their consequences.

Leaders and managers use heuristics which are basically simplified beliefs that save cognitive capacity and time. It is widely understood that people are bounded rationally, which means we are not as rational as we often would like to believe. This was officially discovered by the economist and organizational decision-making researcher Herbert Simon in the 1950s. He was the first to argue, that people have limited cognitive abilities and that therefore they simplify decision-making processes by creating mental tools or rules of thumb called heuristics, to help themselves make judgements more quickly and efficiently. (Simon, 1957) Relying on analytical thinking under uncertainty is unrealistic whereas heuristics help in handling it. However, these quick rules of thumb can also cause serious mistakes, and it also helps us explain why decision makers don't always make the most logical and optimal decisions. The errors caused by these mental shortcuts are called biases. One easy way to see the relation of these two to each other is by knowing that, heuristics are helpful biases, and biases hurtful heuristics.

This concept of Bounded rationality was further developed by Daniel Kahneman and his colleague, Amor Tversky in their (1982) book about heuristics and biases. They studied in practice the different biases that humans have under uncertainty. It is considered a seminal work with over 47000 references and has had remarkable influence in the psychological aspect of human decision-making. I would like to find out what are the pros and cons of these kind of mental shortcuts and in what separate situations is leaders' use of each recommended.

2.1.1 Differences in heuristics and biases between entrepreneurs and managers

People use heuristics in order to reduce a complex task of evaluating probabilities and predicting values, into a simpler function. This saves time but can lead to severe errors. For example, when people try to predict how the financial situation evolves, they usually have their own rule of thumb when things have changed for the worse and when action must be taken. Like when unemployment number exceeds a certain threshold or new job growth starts to decrease. how people believe the financial situation evolves, what party they think will win the next elections. When the consequences are high such as in strategic decision-making, the heuristics often impair the quality of the process and results. Especially if they are founded on false premises.

Entrepreneurs and leaders of companies are the ones that benefit the most from understanding the deficits of these shortcuts. It is especially important in a dynamic environment when exploiting new opportunities without the necessary information and resources, that entrepreneurs must be competent in the cognitive aspects of decision-making. Specifically, the heuristics. (Ahmad, Shah & Abbass, 2021) This is because they face harsh conditions such as stress, information overload, time pressure and uncertainty. Also, managers in uncertain situations such as the Covid-19-pandemic, had to rely on heuristics which caused their technical knowledge and reasoning faculties to get undermined and therefore causing judgemental errors. (Ahmad, Wu, Naveed, & Ali 2022) Especially under-confidence, self-attribution and disposition effect were the biases which occurred in emerging markets.

For example, disposition effect means that people do not realize losses immediately but hold on to them. They are risk-averse in gaining but risk-taking in losses. Under confidence is expressed as too high scepticism and belief in negative outcomes. In this situation resources and capabilities are undervalued and therefore opportunities missed. Decision-making in this kind of uncertain environment always causes a lack of information. “Nowadays, information overload and certain cognitive biases influence the decision-making process, especially during environmental transformations.” (Acciarini, Brunetta & Boccardelli, 2021) It is therefore important for managers to manage their biases to get the most accurate picture of the change.

As we have already pointed out, these cognitive shortcuts can be particularly beneficial in certain situations where decisions must be made in an information abundant environment, but they can

occasionally lead to harmful systematic errors. Managers need abundance of different frames. They need to be able to use different lenses in different situations. I would like to describe how cognitive diversity decreases the negative effects of biases and lastly the different viewpoints concerning the benefits of diversity and how can we make it work in organizations.

2.1.2 Cognitive biases and couple examples of them

Making decisions requires focus. Considering all the options and therefore second guessing yourself is not something what is expected from managers. Decisiveness has been the norm. (Strategy safari 2016) Sometimes deliberating for too long actually weakens the decision. We get caught up in too many small details and lose the larger picture. Many times, more information merely increases our confidence but not the accuracy of the decision. (Mintzberg 2018) On the other hand, eliminating irrationalities demand long reflection and broad perspectives. Human brains are limited in their information-processing compared to the large and complex world. Reasons do not need to precede action. We make decisions before we can even consciously understand why we came to the conclusion. According to philosopher and cognition scientist Daniel Dennett, our own behaviour is the result of habits, impulses, desires, and reactions to random events. In our conscious mind we just build a coherent narrative of our behaviour. The decision-making process is unconscious, and we rationalize the result after hand. (Poskiparta & Leisti 2022)

Kiesler (1971) put forward that making strategy explicit in terms of having people articulate their problem-solving approach actually causes psychological resistance to change it. Therefore, there is a risk for groupthink in strategy formation especially when it is done by a collection of minds that make the resistance accumulate. There are unlimited number of biases in the world. A few of the most common in organizational decision-making context are status quo or conservatism bias, confirmation bias, availability and group-think bias.

Status quo bias

Mintzberg (2008) says that status quo bias in decision making is the incapability to change one's mind in light of new evidence. In relation, according to Dean, Kibris & Masatlioglu (2017) majority of SQB models focus on it as a reference point which alters preferences. Our experiences alter the way we think and how we think alter the way we see our experience whereas it shapes what we do.

It is easy to repeat procedures according to a set routine because it saves cognitive capacity. However, when the world around you changes, the routine may become obsolete. For example, people more than likely elect an incumbent to another term in office, follow default company policies or buy the same product brands. This has been proven in a study by Samuelson & Zeckhauser in an article “Status Quo bias in Decision Making” from 1988, where individuals exhibited a significant status quo bias. The degree of the bias varied with the strength of the individual’s preference and the number of alternatives in the choice set. Number of options correlated positively with the relative bias for the status quo, whereas the bigger was the individual’s preference, the weaker was the bias. (Samuelson & Zeckhauser 1988) Larger choice sets cause attention to become scarcer and makes decisions more difficult to make which increases the status quo option’s preference. (Dean et al. 2017).

However, decision makers rarely drift away from the status quo alternative. “That is, doing nothing or maintaining one’s current or previous decision.” (Samuelson & Zeckhauser 1988). They also conclude that data on the selections of health plans and retirement programs by faculty members reveal the substantiality of the status quo bias in important real decisions. Status quo bias is not a calculation error that once pointed out is easily corrected. It is noticeably more subtle and therefore even the assumed rationality of economical agents who have real resources at stake, apply weakly to the findings of status quo bias. In addition, the economic theory of rational decision maker rarely works out in the real world where the decisions most often are based on uncertain and subjective outcomes. The only way to avoid this is by weighing all the options even-handedly. Many decisions made in the real world are made in a group context and when you are a part of a group it exerts additional pressures for the status quo choices. (Samuelson & Zeckhauser 1988) In summary it is important for companies to be brave and trust their intuition for them to be able to handle uncertainty and improve their offerings and processes across time. Therefore, firms in this age have to invest in their nimbleness and question their practices and value constantly: How can we do this better? and What if we changed the direction of our approach?

Many companies exploit this bias in marketing and selling. It is called soft-selling, and its techniques cause a psychological investment to be made by the consumer in the buying process. Airlines tie travellers to their offering by emphasizing pseudo sunk costs. Such as by offering large mileage bonuses upon initial enrolment and by giving awards as flying time accumulates. The companies try to commit and in a certain way force customers to stay with them through evoking transition costs. (Samuelson & Zeckhauser 1988). The ultimate costs are small because competition is present, and

the other airlines want to incentivize its competitors' customers to also transition into their own offering in the same scale.

According to Kahneman (2011), people feel more regret if they act and cause harm rather than do nothing and cause harm. Individuals strive to hide consequences which show them making an explicit mistake such as drifting away from the default option rather than staying on the current safe situation even though the decision would have seemed justified. This is called regret avoidance and is one source of status quo bias. (Kuhlampi, 2021)

Status quo bias is highly subjective and is largely due to uncertainty. It is probably the most difficult to alleviate even with cognitive diversity.

Confirmation bias

Secondly, I go through confirmation bias. The first historical mention of this is by the Greek historian Thucydides, who in the history of the Peloponnesian War wrote: “ --- for it is a habit of mankind to entrust to careless hope what they long for, and to use sovereign reason to thrust aside what they do not fancy.” This sounds a lot like wishful thinking which is another bias. Another older mention is from an Arab historian Ibn Khaldun (1332-1406) who noted: “...if the soul is infected with partisanship for a particular opinion or sect, it accepts without a moment's hesitation the information that is agreeable to it.” I find the expression “infected” interesting in its vehemently negative tone. The lack of doubt is one reason for this bias. Without it even the simplest thing cannot be made clear to the most intelligent man who is firmly persuaded that he knows it already. (Acks 2019) Mintzberg (2008) termed it as a “search for supportive evidence”. It is the willingness to only gather and accept facts which lead toward certain conclusions and to disregard other facts which threaten them.

Similarly, Acks (2019) explains it as a tendency where people seem to only accept facts that correspond to their already founded beliefs or prejudices. This shows up when someone invests in a certain narrative, and he has a reluctance to forego it even when faced with conflicting evidence. Maybe this is connected to the sunk cost fallacy bias. Moreover, we ignore information that is inconsistent with the status of our cognitive frame and mental model because they threaten the way we see things. (Mintzberg, 2008) It is obvious that confirmation bias is a type of filter. If a person has invested in a particular narrative, it is of course more than likely that they will build on top of it than not. In fact, I have noticed that many people lock their beliefs way too quickly in order to take action and to get a particular image or story that makes sense to them and makes them feel safe. The ultimate reason for this is because people can't handle uncertainty. They rather be inaccurate than uncertain

of themselves. The society favours concrete results and action and not pondering. Even though the increased scale of information might ask for it. (Acks, 2019)

Confirmation bias can have very harmful consequences such as the false claim that vaccines cause autism or the vicious lie that the Sandy Hook school shooting was a hoax (Acks, 2019). Regardless of whether those were lies or not, people must always choose what to believe and people have a right to believe whatever they want. At least in their private life. The problem in these scenarios were that they didn't justify their stances appropriately. Alex Jones, the person behind Sandy hook false narrative, was too sure about his convictions about the matter even though he should have expressed doubt because he couldn't have been completely sure. Being doubtful helps transfer the responsibility from your shoulders because then people don't have valid grounds to point to you if and when something bad happens or as in this case some do something ill-advised based on your alleged facts.

A lot of the conspiracy theories are just ways for people to seek understanding and justifications for things. They can't trust "facts" without appropriate reasonings that make sense for them. In addition, I argue that many dissidents just want to play devil's advocate because it actually helps in determining the best decision. Personally, I can say in my experience that I always play the opposition role because I am good at pointing out why other people are not correct and what they are missing. Another reason why people might have confirmation bias is that nobody can know anything for certain without extending their prevailing opinion for too long, so people must build a narrative out of particular details in times of uncertainty (Leisti & Poskiparta, 2022). As a whole, to decrease the effects of confirmation bias, people should be more willing to consider other points of view and to be able to see the events from their eyes. Being aware of its existence is the best defence. (Acks, 2019)

An example of this biases real effect is when Stanford researchers Lepper, Ross and Anderson conducted an experiment in the late 1970s where they gave student volunteers packets of information with fake biographies for a firefighter and his risk appetite and how competent he was. Half the students go the version A which showed a firefighter who wasn't a risk taker and who was indicated by the fake biography to be very good at his job. The rest got the version B which showed the firefighter still taking the safe option but this time he was said to be very bad at his job. Even after the experimenters revealed the firefighters were completely fictitious, the students who got version A said that he was a better firefighter due to his avoidance of risk and the ones who got the version B said instead that a good firefighter would take risks. This points out that even after knowing the

biographies were made up, they still based their opinions off the information given to them. (Acks 2019)

We unknowingly build around us a bubble full of people thinking exactly like us. Similarly, we distance ourselves from people with different views because being in proximity with those makes us feel uncomfortable due to the possibility of getting challenged or cognitively knocked down. This is harmful and can narrow our thinking. (Leisti & Poskiparta 2022)

There are two types of cognitions, flexible and rigid. These are actual personality differences according to psychologists Leisti & Poskiparta (2022). Cognitively rigid people have a low threshold for uncertainty and therefore they have a stronger need for cognitive closure. This is why they might be more prone to confirmation bias since they are not as likely to consider alternative viewpoints. In contrast, people who have flexible cognition are better able to see things from multiple perspectives and are not likely to commit full-heartedly to a particular narrative. They are thus more willing to alter their views as information increases. (Leisti & Poskiparta, 2022)

Attribution theory

Attribution theory was developed by a psychologist Fritz Heider in the 1950s. His most fundamental notion was that people are motivated to satisfy two essential needs. The need to form a narrative of the world which makes sense for them and the need to be in control over their environment. People have a desire for consistency and stability and to be able to predict and control what will happen to them. The way people understand their environment and create meaning is through attributing causality. (Heider, 1958)

The theory therefore tries to explain how people interpret what caused a certain behaviour. It is a way people unconsciously interpret people's behaviour or events. It helps people make sense of the world especially in seemingly random, unexpected and negative events (Fishman & Husman 2017). According to Kelley (1967) attributing is a "process by which an individual interprets events as being caused by a particular part of an environment." It offers possible causes of events and describes how people come to choose one explanation over another. (Pearce & DeNisi 1983) Because people are irrational beings the causes and explanations can often be involved in creating certain biases. Understanding this theory therefore can help to understand the biases people are accustomed to. Fishman and Husman (2017) studied the theory in a university student's context. They wrote that

stressful events encountered by university students elicit causal thought or internal investigation by which they try to acquire or sustain a sense of control over their environment. Causality and a sense of control for stressful outcomes provide a sense of structure, understandability and perceived predictability. (Fishman & Husman 2017) In fact, a sense of control has been considered as the central motive that guides human behaviour (Heckhausen & Schulz, 1995).

Attribution theory research has focused on the motivational consequences of causal thought patterns concerning behaviour or events. The way people interpret events and behaviour and create a sense of control has been shown leads to different achievement and well-being outcomes (Fishman & Husman 2017).

All attributions can be divided into three dimensions, locus, stability and controllability. Heider (1958) put forth the locus dimensions that became influential: dispositional (internal cause) vs. situational (external cause) attributions. The former assigns the cause of behaviour to some internal characteristic of a person such as personality, motive or ability etc. rather than environmental factors which are outside a person such as nature of the task and luck (Pearce & DeNisi 1983). The latter are more often outside a person's control, making it an attractive way to explain our own mistakes.

The second dimension, stability refers to the duration of a cause. It can be stable (permanent) or unstable (temporary). Despite the dispositions (internal), which are usually in control of a person, there is a third-dimension, controllability of which definition is self-evident, referring to whether the cause can be altered by the subject. For example, effort is controllable but natural ability isn't (Pearce & DeNisi 1983).

Pearce and DeNisi mention (1983) that we can basically reduce successes and failures into four causal explanations. They are ability (aka. natural ability), effort, nature of the task and luck. People usually attribute successes to two of the internal causes: Ability and effort. Failures are instead usually attributed to external causes such as the nature of the task and luck. Ability and the nature of the task are fixed over time, so they are stable causes. In contrast, effort and luck are suspect to change, thus they are unstable causes. Ability is considered to be internal, stable and uncontrollable as we can see in the figure 1 below (Ps. controllability factor is missing in this figure). By contrast effort (which is replaced by motivation in the figure) is internal, unstable and controllable. (Fishman & Husman 2017)

In this figure, the two dimensions of attribution theory are represented by a double dichotomy represented in a square. The horizontal axis represents the locus of control dimension, with internal causes at one end and external causes at the other. The vertical axis represents the stability dimension,

with stable causes at the top and unstable causes at the bottom. (The depth axis represents the controllability dimension, with controllable causes at the front and uncontrollable causes at the back. (Fishman & Husman 2017)

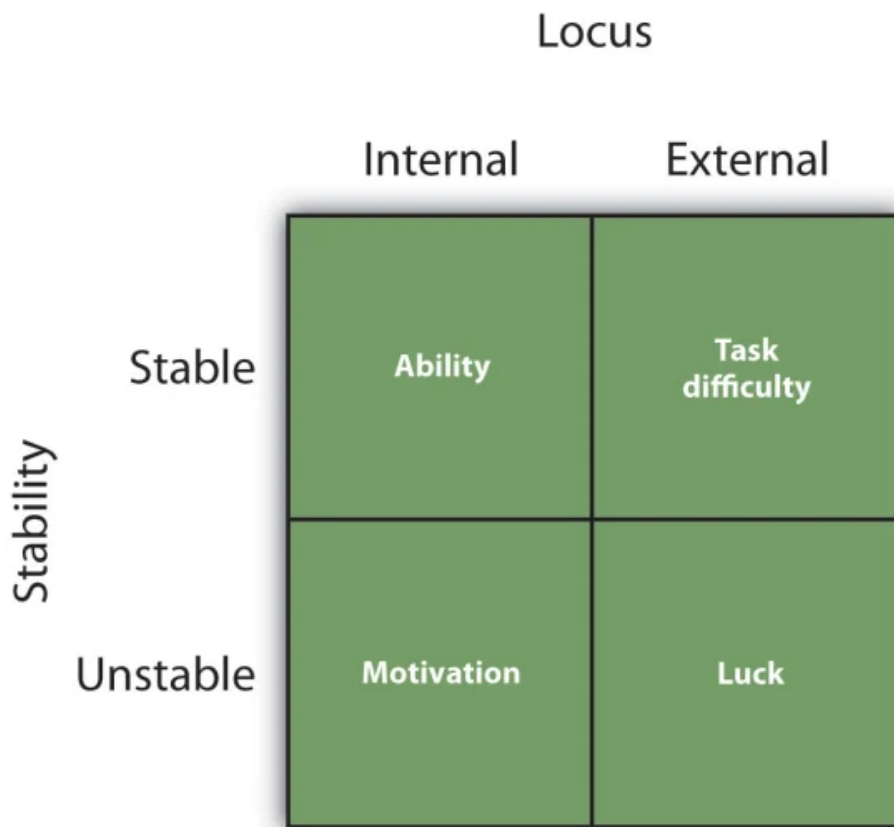


Figure 1 Double dichotomy of Locus and Stability in the theory of attributes, Source: [The salience](#).

It is also crucially important for understanding the overall purpose of this theory, to note that some attributions are motivationally adaptive whereas others are maladaptive. For example, if a student attributes his lack of success in an exam to a lack of intelligence (internal, stable and uncontrollable) compared to tiredness (external, unstable, controllable), this creates a maladaptive attribution, and his future success is likely to suffer from this. (Fishman & Husman, 2017)

How people perceive their capacity or control over the explanation process also matters since it affects how they attribute their achievements or failures. Fishman and Husman, (2017) research this in terms of students’ “Perceived Control of the Attribution Process (PCAP)”, which explores how the students’ beliefs affect the motivational outcomes of their attributions or explanations. By thwarting the maladaptive causal thinking the negative motivational consequences could be avoided. “Students who perceive control of their attributions feel that they are the ones who ultimately control the explanation of the event.” (Fishman & Husman, 2017). This increases the likelihood of experiencing autonomy

and well-being. People who are aware of this understand that their explanation for a given event will influence how they react to it. These are meta-cognitive beliefs, because they reflect a higher-order cognitive process. (Fishman & Husman, 2017)

So, it is important to point out that the perceptions of their abilities people have might be the most important factor here. How people attribute their successes and failures to these causes determine their anticipation for future successes or failures. If a person attributes their success to a stable cause, and failure to an unstable cause he is more likely to believe in his continued success in the future. On the other hand, if failure is attributed to a stable cause, it manifests the opposite effect. This is because the subject doesn't have any grounds to anticipate any better result in the future. (Pearce & DeNisi, 1983)

A summary of this theory could be that the attribution theory is an important way people create their own narratives for their behaviour and outcomes.

2.1.3 Cognitive Diversity

If entrepreneurs or leaders work alone or in too homogenic groups, the risk for cognitive biases and too high conformity increases (Phillips, 2008). That is where cognitive diversity comes along. First of all, it is important to define the term. The most basic dichotomy is that there is surface, also called demographic attributes such as gender, age or functional experience. Then there are the more all-encompassing ones which are manifested in the cognition itself such as beliefs, values and knowledge. These are the actual causes of differences in how people perceive, process, and decide based on data. Then we move on to how the diversity itself is manifested in the real-world context. There is the dispersion of diversity, which is what we usually mean with the term, and on the other hand the mean levels of team member characteristic, such as the average personality trait or level of expertise. (Kearney, Diether & Voelpel, 2009)

According to Miller, Burke and Glick (1998) in their article of "Cognitive diversity among upper-echelon executives: Implications for strategic decision processes", cognitive diversity can also be divided into belief diversity and preference diversity. The underlying foundation of cognitive diversity and the integration of perspectives and different thinking styles and values are different roles people play and how they see things. Attention causes perspectives and thinking style processes it based on your values and beliefs. (Miller et al., 1998)

Diversity can also be distinguished as not directly task related and directly task related diversity. Demographic attributes such as nationality, age and gender represent the former and more cognition connected such as educational, personality and experience the latter. Diversity can also be used to describe the distribution of differences among the members of a unit with respect to a common attribute, X. This can be for example personality attribute or the amount of work experience. It is measured in a unit level and not by comparing individual differences between members. Contrary to latter the diversity can also be measured in a continuum so there can be diversity in more than one specific feature with respect to its members. (Harrison & Klein, 2007)

Harrison and Klein (2007) criticize the ambiguity of the term. Therefore, they propose more appropriate definitions for it, the most holistic being that diversity should be divided into three separate components, that are separation, variety and disparity. This division is not largely adopted nor understood because the diversity theory and its scholars usually refer to the term interchangeably as dissimilarity, inequality, variation or dispersion etc. They have also offered only generic definitions of it. If we could develop a deeper and standardized understanding of this construct, we could compare the within unit differences in relation to the outer units. Therefore, comparing and seeing differences within and between units. (Harrison & Klein, 2007)

The separation considers lateral differences in opinions, beliefs, values and attitudes. It is the most ambiguous and regards different views of goals and processes. Examples of variety are functional backgrounds and different experiences. Lastly, disparity concerns the vertical differences in proportion of task-based status such as pay, decision-making authority or prestige. (Harrison & Klein 2007) In summary the three differences are based on position, category and status (hierarchy).

It is good to emphasize that this former article concerns diversity as a whole whereas this paper focuses on cognitive diversity, so the separation distinction is the primary and which naturally corresponds to this frame and is the main focus even though all of them influence the separation frame. In summary, cognitive diversity can be defined as demographic or cognition based; (the former less accurate) dispersion or mean level; in relation to one common attribute X or not; belief or preference diversity, and lastly as separation, variety and disparity diversity.

2.2.2 How cognitive diversity approach differs from the traditional focus.

In the first decade of 21st century, 89% of studies conducted address the effects of readily detected, relations-oriented traits, such as gender, race, and age. Existing approaches have emphasized representational, numerical diversity. This is the first step organizations have taken to increase the number of underrepresented groups affiliation in organizations and in creating meaningful, inclusive interaction practices that are also supposed to enhance performance. (Turkmen, 2013) Bernstein, Salipante & Weisinger, (2021) expressed it as “— achieving frequent, high-quality, equitable and productive interactions that enable individuals to leverage their distinctive talents.” Cognitive diversity refers to differences in executives' beliefs regarding organizational goals, whereas diversity typically pertains to observable characteristics such as race or functional background. Although social category and functional background diversity have received substantial research attention, cognitive diversity has been relatively understudied. There is a mixture of findings related to diversity based on demographics. (Olson, Bao & Parayitam, 2007) Even though cognitive diversity's benefits are also mixed, there is more consensus on it being the more relevant concept and which at least intuitively should produce positive outcomes.

For example, multiculturalism is likely to result in variations in values and beliefs that can have significant implications for decision-making processes. Some may truthfully argue that this leads to dissatisfaction or conflict. Thus, there needs to be focus on managing it correctly to maximize the benefits. Similarly, informational diversity as measured by functional backgrounds, in one hand has been seen as a way to provide richer discussions on various alternatives and contribute positively to the decision-making process. On the other hand, some researchers have found it resulting in communication deficits among executives, less effective decision making and less positive organizational outcomes. It can be summarized that recent research suggests that demographic diversity variables serve as proxies for cognitive diversity, and therefore, there is a need to focus on examining cognitive diversity directly. (Olson et al., 2007; Kilduff, Angelmar & Mehra, 2000)

2.2 Successful implementation of Cognitive diversity on innovation

Cognitive diversity is a fascinating research subject because it has produced year by year mixed findings. It is intuitive that broad view of alternatives to direct the strategic decision should be advantageous. The studies however haven't always produced this kind of expected results. This is because the concept is not simple, and it is not the easiest to measure accurately. The results of decisions are also hard to measure. And sometimes diversity is not beneficial but a handicap. Specifically, in uncomplex routine and stable environments. So, the industry setting must also be taken into account because service sector innovation is a lot different than R&D in manufacturing sector. (Gallouj & Weinstein, 1997) In addition, how can we be sure that the differing ideas are actually truthfully considered and not just put into a black box for eternity just to virtue signal about diversity and inclusiveness?

Furthermore, the creativity and implementation are two completely different operations like you will soon find out. Therefore, both of them should be studied together to discover the true relationship between diversity and firm performance, which is ultimately what matters the most in business context. Katherine Phillips found out about this crucial difference between brainstorming and implementation in her paper *diversity and groups* (2008). In order to understand how these relate to each other we must understand what team creativity is. "Team creativity is defined as the production of novel and useful ideas concerning products, services, processes, and procedures by a team of employees working together." (Shin & Zhou, 2007, p. 1715). As we see, in addition to producing ideas they should be taken into practice. Phillips also wrote that "-- simply stating that increased diversity will lead to greater creativity is overly simplistic."

She also confidently pointed out that certain definite group conditions are indispensable in order to open the door for the use of diversity towards innovation. For example, the sharing and communication of ideas are necessary. The reason this is a problem is the fact that groups usually appreciate harmony and conformity more highly than potentially better-informed decisions (Phillips, 2008). Better informed decisions are invisible whereas the former can be seen and felt. This is why there also needs to be psychological safety together with necessary conflict caused by argumentative challenges. (Phillips, 2008)

Phillips (2008) argues that one of the best ways to instil creativity in decisions is through the organization of two different groups that feel connected through one shared task or goal. Moreover, it is even more proper if the groups are of unequal sizes hence this can prevent intractable conflict from occurring. Reason for this is that the bigger group don't see the smaller one as a threat or competition. The conflict is also usually milder and shorter. The question therefore is, how can we generate this shared goal? It is usually facilitated by one superordinate or a leader who converges the people from different teams and generates common conclusions. Otherwise, the teams will compete fiercely about which one's solutions are chosen. Therefore, the leader acts like a third objective party. Other ways to make the groups intertwined is by somehow forcing them to collaborate and communicate with each other. (Phillips, 2008) But especially cognitive diversity among top-management team has gained attention because it is assumed to influence a firm's strategic decision process which obviously is very crucial for the firm's success.

Phillips's paper was very informative in many ways and its content important for this concept. Nonetheless, last thing worth mentioning is that different groups are important generally not because of idea generation but because of the development of ideas that come up individually. This is mostly due to people's fear of embarrassment in contributing to idea generation. This leads to conformity and possibly groupthink. Therefore, this is the most important obstacle to ameliorate since it undermines the group's ability to think creatively. (Phillips 2008)

In summary, according to Phillips (2008), idea implementation in practise and group dynamics together with psychological safety and shared goals, are important factors for successful implementation of cognitive diversity towards innovation.

2.2.1 The relationship between cognitive diversity and third factors on decision making.

I consider this as the main chapter of substance in this whole paper, because I go through the main third factors or variables that determine the effects of cognitive diversity on innovation and decision outcomes. There are both positive and negative relationships between cognitive diversity and these variables, thus diversity doesn't always lead to positive outcomes. However, in most of the articles the positives in decision making outweigh the negatives.

2.2.2 Strategic comprehensiveness and extensiveness

On the whole, the positive effects between cognitive diversity and strategic comprehensiveness and extensiveness are more prevalent than the negatives. Comprehensiveness and extensiveness of investigating strategic opportunities are two important components for firm performance (Chet, Burke & Glick 1998). Comprehensiveness tells how extensive the decision process is when dealing with immediate threats and opportunities. It is connected to the amount of investigatory activity; The metric for it is brainstormed ideas concerning the short-term environment whereas extensiveness is similar but focuses on the long term. Additionally, solving today's problems vs shaping the long-term future is yet one distinction (Chet, Burke & Glick 1998).

According to the same study (1998) however, there are also studies that give references that cognitive diversity could indirectly decrease strategic comprehension and extensiveness and thus firm performance. This is due to difficulties in communication, integration and political behaviour. There were two factors that caused this negative relation. First was headbutting due to strongly held disagreements which causes the individuals to diverge. Second was communication failures due to too individualized ways of expressing oneself. (Chet, Burke & Glick 1998) That paper measured the cognitive diversity easily by obtaining only perceptions of executive diversity through few questions asked of chief executives about their units. However, this is not without problems. The things that may have impacted their results are the facts, that they included also executives with little impact on decisions in their data. This causes noise in the diversity data and decreases the validity of the findings. (Chet, et al. 1998).

A second cautionary note was that the causal reasoning isn't straightforward due to cross-sectional approach. Thus, they do not know whether cognitive diversity influences comprehension and extensiveness or the other way round. (Chet et al. 1998) This all means that their study isn't absolutely conclusive of the matter whether cognitive diversity was beneficial or not in the executive teams. Chet et al. (1998) therefore propose that the management of cognitive diversity should attract more attention and that it currently hasn't been dealt with effectiveness in organizations.

2.2.3 Task conflict improves decisions and performance

The results of cognitive diversity are the opposite in a newer paper by Olson, Parayitam, Satyanaryana & Bao (2007). The article points out that diversity increases task conflict which is a symptom of dealing with the exchange of wide variety of information. Arguments about how it should be interpreted can cause disagreements. Task conflict is said to be inevitable in strategic decision making because there will always be different perspectives about the environment (Olson et al. 2007; Amason 1996). Some scholars have even put forward that task conflict is included in the important processes that are necessary for cognitive diversity to take shape in the strategic decisions. Task conflict increases decision understanding, decision commitment, and decision quality. And ultimately the performance which is defined by Hackman (1983) as for example goal attainment, efficient work processes, effective perceived interpersonal coordination, customer satisfaction and team member satisfaction. Most often studies consider it as some overall goal attainment (De Dreu & Weingart, 2003). So, task conflict is the cause of expressing different views and them being challenged. It makes cognitive diversity possible to actualize in the decisions and also to show in performance. However, it is important to differentiate task conflict from relationship conflict which can be detrimental. (Olson et al. 2007)

Task conflict has had arguments both for and against it. Some scholars have argued that conflict makes teams more innovative because team members confront each other, debate issues openly, voice dissenting views and are forced to find collectively satisfying solutions. (Nemeth & Staw, 1989; De Dreu, 2006) Others think the opposite. They have argued that conflict hurts innovation due to distractions and loss of focus on the task. In addition, certain scholars expressed that " --conflict-related stress and emotions prevent straight and analytic thinking" (Brown, 1983; Wall & Callister, 1995; De Dreu, 2006). De Dreu (2006) has produced a framework for either side. First of all, he divided conflict into two issues: Relationship and task issues. Examples of relationship conflicts are conflicts about personal taste, political preferences, values or interpersonal style (De Dreu, 2006). In contrast, examples of task conflict are ones that are for example about the distribution of resources, procedures, policies and about judgements and interpretations of facts. Relationship conflict interferes with task performance whereas in contrast task conflict increases group members' tendency to scrutinize task issues and to engage in deep and deliberate processing of task-relevant information.

This again promotes learning and the development of new and occasionally highly creative insights which leads the group to become more effective. (Jehn, 1995; De Dreu, 2006)

The underlying reasons for the conflicting notions have been found by Jehn and Bendersky (2003) who proposed a host of variables that explains it. Such as team climate, the types of tasks the teams have to perform, norms with regard to conflict and within-team trust. Task conflict might also stimulate certain subcomponents of performance while hindering others. Van Dyne, Jehn and Cummings (2002) have put forth in their study that for example home strain was positively related to sales performance but negatively to creativity.

De Dreu's article (2006) puts forth again the importance of conflict on creative thought. For example, he writes that laboratory experiments showed that exposure to minority dissent increases individual courage to resist group pressures to conformity and that work teams with high levels of participative decision making were, on average, more innovative when they experienced greater exposure to task-related minority dissent. (De Dreu, 2006)

Low conflict leads to inactivity, avoidance and neglect of information. In contrary, high conflict intensity reduces the capacity to perceive, process and evaluate information. In the middle the balance occurs. At the moderate intensity level parties will seek and integrate information, consider more alternatives and experience a stronger impulse to improve the situation (Walton, 1969; De Dreu, 2006). It has been proposed that the level of information exchange corresponds to the conflict intensity level. Low information exchange prevents the creation of ideas whereas high levels produce the distraction and information overload that prevent the development of creative insights. Therefore again, the moderate levels are the most optimal for this variable as well. The result is that task conflict has an inverted U-shaped relationship with team effectiveness. It is also good to remember that the information exchange and the need for collaborative problem solving are ones partially responsible for the relationship between task conflict and team innovation. (De Dreu, 2006)

2.2.4 Trust allows and encourages sustainable disagreement and better decision making.

Trust in members' competencies and thus accepting knowledge from others is important for colleague relationships because it creates task instead of relationship conflict (Olson et al. 2007). Therefore competence-based trust encourages and makes disagreement sustainable between team members. Without this trust employees might not think that their different perspectives would be taken into

serious in-depth analysis. Trust should also be studied at the group level instead of focusing only on the individual level because this is more useful in social information sharing. Trust allows challenging other people’s perspectives without fear of retribution or ridicule (Olson et al. 2007).

Olson et al (2007) expressed at full length these three group process variables’ relationships to decision making as:

“The aspect of gaining information from a variety of sources and perspective suggests cognitive diversity; the facet of accepting knowledge while striving to minimize risk connotes trust in others’ abilities; and the exchange of acquiring and sending information implies task conflict.”

These variables: cognitive diversity, competence-based trust and task conflict are shown in a model proposed by Olson et al. (2007) in a figure 2.

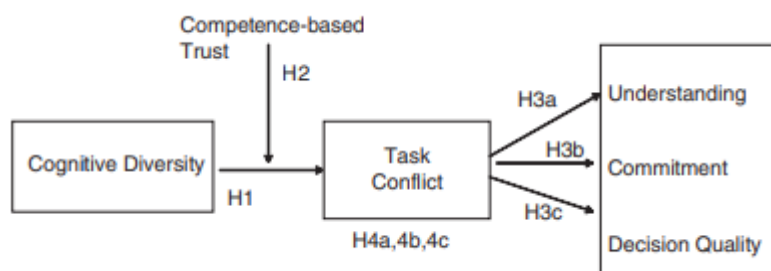


Figure 2. Group process variable model. Olson et al. (2007)

In summary, cognitive diversity increases task conflict which has a positive relationship with decision quality. Group level competence-based trust increases sustainable task conflict which affects the decision quality and acts as a moderator between the two. Many studies have examined the direct effect of diversity to decision outcomes. However, they have missed the group processes and situational factors itself that cause it. These processes are complex and occur in the interactions within teams. For example, competence-based trust makes it possible to disturb the discussions while keeping harmony and putting forth challenging opinions and perspectives. These diverse perspectives have strategically meaningful effects because they will increase the broadness and depth of knowledge for task at hand. (Olson, Parayitam, Bao, 2007) According to Olson et al. (2007) “The benefits of diversity are only realized through interactional processes, which culminate in a synthesis of diverse perspectives”.

2.3 Need for cognition personality factor with other situational factors influences diversity's role on team performance.

Kearney, Gebert & Voelpel in their article (2009), found out that instead of task conflict, team members' need for cognition determined indirectly through information elaboration and collective team identification the positive effect of age and educational diversity on team performance. Need for cognition is an individual difference variable that supports the positive effects of diversity (Kearney et al. 2009, 3). It is the intrinsic motivation towards and enjoyment of effortful cognitive activities. It basically determines how well the diversity is taken advantage of in teams. Only if information is properly exchanged between members and the group feels certain amount of togetherness, will the need for cognition influence the performance of the team. Kearney et al. (2009) understood that synthesizing the amount of diversity such as educational diversity with the group's average personality trait of need for cognition, will generate concrete causal findings on team performance. So, we cannot only look at the distribution of a trait or attribute but the third factors that determine whether the diversity is actually used and beneficial in the particular project or not.

As we can see the unfolding in this paper, we are continuing to point out the importance of situational third factors such as task conflict, trust and now the need for cognition.

It is not also surprising that the benefits of cognitive diversity are more likely to ensue in complex tasks compared to routine ones (Kearney et al. 2009). Although the level of your job can be a simple heuristic to get approximate inferences of the benefits of cognitive diversity, it is not definitely all encompassing, not at least when the actual effects are considered. So, like we said there are situational factors that need to be taken into consideration. For example, when looking at the need for cognition, the amount of how much the actual knowledge is exchanged and how high the team collective identification is, determines the performance. The former is called elaboration of task-relevant information which includes the exchange, discussion and integration of ideas, knowledge and perspectives relevant to the team task (Van Knippenberg et al. 2004). The collective team identification is defined by how much the groups attach emotional significance to them being a member of it. It reflects how well the group overcomes any dissimilarities that might cause disruption. (Van der Vegt & Bunderson 2005)

2.3.1 Information elaboration as a crucial group process influencing complex decisions

This far in this article there has on a few occasions come up the notion of information exchange and the demand for information elaboration as variables for cognitive diversity to have its effects on decisions, innovation and ultimately the performance. Thus, it isn't enough to only have employees with diverse demographical data, functional backgrounds or experience. It is debatable whether these demographical variables capture the cognitive perspectives of individuals. Individuals may have similar functional experiences but might still differ in their cognitive views such as goals or values. (Mohammed & Ringseis, 2001) This is why the group processes that determine the information processing and exchange are crucial. Therefore, Olson et al (2007) suggests that information processing theory is helpful in identifying important group process variables relevant to decision making. This theory proposes that organizations are information processing systems and that strategic decisions require information processing by the managers (Daft, Bettenhausen, & Tyler, 1993; Galbraith, 1973). Members of organizations exchange, process and interpret the information using many different heterogeneous sources and even in a way act on it before making decisions (Olson et al 2007)

Renne Pesonen (2022) proposes argumentation as a social collaborative cognitive activity. He writes that the social epistemology of science would benefit from concentrating on this argumentation exchange. The epistemology is also relevant in organization's group processes since decision making always depends on information and the understanding of the evidence it has been established on. He points out that the argumentative exchanges depend on cognitive diversity due to the incidence of disagreements it produces. Critical interaction is a term he uses to explain this. Pesonen (2022) also explicates the meaningful conceptual difference between the distributed and social processing of information. Argumentative exchanges belong to the latter but most existing simulation models on organizational psychology concerns distributed processing which can weaken its real-world relevance. Argumentative exchanges should not be treated only as simply exchanges of information that leave the actual private reasoning process intact. People should report the actual reasonings behind our attitudes and decisions, but evidence shows that often the reasons are opaque to ourselves, and their elaborations are largely rationalizations (Pesonen, 2022).

It doesn't also help that according to Pesonen (2022) research on social psychology and choice behaviour suggests that the rationalizations are usually sensitive to intersubjective norms i.e., what

makes sense to others not us. Rationalization is a thinking process that tends to solidify attitudes which obviously decreases openness to ideas if they go unchallenged. The reasons why people rationalize is that they want to make their reasons explicit which allows them to subject them to public review and feedback. Despite the negative effects they are also helpful in that they allow us to operate and develop them and alter our decision process. Argumentation is the social process where we mutually contemplate each other's rationalizations and have the chance to judge and adjust each other's beliefs. (Pesonen, 2022)

Pesonen in his article took a social view of human reasoning compared to individualistic one. It proposes that reasoning is inherently argumentative. He offers the *argumentative theory of reasoning* pioneered by Mercier and Sperber (2011, 2017) to show this. The theory holds that reasoning is closely related to communication, trust and persuasion. Generally speaking, to the interactive and social dimensions of which argumentation is the function of operation. Argumentation and information exchange are connected to information elaboration. This latter is defined according to Pesonen (2022) as any group process where participating group members communicate and integrate "cognitive resources" scattered within the group. He also writes about a subcomponent of information elaboration which is social processing of information. The most meaningful aspect of this term is that diversity or social information aren't the primary things affecting it. Instead, it is connected to cognitive mechanisms which means that the social interaction implements or facilitates cognitive processing. We explore our justificatory reasons and tacit background assumptions when we are in social argumentative situation. If groups of people work on their own this social process will never occur. (Pesonen, 2022)

This is why Van Knippenberg et al. (2004) proposed that for diversity to be effective, there must be an elaboration of task-relevant information." In summary, diversity doesn't by itself create the best decisions and it doesn't prevent cognitive biases. Cognitive diversity must be accompanied with challenging argumentative exchanges of task-relevant information so that people are forced to reflect on their reasonings and rationalizations that are established by social information exchange produced by cognitively diverse personnel.

2.3.2 Openness to experience and firm performance

There has been also another study by Homan, Hollenbeck et al. (2008) that revealed that the average measure of personality trait of openness to experience was the ultimate factor which allowed the positive relationship between cognitive diversity and performance to occur. Openness to experience and the need for cognition are close to each other and measure a lot of the similar properties. Especially in our context of knowledge work. In fact, they do have positive correlation with each other but nonetheless mean different things. Some people can be open to things that aren't very cognitive whereas cognitively motivated people might not be open to other types of experiences. Cognition means reflection whereas openness usually signals intuition. This points out the difference. Some intuitive people are reflective and some not. Latter creates insights and people who have high need for cognition obviously usually welcomes them. (Kearney et al. 2009)

So, it is a matter of preference not intellectual ability even though the most intellectually orientated are usually also more open to new things as we elaborated. This gives us even more evidence for the necessity of a third explaining factor that considers the role of an average personality trait such as openness to experience trait in explaining the effect of cognitive diversity on decision outcomes. It is therefore interfered that the group must share a similar belief for the value of different cognitions and knowledge. There must also be task-based advantages in taking advantage of it in action (need for cognition). These factors enable the group to be intellectually open in considering other perspectives. (Homan et al. 2008)

2.3.3 Effects of Team Intrinsic motivation and transformational leadership on cognitive diversity and creativity

According to a certain study by Wang, Kim & Lee (2016), teams have become a widely used method to respond to the needs of creativity in the global competitive markets. No wonder the research on facilitators and inhibitors of team creativity has increased rapidly in the last several decades (Wang et al. 2016). Couple of these facilitators are, together with cognitive diversity, transformational leadership and intrinsic motivation. Specifically, they observed that the intrinsic motivation of team

members increases as teams become more cognitively diverse only when team leaders show high transformational leadership. (Wang et al. 2016)

Team intrinsic motivation, in turn, results in higher levels of team creativity. The writers Wang et al. (2016) expresses although it is also widely known that transformational leadership is leadership which makes the members transcend their self-interests for the benefit of common good and cause individual members to perform beyond normal expectations. This makes sense since true conflict can only be surpassed by focusing on the group and goal on the whole and not just on your own interests. Whereas intrinsic motivation is defined as “the ability to enjoy performing the team task for itself --.” It is the motivation to complete a task or solve a problem because it is interesting, challenging and satisfying. (Wang et al. 2016)

Team motivation is a crucial precondition for diverse teams to fulfil their creative potential (Paulus 2001). It is now scientifically shown that the likelihood of exploring diverse and holistic cognitive pathways and to weigh in different ideas increases when members are motivated and emotionally excited. They are also more apt to concentrate for a longer period on the task (Wang et al. 2016). This comprehensive enduringness makes creativity able to occur and thrive in the first place. Intrinsically motivated team members are cognitively more flexible and more likely to conduct divergent thinking. They are more motivated to expand their knowledge base by incorporating diverse information. Intrinsic motivation is one of the most important variables on cognitive diversity and its effect on team creativity but still rather neglected one. (Wang et al. 2016)

The motivation to appreciate different cognitions among teams don't always appear organically even though the name intrinsic would allude otherwise. Sometimes it needs leaders and especially transformational ones who encourage them. They can stimulate the members intellectually and encourage them to find new solutions. (Wang et al. 2016) For this to happen the underlying cause for the endeavour must have meaning for the teams. The why must be considered. Transformational leadership increased team intrinsic motivation and therefore caused indirect effects on team creativity through cognitive diversity. The lack of transformational leadership on the other hand caused cognitive diversity to have a negative effect on team intrinsic motivation and therefore creativity. This was due to tensions and conflicts. (Wang et al. 2016)

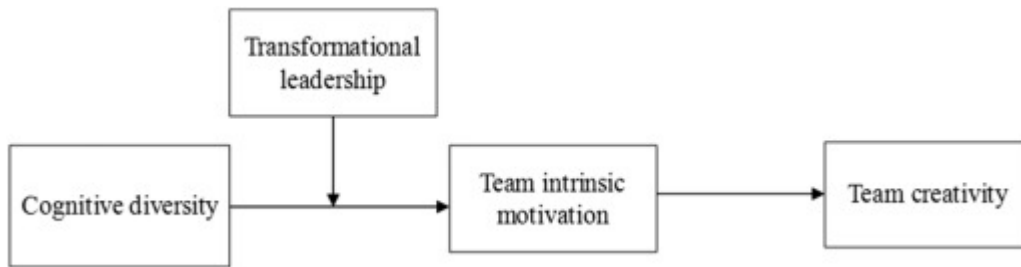


Figure 3. Conceptual model of how, when and why cognitive diversity affects team creativity. Wang, Kim & Lee (2016)

The most important matter in how the team intrinsic motivation appears in the study is just through generalizing individual constructs on to the team level. For example, collective efficacy is analogous to individual self-efficacy, and team empowerment to individual's psychological empowerment, respectively. So correspondingly. According to them, team intrinsic motivation originates from individual intrinsic motivation.

2.4 Literature review conclusions

Cognitive diversity is not a simple concept. According to research and my literature review there are bunch of different factors that contribute to creativity and decision making. There must be the underlying diversity present, then there are the group process variables such as task conflict and the commitment it generates, trust that helps the former and thirdly the exchange of perspectives called social information elaboration. Additionally, the contributing variables are for example transformational leadership, team intrinsic motivation, need for cognition. For example, intrinsic motivation is fundamental and without it no diversity of thinking is possible. Transformational leadership is also highly important to prevent problems from arising and alleviating conflicts due to the variety of views about goals. These could be named fundamental contributing factors compared to the group process factors. I considered creativity and decision performance to be related in that the former influences the latter. In this broad context, I deal with them together.

In research, there have been both types of researchers. Ones that argue diversity's positive outcomes and others that argue it leads to less communication, less effective decision making and less positive organizational outcomes. This is because researchers have focused on demographic diversity not cognitive diversity of which the latter has the direct effect on processes and organizational outcomes. In fact, there are a lot more articles pointing to cognitive diversity's advantages than weaknesses, while the mere demographic diversity has been demonstrated to both impede and increase performance. (Miller et al., 1998)

Despite the abundance of literature, this concept nevertheless seems to be quite obscure and unknown. There are no simple systems that explain it. Maybe due to this complexity, it has not attracted the traction it in my opinion should have. This is why I try to put some light on this and create some kind of framework for it. In this paper, I tried also to write the complex literature as simply as I could and to elaborate the main points structurally.

Based on different conclusions about cognitive diversity and its effects on decisions it is safe to say that its benefits depend upon the quality of harnessing it. The underlying factors must be suitable for organizations to profit from the phenomenon. For example, it is widely known that too heterogenous groups can cause conflict within. Therefore, it is dependent on the leader or superordinate to handle

and manage the disagreements for the cognitive diversity's benefits to accrue. What this literature focused on was cognitive diversity and the group processes that are fundamental to its benefits and not only the demographical attributes such as age and gender or functional differences such as education and work experience. This is in a way more accurate but at the same time broader and more obscure and complex way to tackle the concept. Therefore, this is harder to measure and achieve in practise. The attributes this review focused on are invisible, more cognition based. We understood that only the existence of diversity is not what is relevant but the implementation of practises and group processes that produce the actual results. Therefore, the framework I use for this research focuses more on the latter.

This demands for example active collaboration, participation, commitment and trust. Interpersonal dynamics so to say. Different opinions must be listened to, and personnel should be allowed to express them without fear. These are the factors that allows for variety of views to be accounted for.

We can divide this cognitive diversity phenomenon to the group process variables such as the cognitive diversity itself, competence-based trust and task conflict. I chose this model due to the convenient way of measuring it and because it is closely connected to information elaboration and the exchange of opinions and perspectives. Task conflict can be considered as a symptom of this, so I think it is relevant to combine them into the same model. It is also the most interesting to me due to its conflicting research.

I consider information elaboration such as argumentative exchanges important in group processes, because this can be seen as the instrument to drive diversity's effects. Also, without transformational leadership and need for cognition, this cognitive diversity might not work. However, I can't include everything into my framework, so I want to emphasize three variables: Information elaboration, task conflict and competence-based trust. The model and figure 2 proposed by Olson et al (2007) is relevant but I want to add the important group process, social information elaboration, to the mix. Based on this I created a model shown in figure 4. Pesonen (2022) defined social information elaboration as "any group process wherein participants communicate and integrate cognitive resources dispersed within the group, such as knowledge and reasoning heuristics." One specific form of this is social processing of information which is social interaction that facilitates cognitive processing (Pesonen, 2022). That promotes the bringing out of explanations that help the members to understand the options better. Pesonen (2022) also in his article reviewed evidence that supported the idea that group deliberation makes our reasoning more objective.

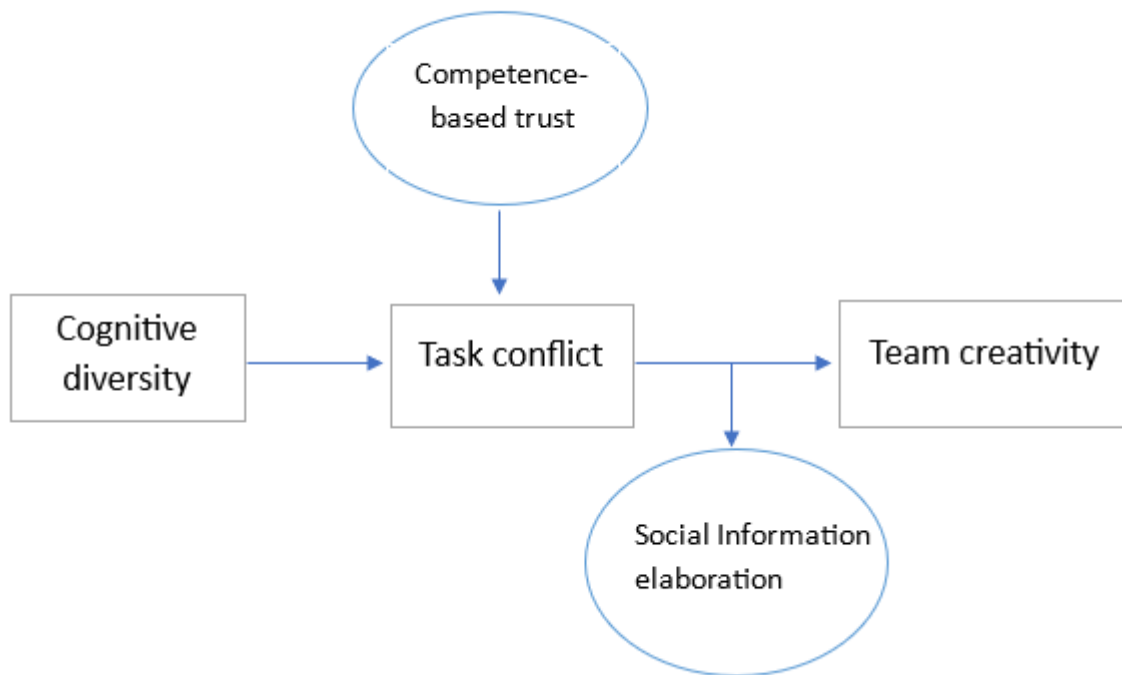


Figure 4: Proposed framework for research.

Firms are information processing systems and managers acquire and process information for strategic decisions (Daft, Bettenhausen, & Tyler, 1993; Galbraith, 1973). That is why the information elaboration and social, collaborative interactions and processing of information is beneficial. I would also like to emphasize the importance of reasoning and argumentations in helping create accurate, objective beliefs in organizations. I believe that by improving beliefs we can create creativity and better decision making.

3. METHODOLOGY

3.1 Research method

I conducted a thematic, semi-structured, and in-depth interview with an exploratory and emergent approach according to Saunders, Lewis and Thornhill's Research Methods for Business Students (2019). Further, I preferred convergent interview compared to dialogical one because my primary purpose is not to seek subjective, socially constructed meanings but to arrive towards the underlying, grounded theory of my focus (Saunders et al. 2019). This grounded theory is cognitive diversity and how its processes are applied in knowledge organizations. The interview focused on a broad theme with directive but not fixed questions. Since my research area is so broad, there are no grounds for standardized or structured questions. However, I need to have an underlying idea or aspect to lead the interview into. In this interview method the interviewee determines the path of the interview. The interviewer's prompts only emerge from what the interviewee tells him. The prompts can be clarifications or to probe and explore meanings. (Saunders et al. 2019)

The motive of this is to get familiar with the interviewee's experiences based on a particular theme. Following this emergent course of interview action is a reasonable strategy since my plan was to investigate my research theme initially broadly and then to dive deeper into whether the interviewee is familiar with the factors that contribute to my theory.

My purpose is to achieve depth of understanding through gaining the interviewees' trust so that he or she is willing to reflect more openly for the pre-conceived ideas and beliefs to be evaluated. In-depth interviews can be divided into dialogic or convergent interview. I preferred more the convergent theory since it focuses on the process of starting with unstructured interviewing and developing more specific and focused questions to converge on a theory. (Saunders, Lewis & Thornhill, 2019)

3.1.1 Qualitative research

In qualitative method the objective is to understand the phenomenon and map the field the researcher works under (Hirsijärvi, Remes & Sajavaara, 2000). The objective in qualitative research is to get a holistic understanding of the subject. In my case this method helps to give a broad and deep understanding of the phenomenon and its usage in the business field. This method of acquiring data is human based thus the interpretations and views are born and develop gradually inside the researcher. (Kiviniemi, 2018) The researcher must prevent having prejudices and refrain from forming propositions since the goal is to expose truths not to confirm already formed assumptions (Hirsijärvi et al. 2000). The researcher is supposed to remain objective and neutral in relation to the

phenomenon he is researching. The researcher has a bigger responsibility in this method compared to quantitative which isn't as interpretive but instead objective numerical way of getting data. In the qualitative method It is typical to acquire data from natural situations using people and their experiences as a research instrument.

The researcher must trust his or her observations and the data acquired from the discussions with the subjects. The readers must also trust the researcher and his or her objective observations of the interviewee's subjective experiences. The overall goal is to illuminate some unexpected facts or propositions rising from the research material and not to reaffirm some preliminary statements founded in advance in order to prove some underlying hypothesis. The most relevant offering of qualitative research method is to offer the reader a new way to understand a particular phenomenon. (Hirsijärvi et al. 2000)

3.2 Data collection

I interviewed a person face to face through video webinar tool Microsoft teams. I interviewed an independent self-employed person who works in a change leadership consulting company which is part of a bigger, integrated consulting group that operates in Europe. I contacted her via email in which I explained that I am doing a thesis about cognitive diversity to develop group decision making and innovation. The interview lasted 44 minutes and I feel like I got a broad picture of what I was looking for. Due to the ambiguity and obscurity, I didn't use cognitive diversity term in the interview body, but instead some of the group process factors which are easier to understand. The interviewee worked under titles such as work counselor, facilitator or coach of groups and as a work community mediator. So, her job is creating cooperation between groups such as stakeholders in situations of change and development. According to her, she helps different groups with different views to interact with each other on the same level. Best way to understand this is to say she works within group interaction mechanisms and processes. This was pretty much what I was looking for as this is correspondent to what I write about in this paper. She focused primarily on bringing cooperation and interaction between groups. This drives innovation and decision-making quality through group processes. Because of this I feel like only one interview was enough.

The questions were about my literary framework such as information elaboration, existence of open exchange of views, task conflicts, participation, how to get groups to work together and what problems she has faced in her career. In line with the unstructured method the interview developed in accordance with the emerging ideas that came up during it.

Tentatively, I can mention before the analysis itself that some things that came up was the importance of setting time for discussions, truly listening to group members and psychological safety. These are things that without the groups don't work well. There were additional, very interesting remarks made such as the structural difficulties that came up. Representational problems and time bias in particular. For example, it might be harder to collaborate between groups if the other one must consider outsider's perspective such as suppliers and customers. Parties' different stakeholders make collaboration harder. The lack of time for true commitment between groups in organizations was also very evident. The interviewee put forth a term time bias by which she meant that organizations or

people prefer to work for a seemingly short time over a longer process of bringing commitment that would generate better results in the longer term.

Also, the difference between sectors like manufacturing and others. In addition, there was an interesting concept of what the interviewee expressed as congruence and defined as integrity or harmony in terms of a person's feelings, thinking, words and body language.

3.3 Qualitative content analysis

Content analysis is a systematic and objective research method with means to describe and quantify phenomena. Researcher can understand the data better by distributing words and phrases into different categories and themes of meaning. The data is then also reduced to concepts that describe the research phenomenon. The aim is to attain a broad description of the phenomenon and build a model or a conceptual system out of the analysed content. Some aspects of this process can be described but it also partially depends on the researcher's intuition and insight which is hard to describe to others. Content analysis is concerned with meaning, intentions, consequences and context. Content analysis includes interpretation on the part of the researcher, and this can pose a threat on its validity. In the end, the researchers' success is measured by whether he makes the reader trust in his study's validity and credibility. (Elo & Kyngäs, 2008; Elo et al. 2014; Tuomi & Sarajärvi, 2003)

I used qualitative content analysis. It focuses on the subject and context and emphasizes variation of similarities and dissimilarities between parts of the text. The origin of qualitative content analysis is in a positivistic ontological and epistemological root. However, the ontological assumptions vary according to the researcher's standpoint. Positivistic point of view maintains distance and separation from the object of the study and seek to capture an objective 'truth' out of it. In contrast, hermeneutical is a more humanistic approach that strives to reveal meanings in the data using various degrees of interpretation. Its researchers aim to be close and connected to the study participants. In content analysis, there is an assumption that meanings and truth in a text can be revealed with as little interpretation as possible by measuring, weighing, and counting frequencies and proportions of similar statements. The interpretation of the text is a co-creation of the researcher and the text. (Graneheim, Lindgren & Lundman, 2017).

The challenge in this approach is to keep the levels of abstraction and degrees of interpretations logical and congruent throughout the analysis and presentation of results. A high abstraction level in categories or themes means that they were built upon several sub-categories and subthemes on various levels. Qualitative content analysis is applicable whether knowledge is believed to be innate,

acquired, or socially constructed. It contains both manifest and latent content. The former is close to the text whereas latter are interpretations, as to say distant from the text. The interpreted latent content can be expressed as the 'red thread' between the lines of the text. (Graneheim, Lindgren & Lundman, 2017; Lincoln & Guba, 1985)

Qualitative content analysis can be used either in an inductive or deductive way. Both processes involve three main phases: Preparation, organizations and reporting of results. The preparation phase includes collecting suitable data for content analysis and making sense of the data. When organizing the data using inductive approach, it includes open coding, creating categories and abstractions. Inductive way is preferred if there is not enough former knowledge about the phenomenon or if the knowledge is fragmented. Qualitative content analysis is a method of analyzing written, verbal or visual communication messages. Initially it was used to analyze hymns, newspaper and magazine articles, advertisements and political speeches in the 19th century. Nowadays, it has long history of usage in communication, journalism, sociology, psychology and business, and during the last few decades the usage has grown steadily. (Elo et al. 2014; Graneheim, Lindgren & Lundman, 2004; 2017; Elo & Kyngäs, 2008)

Within qualitative content analysis I operate with theory-driven content analysis. It is a middle ground between two extremes: The solely data and theory-based content analysis. This method does not test theory but acquires insights from the data and uses the theory as an overall framework and help in the determination of the direction of the interpretations. Thus, the analysis focuses on the material collected and allows insights to emerge from it. This is a better method for my study since I work in largely unpredictable and uncharted territory. Theory-driven approach fixes data-based approaches problems because theory is widely regarded as unavoidable in research investigations. This is because the used concepts, research layout and methods are set by the researcher and thus will inevitably influence the results. The idealized assumptions regarding objectivity are therefore unrealistic. Theory-driven differs from theory-based in that in the former the way the data is collected is free from the theory section. In contrast, in the latter, what is already known determines how the data collection is arranged and how the study phenomenon is conceptualized. In the end, it is researcher's wisdom to understand regarding these methods that they are not by themselves enough to create wise thoughts. There are no rules that can be paralleled to the philosopher's stone. (Tuomi & Sarajärvi, 2003)

3.4 Reliability of data collection

Especially in qualitative studies where data is gathered wholistically in natural situations, the moral and ethical aspects of the researcher is highlighted. The four basis norms of science ethos are: 1) universalism, justifying statements impersonally; 2) communism, the publicity and joint ownership of scientific knowledge; 3) impartiality, science must be a calling without the pursuit of personal profit; and 4) organized systematic criticism. There is also an additional norm that researchers must argument based on rules of scientific reasoning. This causes questions in how it is defined. Are natural sciences such as physics and biology or formal logic the factors that define it or is there another kind of science? (Tuomi & Sarajärvi, 2004)

The internal consistency is a criterion of reliability. Argumentation and sources must be valid. The subjectivity of the researcher influences the study methods and results. I try to take an impartial view and lay questions without presuppositions.

I study group process factors and facilitators for creativity because even though I initially planned to study cognitive diversity, my expertise isn't enough for it, thus I focus on the interpersonal mechanisms and prerequisites for taking advantage of cognitive diversity and achieving more creative solutions. I interviewed a person face to face using a web interaction tool. I chose the person since she had experience of group dynamics and achieving collaboration between people and making creative decisions using diverse perspectives of different people. I told the interviewee what I am researching. In doing this study I have had plenty of time.

4. FINDINGS

During the interview, I acquired a vast amount of information, focusing on the factors that facilitate engagement, commitment, and intergroup collaboration.

The interviewee's work role fits into my research context. Her work can be divided into two baskets. The first one involves counseling workshops and projects of different stakeholders and creating and improving interactions and collaboration between them. For example, sectors include environment ministries and public sector.

Another basket includes organizations in sectors such as manufacturing, knowledge organizations and health and wellbeing sectors. There her job roles include mediation, getting different stakeholders to collaborate, and team and leadership development.

"I help create creativity and spontaneity and make them see outside their own box. This helps decision making and finding new methods."

Now we go into the substance itself.

The first question entailed whether there are active participation and open exchange of different views in organizations. Based on the interviewee's job there is obviously at least some demand for this kind of approach.

"I can only use my own experience and I see it only when I have been invited. My work increases this and there has been a clear demand for this for few decades already. The growth has accelerated because hierarchy has been falling. There is a clear demand for this kind of procedure due to too big of a portion focused on reporting and no discussions and listening which would improve work wellbeing."

Giving responsibilities to teams depends on the situation. Letting them decide in every situation will demand a developed support function due to conflicts.

"Letting groups decide is wise in some situations but not wise in others. Letting them decide in every situation can cause inefficiencies unless there is a developed support function which prevents conflicts. Some organizations have hired very many coaches which makes them able to share decision making."

From the previous answer we got to talking about involvement which is an important factor for cognitive diversity. Regarding this, the ingenuine course of action it can be approached by, was mentioned. I paraphrased it as “make believe involvement”:

“I have observed that sometimes there exists a certain kind of “make believe involvement”, where managers may appear to listen to people's input, but where their contributions do not actually impact the decision-making process. This causes a lot of frustration and a lack of interest in further participation.”

“In contrast, if there is time and opportunity to actually discuss about things and people get to bring their own expertise to different subjects, then it is very rewarding, and they are happy about it.”

More than once, as ways to prevent the “make believe involvement”, came up genuine listening and planning time for spontaneous discussions. Regarding this topic, she introduced another intriguing concept called "time bias". It is a name for the conventional approach in organizations which prefers short and seemingly efficient reporting at the expense of longer discussions that would improve involvement and commitment.

“Biggest problem is they feel they have too much work and no time for spontaneous discussions. There is a time bias when people think they save time by just reporting for an hour even though active, collaborative discussions and thinking about the project for a couple of weeks would ultimately produce better results without the uncertainty and suffering that usually is faced by the people during the project.”

Since conflicts have been referred to increase commitment and therefore is a necessary requirement for involvement, disagreements were mentioned:

“People should be more able to disagree with each other. It is not inherently bad but the manner they are addressed matters.”

She also considered critical reasoning as significant in creating commitment. She proposed that equal participation of both highly vocal and non-highly vocal individuals is crucial, and specific time should be allocated for it to ensure meaningful engagement of both mode of participants.

“The role of critical reasoning is very important. There are louder and quieter critics. However, sometimes it is a hindrance so you must plan own time for it and involve

everyone equally. A concrete process would be to make people first think about the subject alone, then in small groups and then let the group voice their shared view.”

She also emphasized the importance of thinking as a means of fostering commitment among participants:

“Making groups think and not just reporting to them increases commitment. Letting them question like, what benefits and obstacles there are? Make them accept the decision.”

She also suggests, what I called as structural inconvenience, that the effect of strong disagreements between groups differs whether a participant’s stakeholder’s position is also involved. Having to take stakeholder’s interests into account makes collaboration harder. This is a certain structural problem or inconvenience since the personal interpersonal dynamic with the other party doesn’t determine the success of collaboration. The representatives in this case therefore might not have enough authority against the stakeholder. Although having a third person such as mediator involved between the parties helps:

When mediating different sides in environmental questions it is harder than helping with disagreements with persons and teams within organizations because in the former the group might represent their stakeholders so achieving common ground is harder. Especially if they change and have hidden agendas. The party might not have strong power to go against the stakeholder’s position. Whereas disagreements between persons within organizations are solved just by listening and speaking honestly.

- *“In both situations having an outside third person facilitating and monitoring the discussions helps.”*

- *“Also, when preventing conflicts, understanding the feelings coming up is very important.”*

Regarding conflicts, the interviewee came up with a term congruence which can help:

“A thing that helps in getting groups work together is called congruence. It is harmony of what a person feels, thinks, says, and body language. Understanding and handling the emotions. For example, accepting fear and not getting angry for random people.”

Whether conflicts have benefits determine on how they are defined. Disagreements take things forward, but conflicts demand external help. In addition, psychological safety is important to help with conflicts.

“In a conflict it is hard to continue without help. In comparison, civil disagreements of course take things forward. When psychological safety is present, and people are curious to understand dissent, then novel views and solutions emerge. People must see each other as being on the same side of things. People can have different paths or goals.

Based on literature, trust, especially competence-based, alleviates otherwise possibly fatal conflict. Consequently, I asked whether trust makes collaboration possible and how she sees the role of competence-based trust. According to her, it and even the competence-based one isn't enough for social interactions or teamwork to work. I conclude that trust is still an important factor but not the only determinant.

“Trust isn't enough, it doesn't ensure your interactions work. Even with trust a person might not reveal some things or help. But trust helps psychological safety.” In addition, *“It isn't enough that I can trust he does his job well, it is as important that he know how to be with a team.”*

Face-to-face encounters influences possibilities for collaboration and trust in both knowledge and manufacturing organizations: However, in the latter, there is difficulties due to the larger groups of people and in the former due to internationality.

“In manufacturing the teams can be huge, and the groups might not encounter each other at all, whereas in knowledge organizations the internationality and the fact that people see each other only through zoom or other interaction tools. It would be important to see each other occasionally face to face.”

The interviewee proposes that being present, listening and putting time for genuine discussions and encounters creates trust and collaboration and ultimately creativity.

“Leaving work for a while and saving time for discussions and being present. Organizing spontaneous genuine encounters allows collaboration and creativity. So planning is also important. Must also assess when to involve others and when not to. Although, overall, involving is the key.”

The most important factor that emerged from the data was the time bias and the influence it has on lack of commitment. Although it harms commitment and work wellbeing, work culture often prefers short-sighted and seemingly effective behavior. I propose setting aside time for spontaneous discussions, which can greatly enhance well-being, as it reflects a commitment to listening to diverse perspectives.

5. DISCUSSION AND CONCLUSIONS

5.1 Discussion

The demographical, readily observable diversity notion is still more prevalent in contemporary organizations. People see the different ethnicities or genders and even people's functional experience but that is only a proxy for their cognitive diversity. More important is to consider the processes and how organizations can utilize the diversity. For example, a person's discipline might give an implication of what is his or her default operating model is but his or her goals and ideas will be hidden without appropriate group dynamics and processes. This means that the diversity itself doesn't automatically translate to concrete effects and benefits for the organization. It also demands actual implementation such as group information elaboration, open and spontaneous discussions, and conflict handling.

5.2 Conclusions

In summary, genuine involvement and making personnel feel they have been listened to, is the key term that emerged from this study as the main factor contributing to commitment and creativity, and to cognitive diversity. It can be achieved by planning time for spontaneous discussions. Organizations should get rid of the time bias that prevent involvement and true commitment. In addition, when we are dealing with diverse thinking, mediation of disagreements and conflicts are important. The benefits of conflicts for creativity were affirmed and two additional factors in relation to conflict management that surfaced were psychological safety and congruence. These previous aspects went a little further from the task of this study and the literature review but nonetheless can still be considered intertwined to it.

Genuine involvement and listening to everyone and giving everyone an equal voice to suggest their views, were new concepts that are related to social information elaboration. However, I didn't deal with them in the literature because my focus was not on the enabling interpersonal factors but on what

it causes. It is safe to say that personnel should not be afraid to question decisions and suggest their ideas. Organizations should focus on creating commitment through genuine involvement of personnel and creating trust between them and managers. Allowing personnel to think about the decisions and making them feel like they have been listened to is ultimately important. This is how they can assure the different thinking styles and perspectives have opportunity to thrive. Organizations should not forget the face-to-face encounters and the trust and psychological safety it creates.

Trust was seen in helping to create psychological safety, but that it wasn't on its own enough in preventing conflicts. They are inevitable. Nevertheless, having an outside mediator as a support function helps.

To allow cognitive diversity to thrive, it demands high interpersonal and good teamwork skills. When they are in order and the personnel is truly committed to the shared goal, we can expect the kind of innovation that overshadows most other competitors.

Diversity awakens discourse and even discord. It can be credited in the prospering of the intellectual arena but there is also a great reverse insight:

“Amidst the current overwhelming rush to promote diversity – not only of ideas, but of race, culture, gender – we need to maintain a sense of unity” (William Casement, 1993).

5.3 Further research and limitations

The biggest limitation and advantage of my study is the obscurity and the scope of it. There is no sufficient number of particulars to point to and make it more concrete. Everything seems to connect to everything, so my research task was hard to delimit.

This concept is so large that there would be plenty of options to study. I talked about the effects of cognitive diversity on creative decisions. The innovation aspect to which I first planned to focus on actually was left to a smaller examination. And I didn't make a clear distinction between innovation and decision quality. Are the variables same that predict both of these. Cognitive diversity is shown to promote both, but I would like to see a study comparing the contributing factors on how they differ from each other.

Organizations still usually concentrate on the observable and demographic differences and not on the cognitive aspects per se. I think, it would be beneficial next to help leaders and managers to acknowledge the differences of cognitions and use them constructively to strive progress. This demands appropriate organizational culture which is yet another research option. What are the effects of organizational culture for cognitive diversity's implementation?

There are also additional further research possibilities. Personality factors and cognitive styles should be more widely researched together with the cognitive diversity and group process variables and brought into practice in organizations.

In addition, what are some of the concrete methods to drive cognitive diversity. Maybe exchange teams of different units with each other and allow employees to try different roles within organizations more flexibly. This would break routines and open new creative insights.

Longer discussions were discovered to create commitment but in a fast-paced world there is not usually time for this. There needs to be balance between longer time involving people and making fast decisions. A research question might be for example, how to effectively involve employees without sacrificing their feelings of being listened to and commitment.

In relation to the spontaneous discussions, it would be interesting to know what the role of informal communication is in generating commitment and driving creativity in organizations.

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Figures:

Figure 1. Double dichotomy of Locus and Stability in the theory of attributes, Source: [The salience](#).

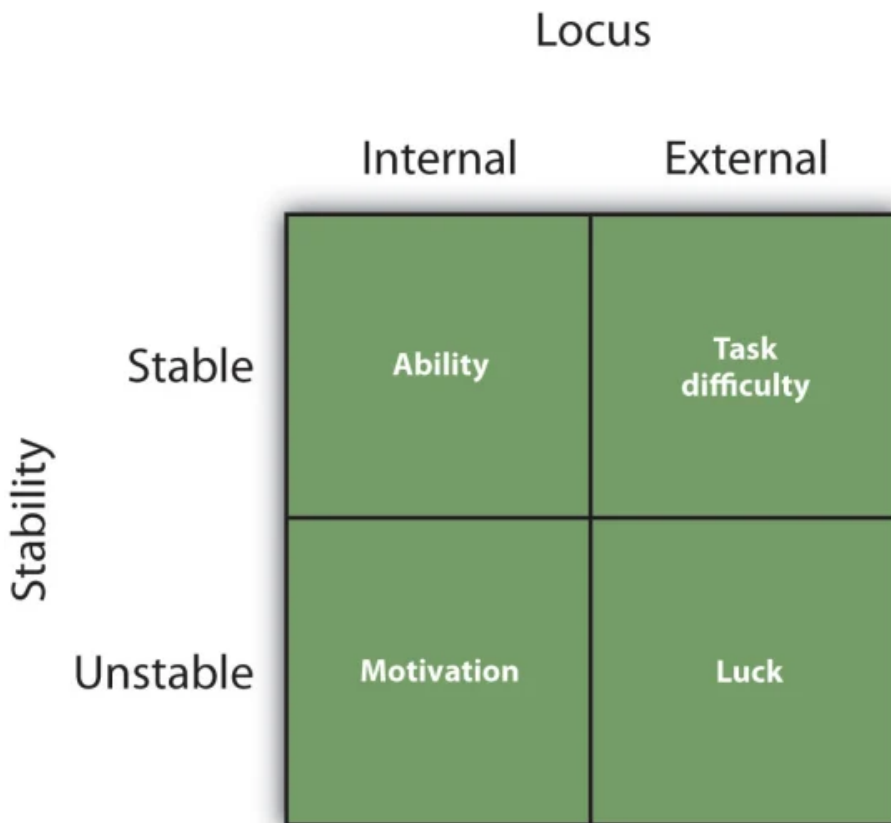


Figure 2. Group process variable model. Olson et al. (2007)

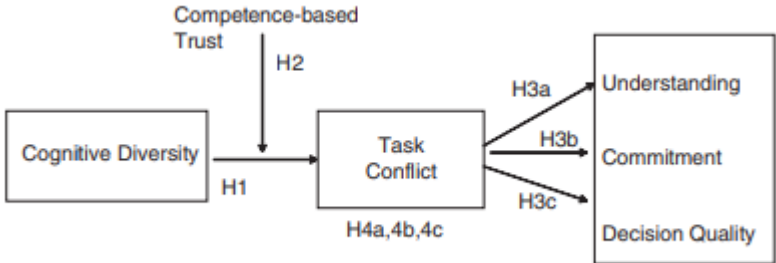


Figure 3. Conceptual model of how, when and why cognitive diversity affects team creativity. Wang, Kim & Lee (2016)

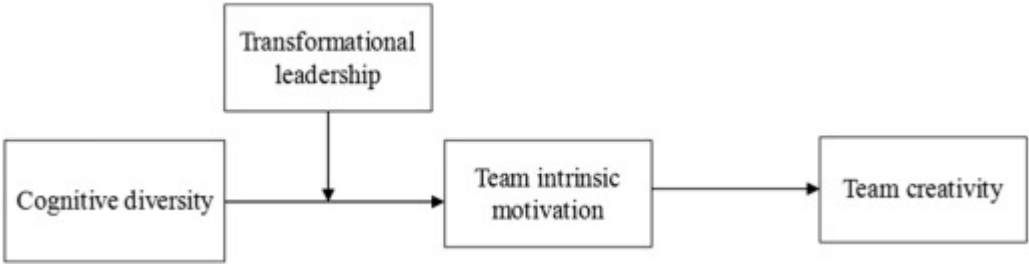
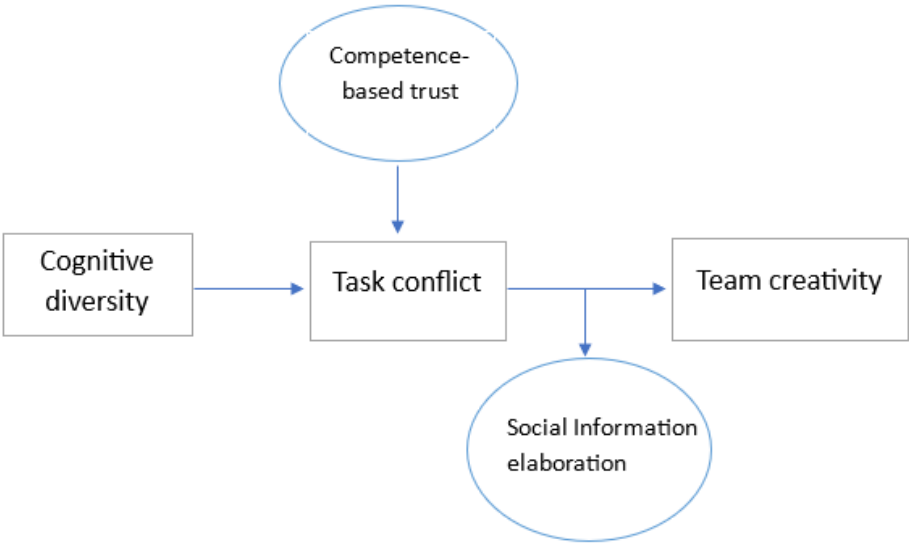


Figure 4. Proposed simplified framework for cognitive diversity. Olson, et al. (2007); Ruben (2023).



Appendix

Appendix 1: Body of the thematic interview

- What is your current work picture?
- Does your work contribute to decision making or creativity or both?

How do you see different views being used in organizations? Is there active participation and a common, open exchange of views?

- How do you see the role of critical reasoning in group decision-making?
- In your experience, how have members of different groups been committed together to reach a common decision.
- Do you feel that conflicts (clashes of beliefs) have arisen between groups because of too many differences of opinion? How have you tried to overcome them?
- Do you think that conflicts may also have been a signal of an open exchange of different views, i.e. that this would also have a positive effect
-
- How do we get people to collaborate? Is competence-based trust important? How you see it?
-
- Can you think of any other major problems you have encountered in getting different groups to work together? How was a common outcome reached?