International Journal of Technology and Education Research

https://e-journal.citakonsultindo.or.id/index.php/IJETER

E-ISSN: 2986-0733

Scoping Review: Comparison Of Organizational Culture Engineering Concepts Of Habit Formation, Shook, And Schein Models In Project Organizations

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Abstract

Organizational culture is part of an integrated system, whether it's a structured organization or an unstructured community. Most research on organizational culture discusses the relationship between culture and other variables within the organization, or how to measure culture within an organization. In an era of technological advancement, rapid change, and high complexity, a method is needed to effectively change organizational culture. This study attempts to examine three concepts that offer methods for changing organizational culture. All three concepts offer the same paradigm: that cultural change does not begin with changing something abstract and soft-system. Rather, cultural change needs to begin with changing something concrete and tangible. This includes procedures, work methods, infrastructure, and other artifacts within the company organization. These three concepts are then synthesized to produce a proposed concept. This proposed concept is expected to be easier to implement and understand for activists and researchers in the field of organizational culture.

Keyword: Cultural Change; Cultural Engineering; Designing Culture; Organizational Culture

INTRODUCTION

Corporate Environmental Factors (EEF) are any or all environmental factors, both internal and external to a project, that can influence its success, including culture (Langley, 2017). Culture is a necessary component of any organization. An integrated system,

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encompassing humans, machines, and other artifacts, creates interactions between humans and other elements. Human nature is characterized by high variability and interdependence. This high variability and interdependence increase the complexity of the integrated system. This complexity makes culture challenging to manage and direct according to needs. Every individual within an organization possesses unique characteristics, and sometimes incompatibilities arise between these characteristics. Individual characteristics can create unexpected emergent properties.

Some human variables are also sometimes beyond the organization's control, making them uncontrollable variables. All these difficulties and complexities shape culture. This culture also forms an integrated system. This culture becomes unique to each member of the organization and to the specific organization. Cultural transmission can occur between generations within an organization, allowing the next generation to continue the culture of the previous generation. This ensures a well-maintained culture within the organization.

Culture is not only shaped by the people who comprise a system but also by the artifacts, objects, and procedures within that system. An organizational system can be completely replaced, but its members can still maintain the same culture if the artifacts within the system remain the same. Culture, like any integrated system, is the accumulation of every element within the system: a combination of people, machines, equipment, methods, materials, money, information, and so on, all interwoven and working together to achieve specific goals.

A method is needed to implement changes to culture. Culture is expected to operate synergistically with other subsystems within the organization to support the achievement of goals. These goals can be short-term or long-term, and both are supported by organizational culture. Culture influences whether a company's performance is superior or not (Wei, Samiee, & Lee, 2014). Culture can influence the performance of the people within an organization. Culture also influences patterns of interaction between people within an organization, which can ultimately hinder performance and productivity, or support and catalyze the productivity and performance of organizational members (Wilkins & Ouchi, 1983). Cultural conditions are often less than ideal due to the fluctuating and diverse nature of human conditions. Therefore, a method is needed to facilitate the transition and cultural change process into a new form that aligns with organizational goals.

Culture also supports the process by which companies achieve specific changes and work methods. For example, customer orientation, excellence, responsibility, and teamwork are four cultural elements that influence readiness in Business Process Management (BPM) (Schmiedel, Vom Brocke, & Recker, 2014).

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Discussions of culture indirectly fall within the social sciences, particularly management and psychology. This social science approach creates discussions of culture, encompassing the exploration of new knowledge and information about culture. Several papers have explored the influence and correlation of culture with other variables:

Table 1. Research Related to Culture

No	Cultural Variables	Researchers
1	Organizational culture	(Amin & Siswanto, 2018), (Budiono, 2018), (Raharjo, Taufik, & Ratnawati, 2017), (Widyastuti, 2018)
2	Organizational culture on employee performance	(Alindra, 2015) (Aulia, Indarti, & Efni, 2018) (Balansa, Lengkong, & Hasan, 2018) (Dewi, Yuniarta, AK, Atmadja, & SE, 2017) (Handayani, 2016) (Kosasih, 2016) (Lina, 2014) (Mohammad, Amboningtyas, Fathoni, & Hasiholan, 2017)
3	Organization in Project	(Katane & Dube, 2017), dan (Nguyen & Watanabe).

Other research attempts to develop a measurement tool for assessing organizational culture. For example, organizational culture can be classified into six main dimensions: Process-Oriented vs. Result-Oriented, Employee-Oriented vs. Job-Oriented, Parochial vs. Professional, Open System vs. Closed System, Loose Control vs. Tight Control, Normative vs. Pragmatic (Hofstede, Neuijen, Ohayv, & Sanders, 1990).

However, there is still a need and a shortage of literature on applied design and implementation research. A significant amount of research examines the relationship between cultural variables and other variables, in contrast to research examining the procedures for cultural change. Several publications have discussed how to change organizational culture to achieve specific goals (Yusuf, 2018), (Suartana, Windia, & Winata, 2015), and (Gunadi, Hutagaol, & Hadad, 2018). The field of industrial engineering, which studies integrated systems, can also explore this cultural aspect through engineering and implementation approaches.

The goal of industrial engineering in studying culture is not to gain new knowledge but rather to find solutions to problems. Industrial engineering designs artifacts with the goal of improving or enhancing performance. Industrial engineering studies of culture seek to find solutions that can later be implemented.

An industrial engineering scholar researching culture doesn't aim to find, for example, what factors influence culture and leadership. Engineering, and industrial engineering in particular, seeks to answer questions like "how to change a culture?" "Can designing a

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framework or procedure enable cultural change?" and other implementation questions. On a smaller scale, it can also design things that directly support the achievement of a particular culture. The resulting designs will then form an artifact, whose performance must be evaluated to determine whether it meets its objectives. The design process is also supported by social science findings discovered and researched by scholars in the social sciences, including psychology and management.

METHOD

In the context of how to implement cultural change, several articles and studies have addressed this issue. At least three pieces of literature were selected for in-depth comparison and analysis to propose an alternative concept. The first concept, which can be used, comes from the book "Habits" (Duhigg, 2012). In general, the book explains that the process of cultural change can be achieved by changing habits and routines within an organization. The second concept comes from a case study of NUMMI (New United Motor Manufacturing, Inc.) (Shook, 2010). This second concept explains that culture can be changed by changing the way an organization works, the way members work, and by changing artifacts within the organization. The third concept, based on Shook's concept, is Schein's concept. This concept states that cultural change begins with changing artifacts within the organization.

The aspects compared between the three concepts are:

1. Smallest Unit of Change
2. Relationship to Culture
3. Causes of Poor Culture
4. Effects
5. Methods for Change

It is hoped that by reviewing these three literatures, comparing them, and synthesizing them, a practical procedure will be developed for organizational actors to change their culture.

RESULTS AND DISCUSSION

The following is a comparison of several cultural engineering concepts from the literature reviewed. This chapter also discusses how these concepts compare and how they can be synthesized to form new concepts for cultural engineering.

Cultural Engineering with Habit Formation

The concept of culture and the systems that shape culture is outlined in Charles Duhigg's

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book, "Habit," specifically in the sub-chapter explaining how leaders create habits through both accident and intention. The book presents examples of a workplace rife with a destructive culture and another with a very positive culture.

The book proposes the concept that organizational culture is built from small, keystone habits. These keystone habits can be designed or unintentional. They exist to achieve specific goals. The habits that shape the culture may simply be intended to address the negative behavior of an organization member. It also explains that if the culture that emerges from routines is not carefully designed, other routines will emerge unintentionally and spread informally. These less-frequent routines can then form a destructive culture within the organization.

For example, an organization should foster a culture of mutual counsel and mutual improvement. The process of mutual counseling is complex and fraught with risks. If the person receiving the advice doesn't like it, it will discourage the person giving the advice and make them less interested in providing advice or improvements. If this culture isn't designed, a routine of gossip will form among employees. This gossip will develop into a culture that damages the organization's operations. An example of this is illustrated in a story about the relationship between doctors and nurses in a hospital. A culture developed in which doctors were unwilling to accept input and improvements from nurses. This led to a culture of gossiping among nurses.

The book also explains that ingrained and institutionalized habits, which create new institutions and artifacts, will eventually lead to performance errors. This destructive culture arises from accidents, not from long and rigorous analysis.

The book argues that no organization is devoid of institutional habits. There are only organizations that intentionally design habits, or those that don't, so habits often develop out of competition or fear.

The book also explores how decision-making within a company often doesn't stem from thoughtful, conscious decisions and analysis. Organizations operate and are guided by long-standing organizational habits. Organizational culture is shaped by patterns that often emerge from thousands of independent decisions made by employees. These habits have a more powerful influence than is generally assumed. An example is presented: the decision to choose a color for a fashion product is thought to be based on robust statistical data analysis. However, in reality, the decision stems from casual discussions and conversations between employees and their colleagues, executives visiting fashion shows abroad, or even discussions between top company leaders and their families at home. These habits influence the subconscious mind and are carried over into the decision-making process.

A review of the cultural system states that customs and routines within a company

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provide hundreds of unwritten rules necessary for the company to continue operating. These routines allow employees and members of the company to act freely without being constrained by organizational bureaucracy. This freedom directly and indirectly supports the company's operations. An example is cited in the disaster response in Mexico and Los Angeles, where informal information was disseminated through children playing. This allowed information about earthquake response to spread quickly throughout the community, a process not included in formal earthquake response procedures. These customs and routines enabled effective earthquake response and the achievement of objectives. These cultures and routines also encompass routines of competition and conflict between internal members of the organization, who are tasked with maintaining balance.

The effects of good routines can only occur if they are not detrimental and are designed appropriately. For example, these routines should embrace the values of fairness, safety, and proper allocation of authority.The routines and culture established within an organization can be so rigid, technical, and inflexible that they are unable to respond to change. Therefore, the culture, routines, and habits within an organization can be shaped to achieve goals. One of these goals is flexibility and adaptability to change.

These routines are so strong and robust that changes can be met with resistance from organizational members. Similarly, organizational culture is not easily changed. Subsystems within each other are interconnected by rigid routines. Therefore, if the culture of one subsystem changes, the system becomes incompatible with the others. The system as a whole cannot function smoothly. This is illustrated in the book "Habit" with an incident in the London Underground system. Departments within the Underground had rigid and standardized procedures. If one department made a change, it would disrupt the others. With such a rigid and standardized system, the organization as a whole was unable to respond to unexpected situations, such as a fire.

When a system becomes rigid and resistant to change, radical and significant change is sometimes required. A crisis or major problem can be the initial trigger for culture and routine change. Duhigg is not alone in explaining the connection between routine and culture. Other research has also shown that organizational culture can be learned through ongoing rituals and ceremonies (Trice & Beyer, 1984).

Cultural Engineering Concept of Shook and Schein

This is an unpopular question, but it is an important topic for study. People face various cultural issues in organizations: corruption, laziness, and gossip. To address these issues, an

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E-ISSN: 2986-0733

alternative answer is provided by an article published by MIT Sloan (Massachusetts Institute of Technology). The article, written by John Shook, draws on the author's experience since the 1990s in transforming a General Motors car factory in America, with its poor performance and low employee morale, into a disciplined culture similar to that at Toyota.

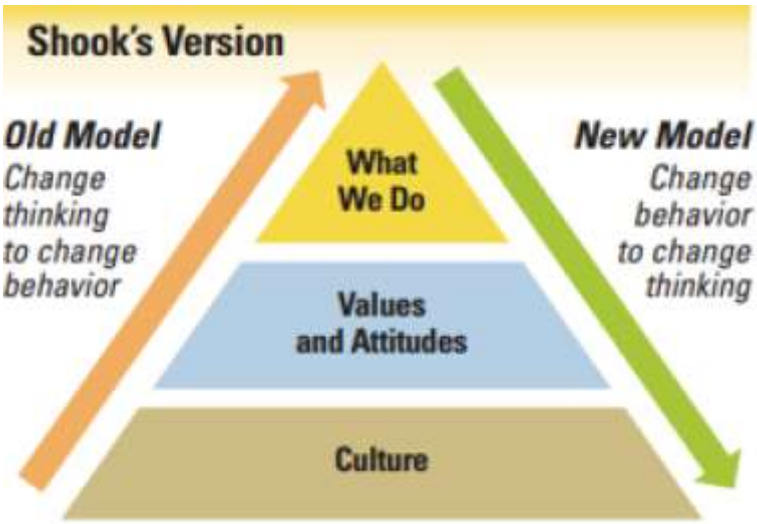


Figure 1. Shook's Cultural Engineering Concept Implemented at NUMMI (Shook, 2010)

The article explains that the concept of cultural change consists of three things that need to be changed:

1. Culture
2. Values and Attitudes
3. What we do

According to Schein, cultural components can be divided into three:

1. Basic Assumptions
2. Values and Attitudes
3. Artifacts

These two pyramids have similar meanings.

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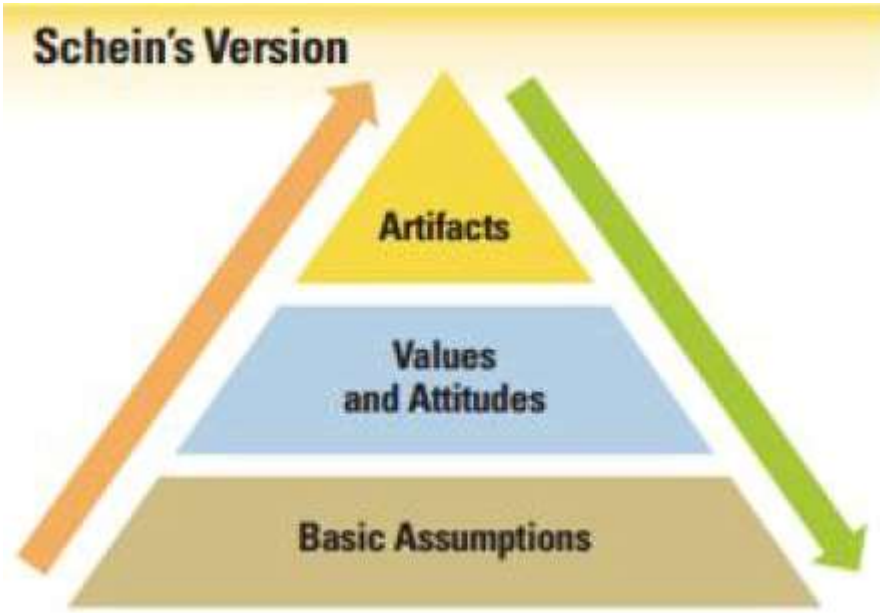


Figure 2. Schein's Concept of Cultural Engineering (Shook, 2010) (Schein, 2010)

The old paradigm held the idea that if you wanted to change an organization, you had to proceed in the order of 1, 2, then 3. If you wanted to change the organization, you had to change its culture, then its values and attitudes, then the way it works. Or, you had to change its basic ideas and assumptions, then its values and attitudes, then the organization's artifacts (rules, procedures, infrastructure, systems, and so on). This was considered correct. We often hear the common jargon "change the idea first," "change the mindset first," "revolutionize the mentality first," and so on. However, John Shook proposed the opposite: if you wanted to change the culture, you had to reverse the order: 3, 2, then 1.

John Shook's findings: If you want to change an organization and its culture, you have to change number 3 first. That is, by changing the way it works and changing the organization's artifacts. So change number 3 will influence change number 2, namely the values and attitudes held by members of the organization, and finally it will also influence change number 1, namely changes in assumptions, basic ideas, and organizational culture.

John Shook exemplified how he wanted to change the company culture to be highly committed to quality assurance. So, John Shook changed number 3: changing the artifacts and work methods. Instead of creating jargon and trying to change employee mindsets, John Shook changed the procedures within the factory. John Shook implemented the principle "Anyone can stop production in the factory." A rule was created: if an employee finds an error in the production process in the factory, they have the authority to request a halt. In a factory, this authority is a significant authority. Sometimes only the top management can stop production.

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But this authority is given to employees and staff. This has resulted in the formation of an organizational culture that cares about quality. Not just jargon and advice to care about quality, but changing work rules, changing procedures, changing the artifacts of the organization, and slowly the culture will change.

This change was just one example of a shift in artifacts and work practices. John Shook implemented other artifact and work practice changes. The effect was that the union not only accepted the new system and culture but also enthusiastically implemented it. The absenteeism rate, which was initially 20%, dropped to 2%. The quality of the plant, which was the worst of all General Motors plants, became the best. All these changes used exactly the same employees, with the problem-creating employees remaining, and the employees themselves remaining the same; nothing changed. What changed were the production and management systems, and in some way, the culture changed as well.

Based on this concept, if organizational culture is to be changed, it must begin with changing the way things work, beginning with changing artifacts. Artifacts are the products of human design. These artifacts can be human behavior, machines, materials, work methods, money, systems, and so on. Change can begin with changing organizational rules and procedures, as John Shook did at the General Motors plant.

It can also involve changing the office interior to encourage employees to behave in accordance with expectations. Information systems across various administrative processes can also be changed to prevent bribery. Changes to artifacts and concrete changes, such as those to artifacts, can slowly change the culture.

There's a principle in building a highway system: "Good design is better than enforcement." Good design is better than imposing rules on users. Creating a safe and orderly road system is better than punishing and forcing people to comply. This principle also applies to designing other things.

Implementation doesn't have to be extreme. This doesn't mean that changing item 3 means ignoring items 2 and 1. It's important to manage the concentration and weight of the changes. When making changes, keep them small. If you're in the process of changing item 1, items 2 and 3 aren't considered complete and abandoned, but rather are being changed at a smaller scale. Changing item 3 (changing procedures, rules, etc.) needs to be accompanied by communication from leadership so the organization perceives item 3 as a change in organizational culture (as well as items 2 and 1). Changes to all artifacts and devices need to be meaningful and communicated as cultural change. Otherwise, all changes will lose their meaning and become a burden for organizational members.

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https://e-journal.citakonsultindo.or.id/index.php/IJETER

E-ISSN: 2986-0733

This concept of cultural change can be a solution to the difficulties in changing organizational culture, such as changing a culture of corruption, changing a culture of laziness, changing a culture of gossiping. Cultural change can begin with changing artifacts and the way people work, changing agendas within systems and organizations, changing rules of the game, changing procedures, changing seating locations, changing rooms, changing meeting methods, changing attendance methods, and so on. These changes are planned and structured to achieve a specific culture.

Concept Comparison

The two concepts of cultural change outlined in the previous subchapters have similarities and differences. These two concepts can complement each other, providing appropriate concepts and guidelines for changing culture according to the needs of the concept's users. The differences in these two cultural concepts can complement each other's gaps.

The smallest unit of change in both concepts is relatively similar. However, there are differences in the things exemplified for change. In the Habit book, change is achieved by altering organizational habits and routines. However, it doesn't explain in detail how to change these habits and routines. In Shook's concept, however, change also occurs in what is done. Schein's concept clarifies that artifacts need to be changed for culture to change. These artifacts then change "what is done," and what is done causes changes in routine habits.

Duhigg and Shook have different concepts regarding the relationship between the smallest unit and culture. In the Habit book, the smallest unit of change is directly related to culture without explaining the intermediary between routines and culture. In the NUMMI case, however, it explains that the smallest unit is artifacts, and what we do primarily influences values and attitudes. These values and attitudes then influence culture. In this case, the NUMMI case more fully explains the relationship between the smallest units and culture. Therefore, the Habit model can be refined. Routines can first shape values and attitudes, and then continuous changes in these values and attitudes will strengthen the formation of culture.

Table 2. Comparison of Cultural Engineering Concepts

Aspect	Habit	NUMMI and the Schein Model
Smallest unit of change	Habits and routines	Artifacts and things to do
Relation to culture	Directly related to Culture	Linked first to Values and Attitudes and then related to culture
Causes of bad culture	The result of a routine that was not designed but grew naturally	Due to poorly designed artifacts and work methods

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The effects caused	Transforming a negative and conflict-filled culture into a collaborative and high-achieving one	Increased factory productivity
How to change	Both change the technical aspects first, then change the culture.	

Duhigg and Shook have different concepts in terms of identifying the causes of bad culture. In the book Habit, it is explained that bad culture is the result of routines that are not designed but grow naturally without the intention of the organization's leadership. Meanwhile, in the case of NUMMI, it is explained that bad culture is the result of poorly designed artifacts and organizational devices. In the book Habit, negligence is the cause of bad culture, while in the case of NUMMI, it is explained that it is the result of poor design or poor working methods of organizational members. The similarity of these two concepts is that a design that does not support the achievement of goals, whether accidentally formed or intentionally designed to be bad, is the cause of bad culture. A design can be poorly designed or can be well designed but inadvertently have a bad effect due to changes that occur in the system environment or other unpredictable variables.

The concepts of the book Habit and the NUMMI case study present evidence of the positive changes that can occur. Habit describes the benefits of change in a hospital organization, while the NUMMI case study examines the impact of change on a commercial manufacturing facility. Therefore, the benefits and evidence of the effects of the two concepts differ. The book Habit demonstrates the successful transformation of a negative and conflict-ridden culture into a collaborative and high-achieving one. The NUMMI case study, however, demonstrates an increase in factory productivity. The emphasis on the effects of the two concepts differs. However, both concepts fundamentally change the human aspect of the organization. Both concepts transform the cultural attributes inherent in the human community within the organization. Positive cultural change that aligns with the organization's goals will create productivity and value. Both types of organizations, public service and business, are tasked with providing value to society.

The concept of the Habit book and the NUMMI case study provide guidance for making changes. Both concepts share a common perspective: rather than changing something soft and invisible, such as culture, traits, beliefs, and so on, both concepts suggest that changes must be made to the hard components of the system. Changes are made to something concrete and visible. Changes can be made to equipment and infrastructure. Changes can also be made to technical matters. Both concepts believe that changes in technical matters will create lasting and relatively permanent changes in intrinsic and invisible things such as values, attitudes, basic

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assumptions, and culture.

Proposed Concept

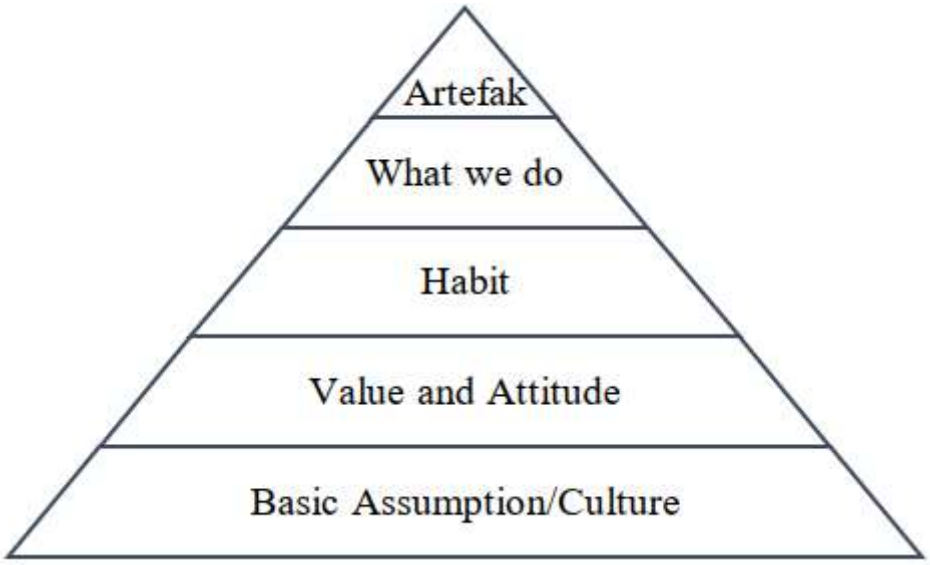


Figure 3. Proposed Cultural Engineering Concept

Based on these two concepts, a new concept can be developed that enhances both. The two concepts complement each other, creating a new, more robust concept. A concept is sometimes designed in a simple form for ease of communication and understanding by readers. However, the simplicity of a concept should not be simpler than necessary, as it could render it unusable. This combined concept attempts to offer a more detailed form, but is expected to facilitate the implementation process.

Unlike the NUMMI and Habit concepts, the change process begins by adopting Schein's concept, namely that change is achieved by changing artifacts. These artifacts are then combined with the NUMMI concept, namely changing "What we do." Existing artifacts within an organization include work procedures, interior spaces, and information systems, all designed to guide the way people work within the organization. Different information systems will lead to different ways of working for organizational members. Bureaucracy and procedures can facilitate the way members work, but can also lead to longer work processes. The artifacts designed will influence the way members work within the organization. Not all artifacts are designed with the desired work method in mind. In order to develop culture, the designed organizational artifacts are carefully planned and their impact on the way people work within the organization is considered.

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By consistently implementing changes to "what we do" within an organization, it is hoped that this will change the way we work and shape habits within the organization. Work methods that are continuously shaped by organizational artifacts and systems will eventually become habits and will persist even when the artifacts and systems have changed. People within the organization will learn to operate in these new ways. To ease the burden on the brain when implementing these new ways of working, the brain will strive to make these new ways habitual, thus reducing the burden on the brain. Therefore, consistency is needed within the organization so that these new ways of working become habits.

The habits formed by these new artifacts are carried out continuously by the organization's members. This consistent behavior requires the organization's members' own readiness. This readiness is gradually built by the human body, gradually becoming ready to carry out these habits. Habituation sends messages to the body and brain to prepare their respective organs for the ongoing routine. For example, a person working as a porter learns and is instructed to be ready by strengthening the muscles that will carry heavy loads. Habits developed within an organization will encourage each member to prepare themselves. One important aspect of developing habits is reasoning. Humans are creatures who need meaning in their actions. Initially, these habits may be carried out under duress. However, this compulsion cannot continue. Organizational members will seek justification and rationale for their routines. These justifications and rationales are formed into values, which then shape attitudes. Research has attempted to explain the relationship between values and culture, particularly competing values and their influence on organizational culture (Howard, 1998). This meaning-making also occurs collectively among organizational members. Communication occurs between members and they share messages to answer the reasons why they need to carry out these habits. This process of meaning-making and reasoning is further facilitated by the role of leadership to guide and educate organizational members. This pattern contrasts with the commonly accepted notion that cultivating something requires instilling values. However, this new concept suggests that instilling culture can be achieved through habituation.

Values and attitudes that have been formed and embedded in the minds of organizational members will form a collective understanding and a strong culture (Schneider, Brief, & Guzzo, 1996). Each member of the organization will have the same perceptions, logic, and preferences. When faced with an event, the responses of organizational members tend to be aligned. For example, when incidents of bribery, collusion, and nepotism occur, organizational members' responses will align with their held values. If corruption, collusion, and nepotism (KKN) have become commonplace within the organization, the organization will act in

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concert to address the KKN.

This alignment does not necessarily create similarities among organizational members. The differences may be intended to fill gaps between each other. The established culture and values regulate several matters that are typically discussed within the organization. For example, an organization might distance itself from regulating religious practices and dietary preferences. Therefore, organizational culture will not intrude on these matters. Some organizational cultures influence all aspects of their members' lives, such as military organizations. The organization fully regulates its culture, even down to eating and sleeping habits, and forms a standardized culture.

The values of organizational members form networks and are reinforced through communication. This communication can occur verbally or nonverbally. An example of nonverbal communication is the role model demonstrated by other organizational members. When a new member arrives from an organization with a different culture, more senior members immediately transmit values through verbal and nonverbal communication. Artifacts within the organization also shape specific behaviors and habits that serve as learning tools for new members.

CONCLUSION

The three concepts and one proposed concept all propose that change can begin with tangible and concrete things. The proposed concept seeks to combine these three concepts. Change begins with organizational artifacts, then the way members work, habits, values, and attitudes, and finally, the formation of paradigms, basic assumptions, and culture.

Organizational artifacts influence each other, resulting in the formation of culture within the organization. Artifacts, in particular, directly change the way people work and act. Further research can be conducted on the influence of each artifact on how individuals work. Each artifact's effects are examined in terms of the level of motivation it creates and the level of consistency it fosters. For example, an information system, as an artifact, will create high levels of consistency in work practices.

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