ABAC ODI JOURNAL Vision. Action. Outcome

ISSN: 2351-0617 (print), ISSN: 2408-2058 (electronic)

Systems Thinking Approach to Transform Individual's Mindset and Identity to Improve Innovation Performance and Organizational Engagement: An Action Research Study in MIN LONG Ceramic Art Museum in China

Lei SUN *Leehsing LU*

ABAC ODI JOURNAL Vision. Action. Outcome Vol 10(2) pp. 291-314

www. http://www.assumptionjournal.au.edu/index.php/odijournal

Published by the
Organization Development Institute
Graduate School of Business and Advanced Technology Management
Assumption University Thailand

ABAC ODI JOURNAL Vision. Action. Outcome
is indexed by the Thai Citation Index and ASEAN Citation Index

Systems Thinking Approach to Transform Individual's Mindset and Identity to Improve Innovation Performance and Organizational Engagement: An Action Research Study in MIN LONG Ceramic Art Museum in China

Lei SUN[1] Leehsing LU[2]

[1] Corresponding Author, Dean of the Department of Media Arts, Beijing Polytechnic, Beijing, China, sunleisunlei@163.com

[2] Associate Dean, Overseas Project, Assumption University, Bangkok, Thailand, leelu@mail.com

Received: 13 October 2022. **Revised:** 13 November 2022. **Accepted**: 14 November 2022

Abstract

This study was aimed at the research of the organization development interventions on the individual's Open-mindedness (OM) and Identity (ID) to improve innovation performance (IP) and employee organization engagement (OE) in MIN LONG Ceramic Art Museum in China. The research sample consists of 4 leaders and 26 employees. The research methods were the questionnaire, semi-structured interview, and participatory observation. Quantitative data were collected to examine the change in OM, ID, IP, and OE levels. Qualitative data were collected to understand the result of organization development interventions on the employees. The researcher evaluated data with the Shapiro–Wilk test and found that data were not normally distributed. The Wilcoxon Signed-Rank Test, Spearman rank Correlation Test, and Ordinal logistic regression analysis were utilized in this study as statistical tools to prove hypotheses. After the organization's development interventions, the collected data confirmed an improvement in the OM, ID, IP, and OE. Based on Qualitative findings, Employees' innovation performance and organizational involvement have improved significantly. However, the findings showed that innovation performance and organizational engagement could be improved by enhancing employees' open-mindedness and identity.

Keywords: cultural and creative industry; systems thinking; open-mindedness; identity; innovation performance; organizational engagement

Introduction

With the in-depth development of the knowledge and information economy, the Cultural and creative industry(CCI) has become a prominent growth point for world economic growth. The CCI has brought massive wealth to many countries and promoted the widespread

dissemination of ideas. The concept of CCI first appeared in Australia in 1994 (Creative Industries Innovation Center, 2013). The UK was one of the first countries to implement the CCI idea and introduce related policies. In 1997, the creative industry was identified as the main driving force and source of future economic growth(Smith et al., 1998).

China's long history and profound cultural background provided advantages to its industrialization process. Moreover, as China's capital and political and cultural center, Beijing's solid economic foundation and the rapid development of CCI have played an essential role in enhancing Beijing's comprehensive capabilities (Zang & Wang, 2022). This paper attempts to take the cultural and creative enterprises in Beijing as an example to analyze the problems faced by the organizational development of MIN LONG Ceramic Art Museum and put forward research ideas on issues related to the development of CCI.

MIN LONG Ceramic Art Museum (MAM) is currently the most prominent professional ceramic art museum in China, which mainly carries out ceramic display, production experience, academic exchange, and historical research. With socio-economic development, cultural demand and consumption have also brought a significant growth. As a result, min Long Ceramic Art Museum has gained more development opportunities. The enterprise has developed various design and service businesses around ceramic culture and generates higher staff requirements from skills and customer service perspectives. Due to employees are used to working independently. Performing teamwork is a challenge, which also affects the innovative performance of the organization.

On the one hand, the researcher was a participant observer, Working with the participants on the project. However, on the other hand, the CEO of the target organization also pointed out some problems and communicated with the researcher to obtain SWOT findings for the analysis. SWOT analysis summary:1. The lack of teamwork and internal competition is not suitable for the development of MAM. 2. MAM needs a set of effective methods to improve employees' OM, ID, IP, and OE.

The rationale for choosing Peter Senge's Fifth Disciplines as a blueprint for ODIs in this study

Senge (1990) merges the concept of systems thinking into organizational learning, integrating the five elements into a comprehensive system of theory and practice. It is based on actual thinking. The five disciplines are shared vision, mental modeling, personal proficiency, team learning, and system thinking. Among these are systems thinking from MIT Systems Dynamics Group, organizational learning theory from the work of Argyris and Schein, and creative tension from the work of Robert Fritz, all of which have influenced the establishment

of Senge's theory(Reese, 2020). One of the most important disciplines is systems thinking. The soul of a learning organization is personal proficiency, and the foundation of a learning organization is team learning. Systems thinking is a discipline that has a holistic perspective. To see the interconnectedness of things rather than just seeing things, to see the changing state of physical objects rather than just the current stopped state, it is the discipline of seeing the complex structure of things that supports the causes. Systems thinking adjusts the way of thinking and gives us a new tool to understand the world(Senge, 2006). Personal proficiency helps people by reinforcing their unique visions and strengthening their abilities by fulfilling their inner desires. Mental models help people understand what they observe and improve their abilities by constantly interacting with others. A shared vision empowers people by generating a common goal and makes people's goals clearer and more determined. Team learning strengthens the collective ability to learn and interact, creating empathy and synergy in learning. Systems thinking allows people to recognize the interconnectedness of things, generating better perspectives and solutions to problems(Flood, 2001).

Statement of the Problem

MIN LONG Ceramic Art Museum was in a period of business transformation. As a result, the organization urgently needs to improve employee innovation performance and engagement to maintain competitiveness and sustainable development. In addition, there needs to be more cooperation and interaction in the work process. Therefore, employees have a weak sense of Identity in the organization and urgently need to change. This study aims to improve innovative performance and employees' engagement of MIN LONG Ceramic Art Museum by improving open-mindedness and Identity, taking Peter Senge's system thinking process as a blueprint.

Research Objectives

1. To identify the current situation of open-mindedness, Identity, employees' innovative performance, and organizational engagement.
2. To identify and design the organization development interventions (ODIs) to develop open-mindedness and Identity.
3. To identify the difference between pre-and post-ODI on open-mindedness, Identity, Innovation performance, and organizational Engagement Intention.
4. To examine the impact of open-mindedness and Identity on the employees' innovation performance.
5. To examine the impact of open-mindedness and Identity on the employees' organizational engagement.

This case study aims to solve MIN LONG Ceramic Art Museum's critical issues in practice, such as Innovation performance and employees' Organizational engagement, using the ODI (Peter Senge's systems thinking process). Furthermore, the practice of MIN LONG Group can be used as an example to provide a reference for other cultural and creative industry enterprises in Beijing.

Literature Review

Organizational members' innovation is the foundation of organizational innovation, while organizational innovation and culture have a close relationship. (Daher, 2016). Furthermore, organizational innovation requires transforming individual innovation performance and individual participation. Therefore, the researcher reviews this study's open-mindedness, innovation performance, Identity, and organizational engagement.

Open-mindedness

Open-mindedness is "an intellectual virtue that manifests in a willingness to form and revise our ideas in light of a critical examination of evidence and arguments to achieve the elusive ideals of objectivity and impartiality (Verducci, 2017). One notable aspect of the discussion around open-mindedness challenges the coherence of the idea that one can be open-minded while having strong (or "intense") beliefs. First, openness as an educational goal can be abandoned; second, the contradiction can be reconciled by distinguishing between openness to something and openness as a disposition (Verducci, 2017). Third, Open-mindedness is suitable for truth. If openness is associated with reality, which is contingent, and if the necessary association with truth is what makes an intellectual virtue a virtue, then the status of openness as an intellectual virtue is jeopardized(Madison, 2017). Fourth, existing research derives the moral value of openness from the epistemological role it plays in ethical thought. Open-mindedness as a moral virtue promotes our flourishing with others in a way that is entirely unrelated to the role of correcting our beliefs (Song, 2018). Finally, reflections on the integrity of open-mindedness demonstrate that religious ethics can help make spiritual life more humane in a liberal, secular context (Sheikh, 2022).

Identity

Social identity theory is an interactionist social psychological theory that deals with the role of self-perception and related cognitive processes, as well as social beliefs in group processes and intergroup relations. It is primarily used to explain intergroup relations (Hogg, 2016). The social identity approach in psychology addresses the concept of group identity and

its impact on the self and relationships with others. Some critical extensions and developments of the social identity approach have focused on contextual factors that can influence the salience and strategic expression of Identity and the importance of emotions to group identity and group life (Spears, 2011). Group identification reduces tension because it allows people to internalize a shared identity and associated group archetypes. Internal states, such as attitudes, feelings, and emotions, are often shared among group members. Group archetypal leaders are more supported and trusted than non-archetypal leaders and are perceived by members as more effective leaders, especially when group membership is a central and salient aspect of membership and when members identify strongly with the group(Hogg et al., 2012).

Innovation performance

Innovation has long been recognized as necessary in creating and maintaining national and firm competitiveness. Emphasis on innovation in corporate culture, especially in products, is a crucial driver of sustainable business development. Innovation performance affects the development effectiveness of the organization (Sikharulidze & Kikutadze, 2017). Business innovation and business performance are mutually driven processes. In both directions, the impact of product innovation is quantitatively more important than other forms of creation. Innovative activities besides product innovation also include the strategic and investment decisions of the firm. Innovation performance affects the firm's development while improving the firm's training of workers and production conditions increases the possibility of innovation (Tuhin, 2016).

Regarding the factors that influence innovation performance, three essential elements of "technology, organization, and geography" positively impact innovation performance (Niu et al., 2010). First, firms must continuously enhance their innovation activities to benefit from market competition. In addition to the drivers of innovation performance, policy, people, and organizational structure also impact innovation performance (Samambayeva & Fernández, 2013).

Organizational engagement

In recent years, employee engagement has become a hot topic of discussion in business media and consulting firms. It has attracted the interest of various stakeholder groups, from HR practitioners to policymakers or government agencies (Kamboj & Sarmah, 2022). Engagement is a significant driver of individual attitudes, behaviors, performance, organizational performance, and productivity (Albrecht et al., 2018). Employee engagement can be categorized into three dimensions: consistency, affectivity, and action orientation, allowing organizational development and HR practitioners to gain a deeper understanding of

organizational engagement and further impact on organizational performance (Shrotryia & Dhanda, 2020). In addition, internal communication, rewards, and recognition are also significantly related to employee engagement. In addition to work-life balance, employee engagement is not negligible for employee performance (Ali et al., 2019). Changes in management practices that increase employee engagement can improve organizational performance (Harter et al., 2002). For example, the involvement of high-potential employees in leadership development activities can increase their engagement at work (Khoreva & van Zalk, 2016). Employee engagement is negatively related to measures of turnover intentions and deviant work behavior toward the organization and perceived organizational support can compensate for relatively low work engagement (Shantz et al., 2016). Organizational engagement can also be enhanced through meaningful work in that employees connect their purpose to their work (Nawrin, 2018).

Organization Change and Development

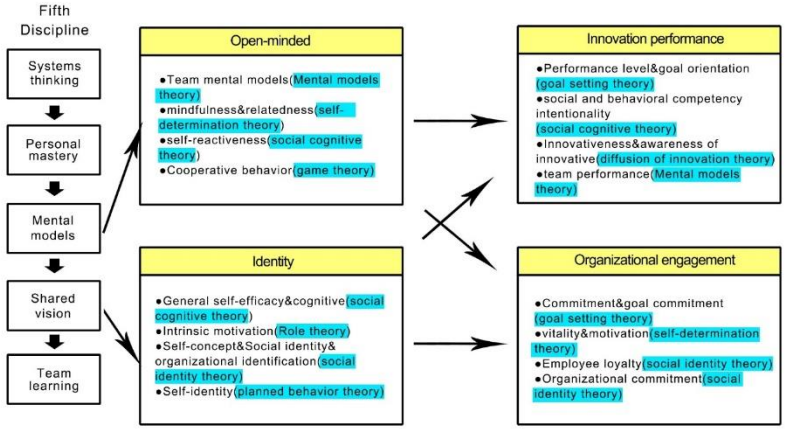
The research uses Peter Senge's The Fifth Discipline's concept of the Learning organization as a blueprint and method for organizational development interventions. Spirituality, mental models, systems thinking, and a sustainability mentality are prominent ones that have set up trends for researchers and practitioners in business and management (Bui, 2020). The Fifth Discipline's concept of the LO embraces several basic principles: systems thinking; personal mastery (development of openness and trust); mental model (refactoring or finding new ways of thinking); shared vision (interpreted as culture); and team learning (Mildawani, 2021). Facts have proved that the fifth principle is prevalent and convincing as a representative of LO. Part of the reason is that it provides new ways to manage chaos, diversity, and contradictions in the rapidly changing environment. It is a new method with practical significance.

A systems thinking approach is needed to address contemporary issues because of their multidisciplinary and interdisciplinary nature. It uses a holistic perspective to accommodate all elements of the problem. Include qualitative and quantitative techniques to incorporate "soft" and "hard" aspects into the analysis. Common attempts are compromised by reliance on short-term management strategies. To effectively solve problems, long-term thinking and an approach to address the root causes are needed to identify better and minimize the often delayed and unintended consequences of management interventions and feedback between systems (Turner et al., 2016).

Conceptual research framework

Figure 1

Theoretical Framework



Source: Developed by the author for this study

According to Saunila (2014), innovation can be considered a measure of an organization's capabilities and behavior. Therefore, organizations need to develop innovative capabilities, which will affect their survival and sustainability (Francis & Bessant, 2005). For cultural and creative enterprises, innovation is the basis for their survival and growth. Innovation ability is essential for a company to gain a competitive advantage and sustainable development (Liao et al., 2017; Phong & Lei, 2017).

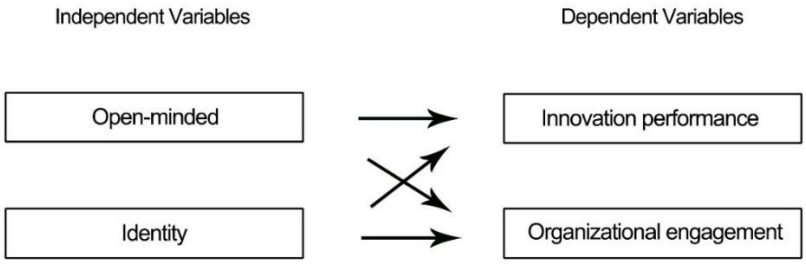
An open-minded culture feeds into the organization's knowledge-sharing process (Michna & Kmieciak, 2020). Having a common goal is essential for open-minded discussions. Research has found that people with common collaborative goals are willing to express their views, evaluate different perspectives, seek solutions, and reach joint objectives (Tjosvold, 1998). An open-minded person can promote cooperation and help each other reach consensus, improve innovation performance, and achieve organizational goals.

Christian et al. (2011) believe feedback, task salience, skill diversity, and task identity positively impact engagement. Xanthopoulou et al. (2009) and Bakker and Bal (2010) concluded that employee autonomy was positively correlated with organizational participation. Bakker and Demerouti (2008) studied the impact of occupational characteristics on employee engagement. This research concluded that the employee's job identity could improve organizational engagement and innovation performance.

In this study, the Beijing Ceramic Art Museum employees are the center of attention to the issues of innovation performance and employee engagement. Companies must focus on innovation performance and engagement in an increasingly competitive environment to survive and succeed. The enhancement of these needs to start with an open mind and Identity. In the conceptual framework, The independent variables are open-mindedness and Identity, whose factors and developments influence positive changes in behavior that lead to higher organizational performance. Innovation performance and organizational engagement are identified as dependent variables.

Figure 2

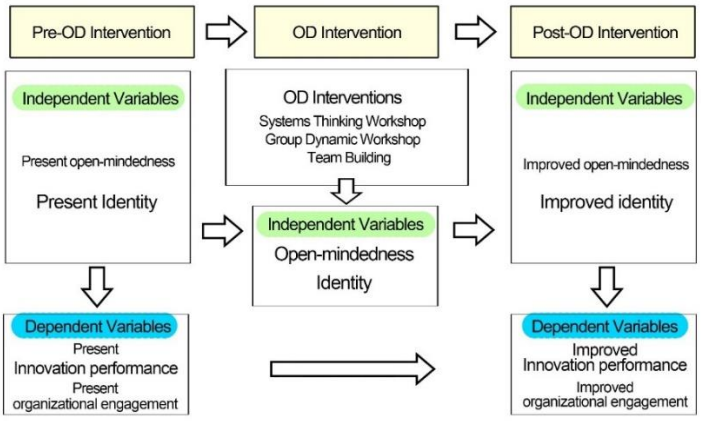
Conceptual Framework



Source: Developed by the author for this study

Figure 3

Action Research Framework



Source: Developed by the author for this study

Research Hypotheses

The hypotheses of this study are based on the conceptual framework:

H1 Open-mindedness has a statistically significant difference between pre-ODI and post-ODI.

H2 Identity has a statistically significant difference between pre-ODI and post-ODI.

H3 Innovation performance has a statistically significant difference between pre-ODI and post-ODI.

H4 Organizational engagement has a statistically significant difference between pre-ODI and post-ODI.

H5 Open-mindedness has a statistically significant impact on innovation performance.

H6 Identity has a statistically significant impact on innovation performance.

H7 Open-mindedness has a statistically significant impact on organizational engagement.

H8 Identity has a statistically significant impact on organizational engagement.

H9 Open-mindedness and Identity have a statistically significant impact on innovation performance.

H10 Open-mindedness and Identity have a statistically significant impact on Organization engagement.

Research Methodology

Research design

This study intends to improve innovative performance and employees' engagement of MIN LONG Ceramic Art Museum by improving open-mindedness and Identity, taking Peter

Senge's system thinking process as a blueprint for organization development interventions (ODIs). The philosophical approach is epistemology. The methodology is based on Pragmatism. The author applied a quasi-experimental design with action research. The survey instrument for the quantitative method uses 5-point Likert scale questionnaires and a semi-structured interview for the qualitative method's data collecting. Data analysis used Statistical methods and coding. The ODI activities were carried out from September 10, 2021 - to October 20, 2021. This study's participants included all the MIN LONG Ceramic Art Museum staff, including four leaders and 26 employees.

Pre-ODI stage. The researcher used tools to collect data from participants. The pre-ODI phase lasts two weeks before the start of the ODI phase. Researchers use quantitative methods to collect independent and dependent variable data, including in-depth interviews, observation, and questionnaires.

ODI stage. As designed during the ODI phase, the purpose of intervention is to improve employees' openness and Identity to improve innovation performance and organizational participation. Including systems thinking workshop. Group Dynamic Workshop and Team building. They have led to building a shared vision and improving employee initiative and willingness to work. Therefore, the process should start with team learning and training the learning ability of the organization. All interventions are based on selected independent variables. On the other hand, intervention design comes from the diagnosis of enterprises, starting from the problems they face.

Post-ODI stage. The post-ODI stage aims to have a specific and detailed comparative analysis will be carried out with the data of the pre-ODI to find out the differences and changes and, on this basis, to verify whether the research problem has been solved and whether the proposed hypothesis has been tested. Therefore, the post-ODI phase is carried out immediately after the ODI phase, including collecting and analyzing data, which took two weeks.

Data Collection and Analysis Tools

The questionnaire instrument used closed-ended questions. It completes a questionnaire survey based on a literature review. All items in the questionnaire use a Likert five-point scale. There are three reverse questions in the 22 items of the questionnaire to test whether the respondent has answered each question carefully. In addition, the researchers conducted an item objective congruence (IOC) test validity, inviting five experts to participate in the IOC test. After testing, the validity of each item in the questionnaire is greater than or equal to 0.6. Therefore, the questionnaire is valid.

The measurement of variables refers to the scales used by Tjosvold et al. (1999), Simon et al. (1998), Prajogo and Ahmed (2006), and Schaufeli et al. (2002). The researchers modified the related content to adapt to the content and background of the study. To test reliability, the researcher conducted one pilot study at Perfect World Co., Ltd. The Cronbach's alpha coefficient of this subject is 0.914, indicating that the acceptable range is substantial. The results prove the reliability of the questionnaire.

The researcher used several methods and different instruments to analyze the data. The number of respondents is small (N=26), less than 50. Researchers checked the results of the Shapiro-Wilk test (S-W test) for normality, which is more significant than 0.05. it indicates that data is not a normal distribution. The researcher used Nonparametric statistical tools to analyze quantitative data in that case. Wilcoxon Signed-Rank Test, Spearman rank Correlation Test, and Ordinal logistic regression analysis were used to analyze the quantitative data. The analysis using the SPSS program.

Table1

Hypothesizes Data Collection Tools and Statistic tests

Hypothesis	Tools	Statistic tests
H1-H4	Survey Questionnaire	Wilcoxon Signed-Rank Test.
H5-H8	Survey Questionnaire	Spearman- Rank Correlation Test.
H9-H10	Survey Questionnaire Observation Interview	Ordinal logistic regression Analysis

Development of OD Interventions

As a cultural and creative industry-based company, MIN LONG Ceramic Art Museum realizes that the open-mindedness and Identity of employees are closely related to organizational performance and employee engagement. It is associated with the further development of the company. Therefore, interventions for employees are aligned with the development of the company. Organizational leaders are also willing to accept and support them.

This action research study intends to improve innovation performance and employees' organizational engagement of MIN LONG Ceramic Art Museum by improving open-

mindedness and Identity, taking Peter Senge's system thinking process as a blueprint for organization development interventions (ODIs). Based on an initial assessment of the company, ODI's current challenges and the situation was designed. The initial organizational assessment revealed weaknesses in the company, including a lack of interpersonal communication, a competitive atmosphere among employees, a lack of systematic thinking perspective, a lack of confidence, a lack of organizational Identity, and a lack of willingness to work. These factors were identified as areas for OD development.

Group Dynamic Workshop was done through in-depth discussions in which everyone shared their most impressive and proud moments. This process brought everyone closer to each other. It allowed participants to see things with new eyes, respond objectively to data and facts, and build a field that could flow naturally. More ideas and creative ideas were generated through this process, and a consensus shall finally achieve.

Team building led to building a shared vision and improving employee initiative and willingness to work. Creating a shared vision reconciles differences, and the team learning process reconciles differences into motivation, stimulating everyone's wisdom and shaping a shared vision. Therefore, the process started with team learning, training the learning ability of the organization, and then the expert in the principles and methods of cooperative and organizational learning, which formed a more efficient organization.

Table 2

The Process of ODI

Intervention	Section	Organizational Assessments	Purpose	Executor	Target Variables
▪ Group Dynamic Workshop (6 Hours)	▪ Icebreaking	▪ Lack of interpersonal communication ▪ Mutual distrust and an unfriendly atmosphere	▪ Solve interpersonal problems ▪ create an open and collaborative mind	Sun	Open-mindedness
	▪ Lunch communication	▪ An unfriendly atmosphere	▪ Create a friendly and open atmosphere	Sun	Open-mindedness
	▪ Beer game	▪ Lack of system thinking skills ▪ Lack of desire to	▪ Improve system thinking skills	Sun	Open-mindedness Identity

		cooperate	▪ Willing to participate and cooperate		
▪ Team Building (3 Hours)	▪ Group Discussing	▪ A distrustful working relationship ▪ Lack of team goals	▪ Build a trusting working relationship ▪ Clear team goals	Sun	Identity
	▪ Cooperative Games	▪ Lack of confidence in team development ▪ Unwilling to listen to other's opinions	▪ Improve confidence in team development ▪ Willing to listen to other's opinions	Sun	Open-mindedness
	▪ Role Playing	▪ Lack of organizational Identity	▪ Enhance organizational Identity	Sun	Identity
	▪ System thinking training	▪ Ambiguous common vision ▪ Lack of initiative and willingness to work	▪ Building a common vision ▪ Improve ambition and desire to work	Sun	Identity

Presentation and Analysis of Findings

Demographic profiles

All participants were selected from the MIN LONG Ceramic Museum. Participants in the study include four leaders and 26 employees. Most are male, accounting for 53.85%, 26.92% under 25, 46.15% between 25 and 34, and 19.23% between 35 and 44. Regarding education level, 11.54% with high school or below. 38.46% have a junior college degree, and 50% have a bachelor's degree. In terms of working years, 30.77% with 1-3 years. 19.23% of 3-5 years and 26.92% of 10 years are the organization's backbones.

The first objective was to identify the current situation of open-mindedness, Identity, employees' innovative performance, and organizational engagement.

The status of the target organization was assessed through the SWOT analysis method in the pre-ODI phase. A SWOT assessment helped researchers reveal the key issues affecting the current business performance and operations of the MIN LONG Ceramic Art Museum. For example, the development of the Internet economy and new communication formats provides opportunities for organizations to expand their business in new directions. In order to seize

these upcoming opportunities, team performance needs to be improved by raising the level of creative performance and increasing the organizational engagement of employees. On the other hand, the impact of the epidemic and the transformation and upgrading of the cultural and creative industries present significant challenges on multiple fronts. Therefore, team development at the MIN LONG Ceramic Art Museum can enhance the organization's competitiveness.

Quantitative data analysis measured employees' open-mindedness, Identity, innovation performance, and organizational engagement before ODI. The data belonged to a non-normal distribution state by the one-sample K-s normality test. Thus, the statistical method of the nonparametric test was used. The median was taken in the statistics to calculate the median.

The second objective was identifying and designing the organization development interventions (ODIs) to develop open-mindedness and Identity.

Based on SWOT analysis and pre-ODI quantitative and qualitative data, while considering the culture and background of the target company, researchers applied organizational development interventions to change the openness, Identity, innovation performance, and organizational participation level of company members. Including system thinking workshops, dynamic group workshops, and team building.

The third objective was to identify the difference between Pre- and Post-ODI on open-mindedness, Identity, Innovation performance, and organizational engagement Intention.

Table 3

Test Results of the Third Objective

Variable	Number	Sig.	Result
OM Post-OM Pre	26	0.001	Reject null hypothesis
ID Post-ID Pre	26	0.008	Reject null hypothesis
IP Post-IP Pre	26	0.007	Reject null hypothesis
OE Post-OE Pre	26	0.006	Reject null hypothesis

*P≤0.05;

OM: Open-mindedness (H7), ID: Identity (H8); IP: Innovative Performance(H9); OE: Organization Engagement(H10)

$H1_0$: Open-mindedness has no statistically significant difference between Pre-ODI and Post-ODI.

$H1_a$: Open-mindedness has a statistically significant difference between Pre-ODI and Post-ODI.

$H2_0$: Identity has no statistically significant difference between Pre-ODI and Post-ODI.

$H2_a$: Identity has a statistically significant difference between Pre-ODI and Post-ODI.

$H3_0$: Innovation performance has no statistically significant difference between Pre-ODI and Post-ODI.

$H3_a$: Innovation performance has a statistically significant difference between Pre-ODI and Post-ODI.

$H4_0$: Organizational engagement has no statistically significant difference between Pre-ODI and Post-ODI.

$H4_a$: Organizational engagement has a statistically significant difference between Pre-ODI and Post-ODI.

The researcher tested H1, H2, H3, and H4 with a Wilcoxon signed-rank test for differences in the change before and after the OD intervention; the results showed that all the p-values were less than 0.05. Thus $H1_0$, $H2_0$, $H3_0$, and $H4_0$ were rejected.

The above test statistics show a significant difference between the pre-and pre-ODI medians. The post-ODI median is higher than the pre-ODI median. The result indicates that ODI strengthened organizational employees' open-mindedness and Identity; thus, innovation performance and engagement improved.

The fourth objective was to examine the impact of open-mindedness and Identity on the employees' innovation performance.

Table 4

Test Results of the Fourth Objective

Variable	Number	Correlation Coefficient	Sig.	Result
OM-IP	26	0.601	0.001	Reject null hypothesis
ID-IP	26	0.555	0.003	Reject null hypothesis

*P≤0.05

OM: Open-mindedness, ID: Identity; IP: Innovative Performance; OE: Organization Engagement

$H5_0$: Open-mindedness has no statistically significant impact on innovation performance.

$H5_a$: Open-mindedness has a statistically significant impact on innovation performance.

$H6_0$: Identity has no statistically significant impact on innovation performance.

$H6_a$: Identity has a statistically significant impact on innovation performance.

H5 and H6 used the Spearman correlation test to detect the correlation of the variables, and the p-values were less than 0.05, thus rejecting $H5_0$-$H6_0$。

Table 5

Test Results of The Fourth Objective

Variable	Number	McFadden	Sig.	Result
OM, ID-IP	26	0.771	0.000	Reject null hypothesis

*P≤0.05

OM: Open-mindedness, ID: Identity; IP: Innovative Performance; OE: Organization Engagement

$H9_0$: Open-mindedness and Identity have no statistically significant impact on innovation performance.

$H9_a$: Open-mindedness and Identity have a statistically significant impact on innovation performance.

H9 used ordered logistic regression to test the degree of influence of the variables, and all p-values were less than 0.05, thus rejecting $H9_0$.

The results of the qualitative studies can also support these quantitative studies, and the post-ODI interviews reveal that an open-minded employee could provide more communication and help. In addition, quantitative and qualitative data analysis showed that an open mind makes change and improvement possible. Thus, open-mindedness can be considered a prerequisite and necessary foundation for improving employee performance in a company.

The same results indicate that employee identification is essential for improving innovation performance. Therefore, this study considers it a vital factor for developing innovation performance.

Through the ODI process, the organization acquired more projects based on the organization's new initiatives with more employee input. With the team's joint participation and collaboration, the organization's first-quarter financial results improved significantly compared with the last quarter of last year while undertaking large cultural production projects

such as the production of ceramic companion gifts for the Beijing Winter Olympics in Zhangjiakou city and the ceramic culture course at the Forbidden City Museum.

The fifth objective was to examine the impact of open-mindedness and Identity on the employees' organizational engagement.

Table 6

Test Results of the Fifth Objective

Variable	Number	Correlation Coefficient	Sig.	Result
OM-OE	26	0.794	0.000	Reject null hypothesis
ID-OE	26	0.685	0.000	Reject null hypothesis

*P≤0.05

OM: Open-mindedness, ID: Identity; IP: Innovative Performance; OE: Organization Engagement

$H7_0$: Open-mindedness has no statistically significant impact on organizational engagement.

$H7_a$: Open-mindedness has a statistically significant impact on organizational engagement.

$H8_0$: Identity has no statistically significant impact on organizational engagement.

$H8_a$: Identity has a statistically significant impact on organizational engagement.

H7 and H8 used the Spearman correlation test to detect the correlation of the variables, and the p-values were less than 0.05, thus rejecting $H7_0$ and $H8_0$。

Table 7

Test Results of the Fifth Objective

Variable	Number	McFadden	Sig.	Result
OM, ID-OE	26	0.861	0.000	Reject null hypothesis

*P≤0.05

OM: Open-mindedness, ID: Identity; OE: Organization Engagement

$H10_0$: Open-mindedness and Identity have no statistically significant impact on Organization engagement.

$H10_a$: Open-mindedness and Identity have a statistically significant impact on Organization engagement.

H10 used ordered logistic regression to test the degree of influence of the variables, and all p-values were less than 0.05, thus rejecting $H10_0$。

Discussion

The study showed that all variables improved after the organizational development intervention, and quantitative and qualitative data confirmed this result. Median assessments of Open-mindedness(OM), Identity(ID), Innovation performance(IP), and Organizational Engagement(OE) of employees were statistically significant in the post-ODI phase. Innovation performance(IP) (14.29%) improved the most, while Open-mindedness(OM), Identity(ID), and Organizational Engagement(OE) all 12.5%. In addition, the qualitative data were consistent with the quantitative results through leaders and employees, in-depth interviews, and observations by researchers. The following table summarizes the relationship between this study's quantitative and qualitative results.

Table 8

Quantitative and Qualitative Results

Variable	Pre-ODI Median 5-point scale	Post-ODI Median 5-point scale	Improvement (%)	Summary of Qualitative Result Post-ODI
Open-mindedness(OM)	4	4.5	12.5%	Employees have more communication behaviors. Employees have more cooperative behaviors. Employees have more discussions and help each other.
Identity(ID)	4	4.5	12.5%	Employees feel that their work is essential. Employees feel more fulfilled. Employees feel more satisfied with their jobs.
Innovation performance(IP)	3.5	4	14.29%	Employees are more willing to communicate and share their plans. More cooperation among employees.
Organizational Engagement(OE)	4	4.5	12.5%	Employees devote more time to work. Employees feel they have more clear plans and goals.

				Employees feel better collaborating with colleagues.

Based on quantitative analysis, the study findings are of statistical significance due to the p-value of the hypothesis being less than 0.05 as shown, (1) after pre- and post-ODI, Wilcoxon Signed-Rank Test analysis, $H1_a$ has OM p=0.001; $H2_a$ has ID p=0.008, $H3_a$ has IP p=0.007; $H4_a$ has OE p=0.006, so there is a statistically significant difference on OM, ID, IP and OE before and after ODI. (2) Spearman rank Correlation Test was applied, and $H5_a$ has P=0.001; $H6_a$ has P=0.03; $H7_a$ has P=0.000; $H8_a$ has P=0.000, so there is a statistically significant relationship between OM and IP, ID and IP, OM and OE, ID, and OE. (3) Ordinal logistic regression Analyses were applied. $H9_a$ has OM and ID on IP P=0.000; $H10_a$ has OM and ID on OE P=0.000, so there is a statistically significant effect that OM and ID have an impact on IP; OM and ID have an impact on OE.

In qualitative data analysis, After ODI, in the ceramic culture course project of the Palace Museum, many people volunteered to undertake the main task in the production process. Employees have volunteered to take on the job. Based on Qualitative findings: after pre- and post-ODI, eight out of ten employees mentioned that more communication and cooperative behaviors were generated among employees. This evidence supports $H1_a$. Nine out of ten employees said that they felt work was meaningful and fulfilling. This evidence supports $H2_a$. The new projects, such as the Winter Olympics, the cultural program at the Forbidden City, and the improved financial results in the first quarter of 2022. This evidence supports $H3_a$. Seven out of ten employees mentioned that they devoted more time to work. This evidence supports $H4_a$. Interview and observation found that OM and ID can improve IP and OE, respectively. This evidence supports $H5_a$ to $H8_a$. Eight of ten employees said that promoting OM and ID increases new business and generates more work initiative and enthusiasm. This evidence supports $H9_a$ and $H10_a$. Summarizing the qualitative results of post-ODI, employees' open-mindedness, Identity, innovation performance, and organizational engagement significantly improved, which supported the quantitative study results.

Previous studies also support the corresponding conclusions, such as the impact of openness on performance (Song, 2018). Group identity can make organizations more effective (Hogg et al., 2012). People's attitudes can impact innovation performance (Samambayeva &Fernández, 2013). Finally, employee participation can improve organizational participation (Khoreva & van Zalk, 2016). This study attempts to research and explore the relationship

between Open-mindedness, Identity, Innovation performance, and Organizational participation.

Conclusion and Recommendations

Conclusion

This case study aims to solve MIN LONG Ceramic Art Museum (MAM) 's critical issues in practice, such as Innovation performance and Organizational Engagement, using the ODI (Peter Senge's systems thinking process). The findings show that through organizational development interventions (ODIs), the levels of employees' open-mindedness, Identity, innovative performance, and organizational engagement improved. The study results also confirm that after ODIs, the company's performance has changed, with new means of communication and new projects unfolding. Thus, the improvement of the change initially impacts team members.

On the other hand, qualitative analysis supports the results obtained from quantitative research. Employees have more communication and cooperation, and at the same time, they have improved their job satisfaction and sense of Identity for their work. Employees' innovation performance has improved, and they have more active work behaviors. The company's employees constantly analyze and solve problems from the perspective of systematic thinking, which is conducive to improving employees' personal development, organizational development, and performance growth.

Recommendations

First, the similarities and differences between individual and organizational mental models can be explored in terms of mental model theory. The mutual influence of organizational learning and individual learning should be explored. Second, starting from social identity theory, the influence of Identity on organizational citizenship behavior can be further investigated. Third, starting from goal-setting theory, the correlation between employee participation in organizational goal-setting and innovation performance can be investigated.

References

Albrecht, S., Breidahl, E., & Marty, A. (2018). Organizational resources, organizational engagement climate, and employee engagement. *Career Development International*, *23*(1), 67-85.

Ali, Z., Sabir, S., &Mehreen, A. (2019). *Predicting* engagement and performance through firm's internal factors: Evidence from the textile sector. *Journal of Advances in Management Research,16*(5), 763-780.

Bakker, A. B., & Bal, M. P. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of occupational and organizational psychology, 83*(1), 189-206.

Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career development international.*

Bui, H. T. (2020). From the fifth discipline to the new revolution: what we have learnt from Senge's ideas over the last three decades. *The Learning Organization, 27*(6), 495-504.

Christian, M. S., Garza, A. S., &Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel psychology, 64*(1), 89-136.

Creative Industries Innovation Center. (*2013*, December): *Valuing Australia's Creative Industries Final Report*. www.creativeinnovation.net.au.

Daher, N. (2016). The relationships between organizational culture and organizational innovation. *International Journal of Business & Public Administration, 13*(2).

Dumaine, B. (1994). Mr. *Learning* Organization. *Fortune, 130*(8).

Flood, R. L. . (2001). Local systemic intervention. *European Journal of Operational Research, 128*(2), 245–257.

Francis, D., & Bessant, J. (2005). *Targeting* innovation and implications for capability development. *Technovation, 25*(3), 171-183.

Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). A meta-analysis is a business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes. *Journal of applied psychology, 87*(2), 268–279.

Hogg, M.A. (2016). *Social Identity Theory*.

Hogg, M.A., van Knippenberg, D., & Rast, D.E. (2012). The social identity theory of leadership: Theoretical origins, research findings, and conceptual developments. *European Review of Social Psychology, 23*, 258 - 304.

Kamboj, S., & Sarmah, B. (2022). Antecedents and Consequences of Employee Engagement for a Diverse Workforce. *Research Anthology on Changing Dynamics of Diversity and Safety in the Workforce*.

Khoreva, V., & van Zalk, M. (2016). Antecedents of work engagement among high potential employees. *Career Development International, 21*(5), 459-476.

Liao, S. H., Chen, C. C., Hu, D. C., Chung, Y. C., & Liu, C. L. (2017). Assessing the influence of leadership style, organizational learning, and organizational innovation. *Leadership & organization development journal, 38*(5), 590-609.

Madison, B.J. (2017). Is open-mindedness truth-conducive? *Synthese, 196*, 2075-2087

Marin, R. (2018). Mediating role of meaningful work between resources and work engagement in Bangladesh's private banks. *Management & Marketing, 13*, 777 - 795.

Michna, A., & Kmieciak, R. (2020). Open-mindedness culture, knowledge-sharing, financial performance, and industry 4.0 in SMEs. *Sustainability, 12*(21), 9041.

Mildawani, M. T. S. (2021). Implementation of The Senge's Fifth Discipline: Strategy to Anticipate Change.

Niu, P., Xie, F., & Leonard, T. (2010). An empirical study of the relations between an economy's knowledge base and innovation performance. *Journal of Knowledge-based Innovation in China, 2*, 171-185.

Phong, L.B., & Lei, H. (2017). How transformational leadership supports knowledge sharing: evidence from Chinese manufacturing and service firms. *Chinese Management Studies,11*(3), 479-497.

Prajogo, D. I., &*Ahmed*, P. K. (2006). Relationships between innovation stimulus, innovation capacity, and innovation performance. *R&D Management, 36*(5), 499-515.

Reese, S. (2020). Reflecting on impacts of Peter Senge's Fifth Discipline on learning organizations. *The Learning Organization, 27*(1), 75–80.

Samambayeva, A., & Fernández-Grela, M. (2013). The Internal Innovation Processes in Kazakhstan.

Saunila, M. (2014). Innovation capability for SME success: perspectives of financial and operational performance. *Journal of Advances in Management Research.*

Schaufeli, W. B., *Salanova*, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*(1), 71-92.

Senge, P. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization.* New York: Currency Doubleday.

Senge, P. M., Laur, J., Schley, S., & Smith, B. (2006). *Learning for sustainability.* SoL (The Society for Organizational Learning, Incorporated).

Shantz, A., Alfes, K., & Latham, G.P. (2016). The Buffering Effect of Perceived Organizational Support on the Relationship Between Work Engagement and Behavioral Outcomes. *Human Resource Management, 55*, 25-38.

Sheikh, F.M. (2022). Open-Mindedness and the Companions of the Cave: Qur'an and the Temporal Elaboration of Muslim Subjectivity. *Islam and Christian–Muslim Relations, pp. 33*, 167 – 190.

Shrotryia, V.K., & Dhanda, U. (2020). Development of employee engagement measure: experiences from best companies to work for in India. *Measuring Business Excellence*.

Sikharulidze, D.I., & Kikutadze, V. (2017). Innovation and Export Competitiveness: Evidence from Georgia Firms. *European Journal of Economics and Business Studies, 8*, 131-137.

Simon, B., Loewy, M., Stürmer, S., Weber, U., Freytag, P., Habig, C., ... &Spahlinger, P. (1998). Collective identification and social movement participation. *Journal of personality and social psychology, 74*(3), 646-658.

Smith, Hon Chris, et al., (1998). *Creative Industries Mapping Documents, Background.* http://www.culture.gov.uk/NR/rdonlyres/338EFCBC-F706-4191-A1A4-CCB7EFF7EDAE/0/foreword.pdf.

Song, Y. (2018). The moral virtue of open-mindedness. *Canadian Journal of Philosophy, pp. 48*, 65 - 84

Spears, R. (2011). Group Identities: The Social Identity Perspective.

Tjosvold, D. (1998). *Cooperative* and competitive goal approach to conflict: accomplishments and challenges. *Applied Psychology, 47*, 285-313.

Tjosvold, D., *Morishima,* M., & Belsheim, J. A. (1999). Complaint handling on the shop floor: Cooperative relationships and open‐minded strategies. *International Journal of Conflict Management, 10*(1), 45-68.

Tuhin, R. (2016). Modeling the relationship between innovation and exporting: Evidence from Australian SMEs.

Turner, B.L., Menendez, H.M., Gates, R.N., Tedeschi, L.O., & Atzori, A.S. (2016). System dynamics modeling for agricultural and natural resource management issues: Review of some past cases and future forecasting roles. *Resources, 5*, 40.

Verducci, S. (2017). Dramatic Openings: A Role for Make-Believe in Open-Mindedness. *Philosophy of Education Archive,* pp. 219-228

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational behavior, 74*(3), 235-244.

Zang, C.P. & Wang, Z.Y.. (2022). Diffusion of Blockchain Innovation in Cultural and Creative Industries and the Construction of Global City Networks. *Journal of Shanghai Jiaotong University (Philosophy and Social Science Edition) (01)*, 81-93.