THE ROLE OF COMMUNITIES OF PRACTICE IN INCREASING ORGANIZATIONAL MATURITY LEVELS TOWARDS DIGITAL TRANSFORMATION: CASE STUDY OF EMPLOYEE COOPERATIVE

Marcel[1*], Meyliana[2], Spits Warnas Harco Leslie Hendric[3], Tirta Nugraha Mursitama[4]

Computer Science Department, BINUS Graduate Program, Doctor of Computer Science, Bina Nusantara University, Jakarta, 11480, Indonesia[13]

Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, 11480, Indonesia[2]

Management Department, BINUS Business School Doctor of Research in Management, Bina Nusantara University, Jakarta, 11480, Indonesia[4]

Information Systems Department, Krida Wacana Christian University, Jakarta, 11470, Indonesia[1]

marcel005@binus.ac.id

ABSTRACT

Organizations looking to improve operational efficiency, customer service and innovation begin by embarking on digital transformation journey. Such transformation necessitates a radical shift in the way organizations execute and behave. Communities of Practice (CoPs) are central to this wavy journey towards agility. This paper presents the role of CoP to assist in advancing organizational maturity quality for successful digital transformation, focusing from a social learning perspective. This paper conducted a case study with an employee cooperative of one state-owned enterprise based in Jakarta, Indonesia using literature reviews and semi-structured interviews involving the perspective from managers, IT staffs as well general staff. This paper utilized the Deloitte Digital Maturity Model (DMM) to evaluate digital maturity levels in five areas: Strategy, Culture, Organization, Technology and Customer. Results suggest that CoPs encourage a learning, innovative culture supported by management strong support and flexible structures with digital collaboration tools embedded in this comprehensive structure as well purposeful continuous training. The cooperative's digital maturity is in the initial stages, with five areas identified for improvement in strategy integration, cultural openness, organizational structure, technological adoption, and customer engagement. This research underlines that CoPs play an important role in enabling collaborative learning as well as digital maturity. Future research could elaborate on the long-term consequences of CoP and extend comparisons across various industries as well as consider how emerging technology influences a variety of factors related to effectiveness of CoPs.
Keywords: Communities Of Practice, Cop, Digital Maturity Level, Digital Transformation, Case Study.

1. Introduction

Digital transformation has become the pressing priority for organizations in nearly every industry as they look to create new capabilities; increasing operational efficiency, customer satisfaction and enhance innovation all necessitate the use of emerging technologies (Omol, 2024; Kraft et al., 2022). But digital transformation is hard, as organizations have to wade through the complexities of technology, mindset and capabilities (Abbu et al., 2020). It is important to remember that digital transformation is not about merely adopting new technology but more a significant change in the way that an organization operates and its culture (Omol, 2024; Bellantuono et al., 2021). To succeed in this process, organizations need to achieve a certain level of readiness that includes the ability to adopt and utilize digital technologies effectively. This condition is where the concept of Community of Practice (CoP) becomes very relevant. CoP will create a foundation for activities and a culture of sharing knowledge and experience that in turn will lead to innovation, to support digital transformation. CoPs also provide a communal learning environment that can support the collective development of skills and knowledge for all employees. This is consistent with social learning theory, which emphasizes the role of social interaction and cooperation in learning (Marx et al., 2021; King et al., 2023; Rossignoli et al., 2023; Sharma & Bagchi, 2024)

Social learning theory states that learning is a cognitive process, and it happens through observing a model and copying them and that learning is shaped and guided by the social environment (Nadeem, 2024; Apetrei et al., 2024). At work, CoPs can support social learning where members can learn from the experiences and knowledge of its members. This is critical in a digital transformation world, where technology skills are distributed across the organization and in which technology is constantly changing. Utilizing CoPs, organizations can speed up the learning cycle, making sure that their staffs are constantly updated with the latest in innovation and digital transformation-ready.

Organizational maturity is one of the most effective measurement that reflects the level of the organization readiness to implement the digital transformation. The maturity level measures how well the current processes, structure and culture in a certain organisation are able to support digital technology adoption (Machado et al., 2021; Crisan & Mihaila, 2021). Higher maturity levels lead to a decreased risk of digital transformation while increasing the probability of success for organizations (Kraft et al., 2022). By encouraging the CoPs to emerge, it can significantly help the organization go towards a higher maturity level by supporting the growth of knowledge to enrich skills and lay down a base culture to drive innovation for the digital transformation (Appio et al., 2024; Codara & Sgobbi, 2023).

Uniquely, social learning and CoP have a unique role in supporting digital transformation in small organizations which often face limited resources. In contrast to large organizations with greater access to technology and training resources, small organizations can leverage CoPs to overcome these limitations through collaborative learning and practical knowledge sharing. With a CoP, members of a small organization can support each other in developing digital skills, finding innovative solutions, and sharing best practices without requiring large investments in infrastructure or external training (Marx et al., 2021; Rossignoli et al., 2023). This condition makes CoP a key element that can drive digital transformation even in organizations with limited resources. This research paper aims to explore the role of Communities of Practice in increasing organizational maturity levels towards successful digital transformation, with a focus on the social learning perspective.

A common issue in research on digital transformation is the lack of attention to social factors that impact its success. Many studies focus more on the technology side, leaving a gap in understanding how Communities of Practice (CoPs) help organizations prepare and grow during digital transformation (Marx et al., 2021; King et al., 2023; Rossignoli et al., 2023; Fischer et al., 2020; Kohlgrüber et al., 2021; Van Veldhoven & Vanthienen, 2022). Communities of Practice (CoPs) are an important part of supporting organizations through digital transformation, their role in improving digital maturity is often not fully understood. Many organizations find it difficult to keep up with rapid technological changes because lack of structures that encourage collaboration and shared learning. This can result in inefficiencies and missed opportunities for growth. This study explores how CoPs can help solve these challenges by encouraging teamwork, sharing knowledge, and developing skills.

This research will highlight a state-owned company employee cooperative located in Jakarta, Indonesia. The following is a list of research questions to focus on:
- (**RQ1**) How do CoPs enable collaborative learning and digital maturity in organisations?
- (**RQ2**) What is current digital maturity level and improvement steps for enhancing the digital maturity?
- (**RQ3**) What is the role and impact of the community related to organization's digital transformation?
- (**RQ4**) What are the Key Success Factors for communities in the digital transformation?

This research will offer valuable input to both practitioners and academics to learn how to maximize the utilization of CoPs in order to achieve successful digital transformation, and to provide various organizations practical suggestions that intend to boost their readiness for technological change.

2. Literature Review

The process of digital transformation requires complex strategic planning, significant organizational structure changes, business processes, and work culture (Zaoui & Souissi 2020;

Gollhardt et al., 2020; Machado et al., 2021; Bellantuono et al., 2021; Omol, 2024). Maturity levels are the metrics used to determine how well an organization is prepared or has succeeded in transitioning to digital transformation. These levels aid in understanding what stage the organization is at in their digital journey and what they need to do to improve themselves to reach the next level. The maturity model is commonly applied to evaluate the digitalization adoption level of a firm as well as indicate how the business goals can be realized by various digital technologies (Aslanova & Kulichkina, 2020; Fernández et al., 2023; Thordsen et al., 2020; Gollhardt et al., 2020)

Digital transformation goes beyond simply adopting new technologies. It requires organizations to rethink their strategies, adjust their cultures, and adapt their processes to remain competitive in a rapidly changing environment. According to Digital Transformation Theory, technology can help organizations achieve their objectives and deliver value (Vial, 2019). However, the theory also highlights that success depends on aligning technology with a clear strategy, effective leadership, and a culture that embraces change.

Change management theory offers insight into how organizations can manage the challenges that arise during this process. It emphasizes the importance of having a structured approach to guide people through change, especially when there is resistance. Key factors for success include open communication, building trust, and ensuring strong leadership support throughout the transition (Errida & Lotfi, 2021).

At the same time, organizational learning theory provides another valuable perspective. It focuses on how organizations can foster a culture where employees are encouraged to learn, experiment, and share their knowledge. This kind of environment supports continuous improvement and helps organizations stay flexible and innovative as they face new challenges (Basten & Haamann, 2018).

Together, these theories provide a solid foundation for understanding digital transformation. They complement the Digital Maturity Model by explaining how aligning strategic goals, cultural values, and operational processes can help organizations navigate their digital journey. Combining these ideas creates a more comprehensive framework for addressing the complexities of transformation while staying focused on achieving long-term success.

This study uses the Deloitte Digital Maturity Model (DMM). This model offers the ability to evaluate where an organization currently stands on its journey towards digital maturity, as it empirically assesses' a firm's capabilities along five important dimensions: (1) Strategy, (2) Culture, (3) Organization, (4) Technology, and (5) Customer (Fernández et al., 2023; Gollhardt et al., 2020; Yuen & Baskaran, 2023). Each of these dimensions has stages that represent how well the organization is doing in tackling different digital transformation capabilities.

Level 1: Initial/Ad Hoc
Digital technology adoption is sporadic and unorganized at this level. A clear digital strategy does not exist, with various individual and/or department-driven digital initiatives that are not supported by the top management levels within organizations. The technology infrastructure is still in place but not integrated into any of the major business processes. The employees are using digital tools in an ad-hoc mode without any proper training or guidance.

Level 2: Developing
Organizations at this level are starting to realize how essential digital transformation is and are beginning to outline early-stage digital strategies. Here, attempts are being made to modernize the technology infrastructure and integrate new technologies into a portion of their business processes. Despite all these efforts from separate areas, digital offerings tend to be fragmented and uncoordinated within the company. The organizational culture is showing indications of embracing digital technology, but there is still resistance in some areas.

Level 3: Defined
At this stage of the maturity model, the digital strategy is more clearly articulated. Organizations start to move their technologies and the way they manage it towards something more significant with the operations (building bigger digital capabilities). Business processes are improved with

the help of technology, and several other departments can work together in tandem. A digital culture is becoming much more widespread, and the management of digital innovation is being actively promoted and supported. Digital training and development starts being conducted in a systemic approach.

Level 4: Managed

Digital transformation is now a key component that underlies the organization's business strategy of operations. Operations have been digitized to enhance efficiency and empower the creation of customer benefits. KPIs or Key Performance Indicators (in digital initiatives) are established and there is an ongoing performance evaluation. The team it organizes follows cross-functional collaboration and provides constant learning based on feedback loops. An innovation-enabled culture with employee-led digital technology adoption.

Level 5: Optimized

The organization has already transformed digitally. Market trends and customer requirements can be anticipated quickly and adequately, with full exploitation of digital technology and data analytics, in order to make accurate business decisions. The whole business process is highly automated and efficient, with the flexibility to respond to changes in the market. It is an innovative organization whose work culture encourages experimentation and continuous enhancement, making it a pioneer in digital innovation. This is the stage when the organization not only follows technology advances but is itself a point of industry change.

We chose the Digital Maturity Model / DMM (Fernández et al., 2023; Aslanova & Kulichkina, 2020; Strömberg et al., 2020; Gollhardt et al., 2020) was selected because it assesses digital maturity in a holistic approach with five primary domains: Strategy, Culture, Organization, Technology and Customer. All of these dimensions are critical to digital transformation and can be used to systematically assess an organization's readiness and capabilities. Levels of Maturity are distinctly defined, which simplifies self-assessment and identifies which area has to be improved.

The literature provides a strong foundation for addressing the research questions in this study. The Digital Maturity Model (DMM) offers a straightforward approach to evaluate where an organization currently stands in its digital transformation journey (RQ2) and identify steps for improvement. By focusing on its core dimensions: strategy, culture, organization, technology, and customer, the study can highlight specific areas that need attention to support the organization's progress.

Communities of Practice (CoPs) are closely tied to the idea of collaborative learning, which relates directly to RQ1. The literature explains how CoPs encourage employees to share knowledge, exchange ideas, and develop new skills together. This fits well with the DMM's focus on culture and organization, showing how CoPs can create a learning environment that drives innovation and supports digital growth.

The role of the community (RQ3) is another key aspect discussed in the literature. A strong, active community can play an important role in helping an organization adapt to change by promoting teamwork and reducing resistance to new digital processes. The cultural and organizational dimensions of the DMM provide a useful way to understand how involving the community can enhance transformation efforts.

The combination of insights from the DMM and CoPs helps identify what makes digital transformation successful (RQ4). Leadership commitment, ongoing training, and effective collaboration are repeatedly highlighted as essential factors. These links between the literature and the research questions help ensure that the study is grounded in practical ideas and frameworks that are easy to apply and understand.

3. Research Methods

1) Literature Identification and Collection

Databases such as ScienceDirect, Emerald and Sage were used for the identification and collection of relevant literature on digital maturity, organizational maturity and Communities of Practice. The following keyword combinations have been used: "digital transformation",

"digital maturity model", "digital transformation" AND "maturity model", "Community of practice" OR "CoP" AND "learning organization", "Community of practice" AND "learning collaborative", "Community of practice" AND "knowledge sharing", "Community of practice" AND "organizational learning" OR "knowledge management". Inclusion criteria: range of publication dates (2020-2024), English language, review and research articles, open access articles related to digital transformation, organizational maturity, communities of practice. We excluded studies that were published prior to 2020 and not in English and that were reviews, research studies, not open access, and those that did were a topic other than what was specified.

2) Literature Review
Conduct a literature review to identify the following:
- How CoPs facilitate knowledge sharing and collaborative learning within organizations.
- Factors that influence the success of social learning.
- Identify the theoretical relationship between DMM and social learning.

3) Case Study
     This research was based on a case study at an employee cooperative of a state-owned company in the logistics sector located in Jakarta, Indonesia. We chose this cooperative due to its participation in digital transformation projects and the existence of active CoPs.
- Workshop session: Organizing different types of workshop sessions on CoP, social learning and DMM.
- Interview preparation: prepare questions for semi-structured interview guide (Table 1 & 2).
- Semi-structured interviews were conducted with the manager (1 person), IT staff (1 person) and general staff (5 persons). All are CoP member.
- Interview Data Analysis: Uses a summary approach to analyze interview data.
     The study focuses on gaining in-depth insights from seven participants, who are key roles within the organization's CoPs, to understand their contributions and experiences in driving digital transformation.

4) Identify Digital Maturity Levels
     The maturity level assessment process is carried out through group discussions. Deloitte DMM was used to evaluate the cooperative's digital maturity level based on group discussion. This model assesses capabilities across five critical dimensions: Strategy, Culture, Organization, Technology, and Customer.

5) Identify Role of Communities
     Conduct semi-structured interviews to identify the characteristics, roles and impacts of communities related to digital transformation.

6) Identify Success Factors
     This analysis was based on previous interviews and data that collected by summarizing the interviews in order to understand the critical success factors of Communities of Practice (CoPs) during our case studies.
     Categorization of Success Factors: The identified factors are then classified in the five domains under Deloitte Digital Maturity Model (DMM) i.e. strategy, culture, organization, technology and customer.

Table 1 - List of Questions for Role of Communities.

Role of Communities (Sharma & Bagchi, 2024) (Jenkins et al., 2024) (Rossignoli et al., 2023) (Marx et al., 2021) (Steins et al., 2021)
Formation and Structure of CoPs
1. How did the Communities of Practice (CoPs) initially arise in your organization?
2. Which actors took part in the development of CoPs?
3. On what basis were the members of CoPs selected?
Activities and Operations of CoPs
4. Which types of activities do CoPs perform in general?
5. Frequency of CoP meetings?

6. Do you have some examples of community projects or initiatives that a CoP manages?

Role and Impact of CoPs

7. In what ways CoPs are enabling knowledge sharing and collaborative learning in your organization?
8. Share concrete examples where CoPs have helped solve organizational issues, or improve processes?
9. How have the CoPs influenced your digital transformation agenda in your organization?

Success Factors of CoPs

10. What are the enablers that have helped CoPs in your organization succeed?
11. What are the mechanisms used to make it possible for CoPs to adapt to changes and challenges within the company?
12. Do you see a specific set of practices or methods that have been successful for CoPs in relation to supporting digital transformation?

Challenges and Improvements

13. What has been problematic for you in terms of maintaining active and relevant CoPs?
14. How they have tackled these challenges?
15. What suggestions you would have for improving CoPs at your organization?

Table 2 - List of Questions for Digital Maturity Level.

Digital Maturity Level (Fernández et al., 2023) (Omol, 2024) (Palfreyman & Morton, 2022) (Teng et al., 2022) (Machado et al., 2021) (Bellantuono et al., 2021) (Verhoef et al., 2021) (Van Veldhoven & Vanthienen, 2022) (Qiang, 2021) (Gong & Ribière, 2021) (Tang, 2021) (Febiri & Hub, 2021) (Jafari-Sadeghi et al., 2021) (Nikmehr et al., 2021) (Kretschmer & Khashabi, 2020) (Fischer et al., 2020) (Zaoui & Souissi, 2020) (Albukhitan, 2020) (Aslanova & Kulichkina, 2020)

Understanding Digital Maturity

1. What is your organization´s actual digital strategy?
2. What is your digital transformation all about?

Assessment of Digital Maturity

3. Strategy: How is a digital strategy integrated into the general cooperative business strategy?
4. Culture: Please describe how open your organization is to digital innovation and the adoption of technology?
5. Organization: How are organizational structures optimized to facilitate digital transformations?
6. Technology: What technologies have you used in the journey of becoming a digital enterprise?
7. Customer: How to use customer feedback & data signals to power digital initiatives?

Measuring Progress and Success

8. In your Digital Transformation, what were the metrics of progress?
9. Which key performance indicators (KPIs) are used to measure the outcomes of digital schemes?
10. For example, what are your digital projects that have been successful or improvements you have realised through digital transformation?

Challenges and Future Directions

11. What key challenges do you face in your organization to move to the next levels of digital maturity?
12. What are some of the steps planned to mitigate these challenges and build on digital capability?
13. How do you believe CoPs will continue to support future digital transformation initiatives?

4. Results and Discussions
4.1 The Role of Communities of Practice in Collaborative Learning and Digital Maturity

RQ1 is answered by identifying How CoPs facilitate knowledge sharing and collaborative learning within organizations (Table 3), factors that influence the success of social learning (Table 4) and identifying the theoretical relationship between DMM and social learning (Figure 1).

Table 3 - How CoPs facilitate knowledge sharing and collaborative learning within organizations.

No	CoP Roles	References
1	Creating a Shared Space for Interaction CoPs enable members to meet regularly-either in person or virtually-to discuss a topic they have in common. Facilitation: Regular meetings, online forums, and collaborative tools.	(Sharma & Bagchi, 2024) (Deschênes, 2024) (Rossignoli et al., 2023) (Kabir et al., 2023) (Marx et al., 2021)
2	Encouraging Informal Learning Learning occurs largely through conversations and peer-to-peer exchanges. Facilitation: Informal conversations, mentoring, and peer support.	(King et al., 2023) (Finefter-Rosenbluh & Power, 2023) (Sung & Kim, 2021) (Marx et al., 2021)
3	Leveraging Expertise Communities of Practice (CoPs) bring together interested individuals with different levels of experience, and help new members learn from more knowledgeable practitioners. Facilitation: Demonstrations, case studies, and share best practices.	(Jenkins et al., 2024) (Geletu & Mihiretie, 2023) (Ensor & Bruin, 2022) (Flood et al., 2022) (Marx et al., 2021) (Sung & Kim, 2021)
4	Building a Knowledge Base	(Sharma & Bagchi, 2024)

	This resource can include documents, case studies, templates etc. which many times are collected by the CoPs themselves. Facilitation: A central repository.	(Rossignoli et al., 2023) (Finefter-Rosenbluh & Power, 2023) (Kabir et al., 2023) (Marx et al., 2021)
5	Encouraging Teamwork In Problem Solving CoPs motivate members to collaborate to solve similar problems and implement creative solutions. Facilitation: Collaborative projects, brainstorming sessions, and work groups.	(Sharma & Bagchi, 2024) (Rossignoli et al., 2023) (King et al., 2023) (Marx et al., 2021)
6	Building Community, Belonging and Engagement A CoP membership helps to bind members in affiliation and involvement to the community outcomes. Facilitation: Shared goals, mutual motivation and support.	(Sharma & Bagchi, 2024) (Rossignoli et al., 2023) (King et al., 2023) (Marx et al., 2021)
7	Enabling Constant Improvements CoPs aim for ongoing competence and are always looking for ways to improve on the skills sets. Support: Ongoing feedback, reflective practices, and professional development.	(Jenkins et al., 2024) (Sharma & Bagchi, 2024) (Geletu & Mihiretie, 2023) (Finefter-Rosenbluh & Power, 2023) (Rossignoli et al., 2023) (Marx et al., 2021)
8	Improving Knowledge Management in Organizational Communities of Practice (CoPs) preserve tacit knowledge as part of the organization's larger knowledge management strategy. Support: The shared wisdom and experiences.	(Sharma & Bagchi, 2024) (King et al., 2023) (Rossignoli et al., 2023) (Marx et al., 2021) (Dussart et al., 2021)

Table 4 - Factors that influence the success of social learning.

No	Factors	References
1	Credible Model or Role Model People learn better by seeing other people who are credible, good at what they do, and showing them how to be like that.	(Golmaryami et al., 2024) (Nadeem, 2024) (Apetrei et al., 2024) (Pekkala & Zoonen, 2022) (Goodyear & Armour, 2021)
2	Supportive Learning Environment A supportive environment seeks to enable positive interactions, and collaborative efforts among members.	(Apetrei et al., 2024) (Nadeem, 2024) (Golmaryami et al., 2024) (Van Zoonen et al., 2024) (Finefter-Rosenbluh & Power, 2023) (Pekkala & Zoonen, 2022) (Goodyear & Armour, 2021) (Okello et al., 2023) (Kucharska, 2021)
3	Motivation and Participant Involvement Motivation is a key factor in encouraging people to actively participate in the learning process, they can involve intrinsic and also extrinsic motivation.	(Golmaryami et al., 2024) (Nadeem, 2024) (Bah et al., 2024) (Zou et al., 2024) (Smoląg et al., 2023) (Okello et al., 2023) (Goodyear & Armour, 2021) (Sung & Kim, 2021) (Ehn et al., 2021)
4	Effective Interaction and Collaboration Social learning works best when there is significant interaction and collaboration between participants.	(Nadeem, 2024) (Apetrei et al., 2024) (Bah et al., 2024) (Golmaryami et al., 2024) (Heiss et al., 2023) (Okello et al., 2023) (Goodyear & Armour, 2021) (Maidl & Buchecker, 2021) (Sung & Kim, 2021)
5	Regular Feedback and Reflection These include feedback and reflection, that which can be given objectively to the individual on areas in which they are doing well, and for those where there is need of improvement.	(Nadeem, 2024) (Golmaryami et al., 2024) (Zou et al., 2024) (Jenkins et al., 2024) (Smoląg et al., 2023) (Patterson et al., 2023) (Pekkala & Zoonen, 2022) (Goodyear & Armour, 2021) (Sung & Kim, 2021)
6	Multicultural Experience and Perspective The experience of social learning is broader when it includes participants who bring different backgrounds, experiences and viewpoints.	(Nadeem, 2024) (Jenkins et al., 2024) (Golmaryami et al., 2024) (Imjai et al., 2024) (Patterson et al., 2023) (Goodyear & Armour, 2021) (Schönfeld & Tan, 2021) (Kucharska, 2021) (Çelik et al., 2021) (Hamzah et al., 2021)
7	Opportunities for Practice and Application Users have the ability to implement and practice newly acquired concepts in actual activities.	(Nadeem, 2024) (Golmaryami et al., 2024) (Okello et al., 2023) (Geletu & Mihiretie, 2023) (Goodyear & Armour, 2021) (Schönfeld & Tan, 2021) (Maidl & Buchecker, 2021) (Kucharska, 2021)
8	Access to Resources and Information To support learning, it is also critical to have access to the right resources and information.	(Apetrei et al., 2024) (Appio et al., 2024) (Smoląg et al., 2023) (Fitriani et al., 2023) (Finefter-Rosenbluh & Power, 2023) (Goodyear & Armour, 2021) (Kucharska, 2021)
9	Organizational Culture that Supports Learning A culture within the organization that promotes the learning and development of everyone.	(Nadeem, 2024) (Kucharska, 2021) (Sung & Kim, 2021) (Goodyear & Armour, 2021) (Maidl & Buchecker, 2021)
10	The right technology and learning tools Social learning requires the right technology to support interaction and collaboration.	(Nadeem, 2024) (Golmaryami et al., 2024) (Goodyear & Armour, 2021)

Figure 1 shows relationship between the five domains of the Deloitte Digital Maturity Model and the four phases of social learning This relationality can offer an insight into how organizations may raise their digital maturity through social learning. Figure 1 explanation:

1) Strategy is linked to Attention
- Communicate the vision and strategic objectives effectively to stakeholders.
- Utilize storytelling and visuals, as well as strategic meetings that connect digital transformation to board-level concerns.

2) Culture is linked to Retention
- Institutionalize new behaviors by embedding digital values into the organizational culture.
- Roll out training, workshops and create digital champions to encourage the digital culture.

3) Organization is linked to Reproduction
- Ensure organisational structures and processes allow the consistent implementation of digital best practices.
- Leverage collaboration tools, cross-functional teams, and best practice repositories to enable the duplication of digital skills.

4) Technology is linked to Retention
- Create an environment that encourages life-long learning and agility to stay relevant with technology.
- Conduct tech bootcamps, webinars and provide access to online learning platforms.

5) Customer is linked to Motivation
- Align digital initiatives with customer feedback and satisfaction to motivate employees.
- Set up customer feedback loops, customer journey mapping & reward systems to ensure companionship in the customer-centric goal.

CoPs are a key element in promoting collaborative learning and digital maturity in organizations by offering structured and supportive opportunities for social interaction and knowledge exchange. CoP members convene themselves on a regular basis, in person, or virtually and share a workplace to exchange ideas. It is in the form of regular interactions, which through regular meetings and online forums, as well as collaborative tools, create an environment for ongoing learning & collaboration (Sharma & Bagchi, 2024; Deschênes, 2024; Rossignoli et al., 2023; Kabir et al., 2023; Marx et al., 2021).

CoPs further foster informal learning, as a part of learning that happens through conversations and peer-to-peer exchanges. This learning relies heavily on informal conversation, mentorship, and peer support (King et al., 2023; Finefter-Rosenbluh & Power, 2023; Sung & Kim, 2021; Marx et al., 2021). In addition, CoPs make use of the knowledge and experience of other practitioners in the community. They organize demonstrations, case studies and best practices so that the new few are able to learn from the industry experts and knowledge will be shared among members (Jenkins et al., 2024; Geletu & Mihiretie, 2023; Ensor & Bruin, 2022; Flood et al., 2015b, Marx et al., 2014a; Sung & Kim, 2013).
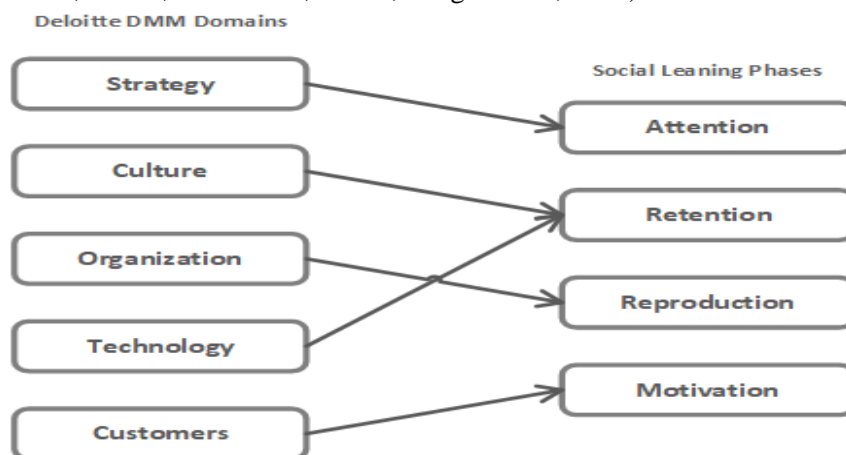

Fig. 1. Relationship Between Deloitte DMM And Social Learning.

CoPs help build a strong knowledge base, engages participation while promoting learning/subject matter expertise sharing. This is done by building a central repository of documents, case studies, templates and other useful resources that members can browse and contribute towards (Provo & Drbul 2018; Washington, DC : U.S. Office of Education, Bureau of Research Development Services., 1972). Moreover, CoPs facilitate teamwork through participatory approaches to problem-solving and project implementations e.g., in the form of projects, brainstorming sessions, or workgroups (e.g., Sharma & Bagchi, 2024; Rossignoli et al., 2023; King et al., 2023; Marx et al., 2021). Further, they can cultivate and foster a sense of community, identity and involvement through coordinating people with common needs and potential support, which is essential for perpetuating motivation and participation (Sharma & Bagchi 2024; Rossignoli et al. 2023; King et al. 2023; Marx et al., 2021).

4.2 Evaluation of Cooperative Digital Maturity Levels Using the Deloitte Digital Maturity Model

RQ2 was addressed by a combination of group discussion exercises to assess digital capabilities in the organization using Deloitte Digital Maturity Model. The following is a summary of the discussion referring to the four perspectives from the semi-structured questions that were prepared previously (Table 2).

1) Understanding Digital Maturity
Actual Digital Strategy:
The cooperative is still shaping its digital strategy. The manager shared, "We're just starting to figure out how technology can help us work more efficiently and improve services for our members." The IT staff explained, "Our focus right now is identifying what we need, like better apps and stronger IT systems, to support the transformation." General staff added, "We're looking forward to these changes making it easier for members to access and use our services."

Digital Transformation Focus:
The main focus is on improving operations and making services run more smoothly. The manager explained, "Our priority is to provide faster, clearer, and more efficient services to members." The IT staff added, "We're working on systems that are secure and easy to use, starting with digitizing documents and improving our IT network." General staff highlighted, "It's really about making everything simple and transparent, so everyone benefits."

2) Assessment of Digital Maturity
Digital Strategy Integration:
The integration of digital strategies is still in progress. The manager said, "We're working on a long-term plan, but it's not fully there yet." The IT staff added, "Some departments are starting to benefit, but it's still limited." General staff shared, "We've seen plans like online payments starting to come up, which is a good sign."

Digital Innovation Culture:
The culture around digital innovation is improving but still has challenges. The manager said, "We support new ideas, but some people think IT is only for the IT team." The IT staff explained, "There's resistance sometimes, but training and discussions are helping." General staff added, "People are more open to changes now, and we're starting to see real improvements."

Organizational structure:
Changes are being made to support digital projects. The manager said, "We've created a team for digital projects and started regular training sessions." The IT staff shared, "The new structure is helping us work better with other teams." General staff said, "Communication has improved, and decisions are being made faster now."

Technology Used:

The adoption of technology is happening gradually. The manager said, "We're starting small, like upgrading networks and using mobile apps." The IT staff explained, "We're focused on improving security and protecting member data." General staff said, "Using mobile apps will make transactions much easier for everyone."

Uses of Customer Feedback:
Feedback from members is being used to improve services. The manager explained, "We collect feedback through surveys and forums to understand what needs to be better." The IT staff added, "We use this feedback to adjust features and fix problems." General staff shared, "It's great to see that our input actually leads to changes."

3) Measuring Progress and Success
Progress Metrics:
Progress is measured by improvements in services and operations. The manager explained, "We look at member satisfaction and how many people are using digital services now." The IT staff shared, "We track server uptime and app usage as key metrics." General staff highlighted, "Services are faster, and access for members has improved."

Key Performance Indicators (KPI):
KPIs vary depending on roles. The manager said, "We focus on efficiency, reducing costs, and increasing revenue from digital services." The IT staff noted, "Our main concern is security and how quickly we can respond to any issues." General staff emphasized, "For us, it's about how fast we can help members and how satisfied they are."

Successful Digital Projects:
Early projects have shown promising results. The manager shared, "We've made good progress with mobile apps and upgrading the network." The IT staff explained, "Our security systems and platform integrations are coming together." General staff commented, "Services are not only faster but also more transparent now, which builds trust."

4) Challenges and Future Directions
Main Challenges:
There are still challenges, but steps are being taken to address them. The manager admitted, "It's hard to change the mindset that IT is only the IT team's job." The IT staff explained, "Integrating old systems with new technology is difficult because the older systems don't work well together." General staff shared, "Adapting to new tools takes time, but we're getting there slowly."

Steps to Overcome Challenges:
To address the challenges faced during digital transformation, the cooperative is taking proactive steps. The manager explained, "We're planning to run regular training sessions and open discussions to make sure everyone, at all levels, understands and feels comfortable with the changes." The IT staff added, "We're working on strengthening the IT infrastructure and ensuring there's solid technical support available whenever issues come up." General staff emphasized the importance of hands-on support, with one saying, "Sometimes, people just need someone to show them how things work. A little help goes a long way for members who struggle with technology."

CoP Support in Digital Transformation:
Communities of Practice (CoPs) are playing a key role in the cooperative's digital transformation efforts. The manager highlighted their value, saying, "CoPs bring in fresh ideas and help foster a sense of innovation across the team, which is essential for making progress." The IT staff shared how CoPs contribute to practical solutions, explaining, "They help us understand what end users really need and what issues they're facing, so we can come up with solutions that actually work." General staff pointed out the role of CoPs in

communication, with one mentioning, "They act as a bridge between management and members, making sure that changes are clear and beneficial for everyone involved."

The maturity levels of each domain are as follows based on the findings from discussion.
1) Domain Strategy: Level 1 (Initial/Ad Hoc)
   • Actual Digital Strategy: Early stages, exploring technology. Needs a more definite digital roadmap.
   • Integration with Business Strategy: Emerging, not yet fully integrated into the primary cooperative business strategy.
   • Follow-up: Provide a clear, detailed road map of execution, and plan for interconnection with business strategy on a deeper level.
2) Domain Culture: Level 2 (Evolving)
   • Openness to Innovation: The organization is ready to innovate digitally, but struggling with the legacy mindset that IT will be done by IT.
   • Resistance to Change: There have been efforts to reduce resistance through training and discussion, but resistance is still found in several aspects.
   • Follow-up: More open conversations and trainings to change attitudes as well as the way they work.
3) Domain Organization: Level 1 (Initial/Ad Hoc)
   • Organizational Structure: Just started forming a dedicated group regarding digital initiatives and conducting regular training. The organizational structure is still siloed and not fully integrated.
   • Inter-Departmental Collaboration: The way the company is organized is being adjusted so that the IT department can work more closely with other parts of the business. But it's still in the beginning.
   • Follow-Up: Optimize the organizational structure and encourage better collaboration between all departments.
4) Domain Technology: Level 1 (Initial/Ad Hoc)
   • Technology Use: Just starting to adopt basic technology such as mobile applications and IT network improvements.
   • Cybersecurity: Exploration of cybersecurity technology to protect member data is still in its infancy.
   • Follow-Up: Develop and integrate more advanced technologies and ensure better data security.
5) Domain Customer: Level 2 (Developing)
   • Use of Feedback: Just established a digital projects task force and was holding regular training. The organisational structure is still siloed and only partially integrated.
   • Signal Data: This collected information is analyzed for improvement of features and to find the areas which needs changes despite it remain fragmented and not coordinated.
   • Follow-Up: Improve feedback collection and analysis mechanisms to support digital initiatives more effectively.
      Strategies recommended for raising the maturity level in each domain, following on from these discussions are:
1) Domain Strategy: From Level 1 (Initial/Ad Hoc) to Level 2 (Developing)
   Develop a Digital Roadmap:
   • Create a digital roadmap task force dedicated to putting together an explicit and comprehensive plan of action.
   • Understand the cooperative business objectives where digital can be integrated
   Integration with Business Strategy:
   • Integrate the digital strategy with your cooperative strategic business plan.
   • Engage senior leadership in the planning and supervision of digital strategy implementation.

2) Domain Culture: from Level 2 (Developing) to Level 3 (Defined)
   Increased Socialization and Training:

- Launch an extensive campaign to educate the entire workforce regarding why digital transformation is critical.
- Organize regular training on new technology and the possible gains it could bring to cooperative operations.

Promotion of Digital Innovation:
- Encourage a culture of innovation by holding competitions or awards for innovative ideas from employees.
- Provide space for employees to innovate and experiment with new technology.

3) Domain Organization: from Level 1 (Initial/Ad Hoc) to Level 2 (Developing)

Organizational Structure Optimization:
- Build digital project-driven cross-functional teams and foster collaboration between departments.
- Restructure to increase the cohesive, complementary structure required to deliver digital initiatives and better communication.

Training and development:
- Conduct routine training to better develop both digital technological savvy and broader employee comprehension of use.
- Create a mentorship program to help your team members in onboarding new technology.

4) Domain Technology: from Level 1 (Initial/Ad Hoc) to Level 2 (Developing)

Adoption of More Advanced Technology:
- Focus on equipment and systems that will effect operational efficiency & member services
- Gradually, start implementing technologies like ERP, CRM and other digital platforms.

Improved Data Security:
- Invest in cybersecurity technology to protect member data and cooperative operations.
- Provide training on data security and IT protocols to all staff members.

5) Domain Customers: from Level 2 (Developing) to Level 3 (Defined)

Improving Feedback Collection Mechanisms:
- Set up a more organized feedback collection mechanism, such as online surveys, debate forums and mobile applications.
- Continually monitor customer feedback to uncover opportunities for new features and improvements.

Use of Customer Data:
- Utilize customer feedback data to inform digital initiatives and enhance the overall user experience.
- Simply blend customer data with company processes, in order to provide ever more personalized and relevant service.

4.3 Roles, Impact and Success Factors of Communities related to Digital Transformation

To address **RQ3**, semi-structured interview activities are used to identify the properties of community involvement concerning organizational digital transformations. Interview questions can be referred on table 1. The following is interview results summary:

1) Setting up CoPs with its Architecture and Design
- In these organisations, CoPs first began as unofficial groups of employees with a mutual interest in technology and innovation. These are employees who freely want to share information and ideas.
- Development of CoPs is led by several different actors: top management support (i.e., the initial set-up); IT staff (technical assistance), and employees are recruited from different departments to participate in a particular topic.
- Members of CoPs are selected through their interest and expertise in specific topic areas. This involves the process of self-nomination, peer recommendations and confirmation on basis of interest levels in what can be done to benefit community goals.

2) CoPs Activities and Operations
   - CoPs generally perform some activities like group discussion, workshops, knowledge sharing sessions and cooperating in small projects. This often involves having talks about the newest trends in tech and best practices from JCC members.
   - The frequency of CoP meetings was usually one meeting a month, but more can be planned depending on project or initiatives.
   - A specific initiative the CoP is managing, for example, is a project to provide easier access to information for cooperative members via mobile. This project was a collaboration of IT and CoP members across various departments.

3) Role and Impact of CoPs
   - CoPs support knowledge sharing during regular discussions and training events. They also share digital learning documents, resources and ideas in a cloud environment.
   - Such as when CoPs team up to address logistics processes that result in delays. After discussing & analyzing together, they started to identify ways of aligned workflow and improving efficiency.
   - CoPs have been instrumental in accelerating the adoption of new tools and methodologies across organizations. This feedback informs the strategies they assist in developing and contributes toward changes needed for digital transformation.

4) CoPs Success Factors
   - Important factors which facilitate the success of CoPs are amongst other supportive management, availability of required resources and an organisational culture valuing innovation as well as learning on a constant base.
   - These mechanisms incorporate the flexibility aspect of CoP structure and activities, technology enabling remote collaboration, and regular training for members in a community.
   - Best practices include leveraging digital collaboration tools, running bootcamp training programs for employees, and starting small projects that can be rolled out rapidly to show the immediate benefits of a company's move toward becoming fully digitized.

5) Challenges and Improvements
   - The main challenges are that there is not sufficient time for members to participate, an apparent resistance to change and difficulty in linking the CoP activities with potential downstream impact. Other than that, CoP remains an add- on task with no special incentives to inspire enthusiasm to actively participate.
   - To overcome these challenges, the CoP addresses them by implementing flexible timing in working hours, providing non-monetary benefits like a public appreciations and metrics used to evaluate if COP activity contribute measurable outcomes.
   - The suggestions for improving CoPs were related to the increase in support from managers, the provision of more resources, holding a higher frequency of training and workshops on relevant topics and possibly creating some type of reward or incentive system for active contributors members.

   The following are some of the key findings as to how we can transform those insights into best practices for easing communities helping organizations digitise based on interview results. This one is defined as an important driving force in the digital transformation, also answers to **RQ4**.

1) CoPs Initiative Starts from Employee Interest
   - Results: CoPs are created from the employee-led technological innovation driving initiatives. This is compelling evidence that employees can play a pivotal role in creating communities around digital transformation.
   - Strategy: Get the team to think on their own. Allow them to meet, brainstorm and initiate small scale, high impact projects. Leaders need to encourage this and should extend the required support (Morton et al., 2020; Singh et al., 2020)

2) Strong Management Support
   - Results: Support from higher management is vital for the creation and extent of CoPs. The support which is not only financial but moral & recognition that helps the individual.
   - Strategy: Management must make resources (time, budget and access to technology) available for CoPs. Additionally, the efforts of CoPs should be recognized to continue motivating member engagement (Marx et al., 2021; Rossignoli et al., 2023; Mouazen et al., 2023).
3) Flexibility in Structure and Activities
   - Findings: CoP that flexibile in the structure and activities allows to adapt with existing changes and challenges.
   - Strategy: Create flexible structures for Communities-of-Practice so that they can meet organizational changes. Flexibility in how and when they meet, what activities are appropriate is also beneficial to ensure that people will come. (Sharma & N. Bagchi, 2024; Marx et al., 2021; Van Veldhoven & Vanthienen, 2023; Rossignoli et al., 2023; Wohllebe & Goetz, 2021; Fischer et al., 2020).

4) Use of Digital Collaboration Tools
   - Findings: The study revealed that digital collaboration tools are critical to facilitate collaborative activities more effectively, particularly in knowledge sharing and project coordination within CoP throughout different stages.
   - Strategy: Invest in digital collaboration tools that enable effective communication and collaboration, both locally and remotely. These tools should be simple and inclusive for all CoPs members (Fruchtman et al., 2022; Marx et al., 2021; Sharma & N. Bagchi, 2024; Van Veldhoven & Vanthienen, 2023; Rossignoli et al., 2023; Embrett et al., 2020; Deschênes, 2024).

5) Small Projects with Real Impact
   - Findings: CoPs that flexible in the structure and activities allows to adapt with changes and challenges.
   - Strategy: Begin with small projects which enable quick wins. The successful completion of these projects could act as a proof-of-concept and build interest and support from others to scale up such efforts (Tang, 2021; Philippart, 2022; Zaoui & Souissi, 2020; Van Veldhoven & Vanthienen, 2023; Yıldırım et al., 2022; Machado et al., 2021; Omol, 2024).

6) Continuous Training and Development
   - Findings: Regular training and skill development is important to enhance competencies of CoPs members as well as the successful technology adoption.
   - Strategy: Conduct periodic training and workshops for CoPs members covering the technical as well soft skills required to drive digital transformation. Mentoring programs are also useful in cultivating skills of members (Marx et al., 2021; Embrett et al., 2020; Rossignoli et al., 2023; Sharma & N. Bagchi, 2024; Van Veldhoven & Vanthienen, 2023; Wohllebe & Goetz, 2021)

7) Recognition and Non-Monetary Incentives
   - Findings: Public recognition may motivate active engagement in CoPs even without financial reward.
   - Strategy: Encourage emerging CoPs leaders to introduce various initiatives that reward certain successes of the members, for example recognition in company meetings, certificates of appreciation or enable them to present their projects to top management. (Sharma & N. Bagchi, 2024; Marx et al., 2021; Rossignoli et al., 2023; Dey et al., 2022; Juma Okello et al., 2023; Mouazen et al., 2023; Bah et al., 2024)

Table 5 summarises the mapping between the five Deloitte DMM Domains and seven key success factors for communities in relation to digital transformation. The process of connecting key success factors to the five domains in Deloitte Digital Maturity Model (DMM) allows

organizations to map a path that strategically aligns their digital transformation goals. The approach guarantees that projects are aligned with strategy, culture considerations and operating model (organization) as well is fortifying by technology capabilities needed to enable customer life cycle.

Table 5. The Mapping of Deloitte DMM' 5 Domains with Success Factors.

DMM Domains	Success Factors
Strategy	CoPs Initiative Starts from Employee Interest
	Small Projects with Real Impact
Culture	Strong Management Support
	Recognition and Non-Monetary Incentives
Organization	Flexibility in Structure and Activities
Technology	Use of Digital Collaboration Tools
Customers	Continuous Training and Development

5. Conclusion

Overall, the findings in this research show that Communities of Practice (CoPs) are a key factor enabling collaborative learning and digital maturity progressing within organizations. CoPs act as an environment that provides structure to regular interactions and knowledge sharing which creates a culture of learning, thus spiraling into innovation. The research shows that using CoPs for informal learning, tapping into the knowledge collective and solving problems in teams do not only form a firm background of shared expertise, but also transfer social capital from the individual level to team levels. Also, presented is the assessment of national state-owned company' employee cooperative utilizing Deloitte Digital Maturity Model that shows a level where it stands digitally and steps ahead for further strategic implementation. Helpful key success factors like strong management sponsor, structural and activity flexibility along with digital collaboration tool use amongst continuous training are the necessity for CoPs success which in turn would lead to a successful effort of digital transformation.

This research does have some limitations. Additional studies could examine both which are the long-term consequences of having CoPs on digital transformation and organizational performance. More comparative work between CoPs from different industries and cultural contexts would also contribute to a better understanding of how context may effect the functioning of such communities. Exploring how new technologies such as AI and ML can be leveraged through CoPs would also present interesting possibilities for subsequent digital transformation attempts. Through examining these areas, future research can help build upon our results and advance a more nuanced understanding of how CoPs contributes to driving digital maturity and innovation in organizations.

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