An examination of the preconditions of learning to facilitate innovation in digitalization projects: a project team members' perspective

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Abstract:
In the modern business environment spearheaded by digitalization, organizations are faced with the challenge of maintaining a competitive edge despite constant dynamic changes. Organizations therefore, have to adopt new, improved and modern ways of doing things. This can be achieved through proper knowledge management within the organization, which is an antecedent of innovation. Innovation is one of the crucial means for tackling the digitalization challenge as it enables organizations to maintain their competitive edge. Although extant studies have extensively studied learning in projects, there is a lack of concrete examples of the correlation between learning and improving innovation in the digitalization context. This article is based on a qualitative study aimed at examining the organizations' preconditions of learning in achieving innovation in digitalization projects focusing on the perspective of the project team members. Data was collected through open-ended questionnaires with a total of 97 respondents and analyzed using NVivo qualitative software. The findings revealed two viewpoints regarding the perception of learning for innovation. The preconditions for learning for innovation in digitalization were also identified. Moreover, the immediate outcomes of learning were identified that can be utilized in assessing whether employees are actually learning given the necessary preconditions are established.

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1. Introduction

Learning and innovation are common terms in today's business environment. Whereas learning is considered a mediator of innovation [1], people are considered the carriers of knowledge and are consequently regarded as the drivers of innovation [2]. Learning facilitates creativity, inspires the generation and development of knowledge, and increases the ability to recognize and apply new ideas [3]. It is pivotal for organizations to create a suitable environment that will encourage individuals to learn [4] because knowledge use amplifies the performance of both individuals and organizations [5]. However, this does not imply that it is an easy task to create a learning culture, especially in a constantly changing business environment [6].

Over the past five decades, technological advancements have shaped our societies and ultimately led to the adoption of digitalization [7]. In turn, digitalization has been adopted in various business aspects, such as in optimizing processes, business models and customer involvement [8]. In such business environments, organizations face the challenges of constantly exploring new alternatives, redeploying their existing resources, and developing new capabilities and routines [9]. To unravel such challenges, organizations need to initiate approaches that expedite changes and adaptations, and stimulate improvements. Digitalization may have emerged as a crucial enabler that facilitates organizations' changes [10]. Because it facilitates the transformation of businesses, digitalization facilitates improvements and maintaining competitive advantages, subsequently enabling the creation of benefits such as productivity improvement, innovation, and cost reduction [11].

In order to remain competitive and relevant in the current changing environment, it is imperative that organizations, specifically project-based organizations, take an effort to ensure smooth acquisition, sharing and utilization of knowledge between individuals and teams. This can facilitate improvement in their performance through error reduction and the creation of novel ideas i.e., innovation. This is in line with the claim by Quinn and Spreitzer [12] that, in current business environments and due to global competitive markets and higher customer expectations, organizations require employees to accomplish more than the norm. Similarly, Roblek et al. [13] acknowledge that knowledge management is a significant factor to enable organizations to generate sustainable competitive advantage and facilitate success of digitalization projects in the current economy [14].

Hussein et al. [15], suggest that the challenges of digitalization projects are rooted in the interplay of three dimensions; (1) managing collaboration between the diverse individuals or organizational units; (2) managing the creating of new processes, products or services that create value, frequently referred to as innovation [16], and (3) managing the procurement or introduction of the digital enablers or digital technologies to create the intended novel solutions. These three dimensions constitute therefore the main efforts in managing digitalization projects and we refer to them as the pillars of managing digitalization projects.

Knowledge management is frequently identified as an important antecedent of innovation. Given the importance of innovation, multidisciplinary researches have looked for answers to the critical question *What can be done to improve innovation?* (e.g., [17], [18], [19], [20]). Knowledge handling has become a significant task in organizations [21]. Similarly, knowledge sharing is an important step in the learning process. To achieve innovation, employees need to acquire knowledge and share it within their organization [22]. This is in line with Camps et al. [23], who claim that learning processes originate from individuals' acquisition of knowledge and evolve with the exchange and integration until collective knowledge is attained.

Tohidi et al. [3] highlight innovation as influenced by organizational learning and emphasize that organizations seeking to innovate should consider strengthening their learning culture. This is in line with Ukko et al. [1], who state that innovation demands creativity, and organizational learning is the key to achieving that level of creativity. Chen and Lin

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[24] suggest that for organizations to develop knowledge, there should be a dynamic environment, specific knowledge, intentional employees who possess sufficient capabilities and high levels of autonomy. Thus, the environment plays a crucial role in organizational learning. This is in line with Daemi et al. [25] who stated that the environment of an organization has potential to either support or impede the successful implementation of initiatives, models or ideas.

The huge challenge facing learning in projects involves the retention of knowledge once the project has been completed and the team has moved to other projects. In such circumstances, there is a risk that the knowledge and experience gained will be lost [9]. To avoid loss of knowledge, it is important to construct ways in which it can be retained and shared within the organization [9]. Giles and Cormican [26] suggest having a proper idea management system, such as idea banks, for easy contribution and evaluation of ideas in a collaborative manner.

The relationship between learning and innovation is more prominent in organizations with comparatively more innovative climates [27]. Organizations have a large part to play in ensuring that conditions are supportive for learning. It is important to have motivated employees, as this facilitates their independent searches for knowledge related to their tasks, hence increasing their capability to innovate [28]. According to Escrig-Tena et al. [29], a proactive behavior for the workforce is a necessary prerequisite for innovation. Organizations can also facilitate their employees' learning by investing in training and knowledge development programs to expose employees to broader perspectives, expertise and deeper insights, thus building their capacity to find creative solutions in their tasks [30]. Employees' skills, attitudes, knowledge, and competencies are generated through training and development, which then leads to improved productivity, effectiveness and efficiency in organizations [31]. Siddique and Hussein [32] found that employees were content in their jobs when they learned something new during their work. This is in line with Rhoades and Eisenberger [33] and Bassett-Jones [34], all of whom support the idea of organizations' investing in employee learning.

Van der Sluis [35] highlights the team's working climate as an important factor influencing people's creativity in their jobs. He highlights the aspects that have a positive influence on innovation as being; a favorable team climate, managerial support for learning, a challenging work environment, mentoring, and good relationships. The relationships between peers, teammates, supervisor, and subordinates must be of quality [36] in order to support creativity and innovation. When there is a good relationship between team members, problems are solved more quickly, which enhances an organization's overall performance [37].

Although we know much about the topic of organizational learning and on the preconditions that facilitate learning between projects, the current body of knowledge lacks concrete examples of the correlation between learning and improving innovation in the context of digitalization. Therefore, this article takes a bottom-up approach towards understanding the preconditions that influence employees' learning in current constant changing business environment i.e., digitalization context. Considering that the focus of this study is on how organizations can achieve innovation through employees' learning, hence use of the term 'learning for innovation'. We examine the preconditions of organizations that facilitate employee learning in order to innovate, but with a particular focus of digitalization projects. Accordingly, we examine the conditions needed in order to improve the employees' ability to learn so they can be innovative in accomplishing their project tasks.

In addition, considering that evaluating whether learning has indeed occurred is of great value in adding quality to the learning process [38, 39], we examine the immediate outcomes that enables the team members to identify if they have learnt. To achieve this, we address the following research questions:

1. *How is learning for innovation perceived in the context of digitalization projects?*
2. *What are the enablers for learning for innovation in digitalization projects?*
3. *What are the hinderances for learning for innovation in digitalization projects?*
4. *What is the immediate outcome/evidence that makes you realize you have learnt for innovation?*

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We acknowledge the existence of numerous studies on internal and external knowledge transfer in and between organizations. Moreover, the scope of this study only covers the aspect of learning for innovation during the accomplishment of projects and other organizational tasks, and therefore the focus is directly on the organizations' internal conditions and strategies for knowledge acquisition and sharing. It is important to highlight that projects studied in the context of this study are projects that have been conducted in the current dynamic business environment and therefore are characterized by a high demand of skills, competencies, technological advancement, experience and digitalization, herein referred as '*digitalization projects*'.

The remaining of this part is structured as follows; section 2 presents a theoretical background on organizational learning and introduces the concept of learning for innovation; the methodology adopted in conducting the study is described in section 3; the findings of the study are presented in section 4 and discussed in section 5; and finally section 6 concludes the study, presents the limitations and recommendations for further studies.

2. Background

2.1 Learning in the organizational context

There are many perspectives on organizational learning. However, common to all perspectives is that we cannot call anything learning if the knowledge that we gain is not exploited for a useful purpose [40]. The complexity of learning in organizations is rooted in the fact that learning is a multilevel phenomenon involving individual, group, organizational, and, at times, population levels of analysis [41]. There is general consensus in the organizational learning literature that organizational learning begins at the individual level and the acquired knowledge is propagated through groups and further to the organizational level. Duhon and Elias [42] claim that an organization knows something if just one person in it has the knowledge in question, and that organizational culture and structure enable knowledge to be reused effectively. The move from the individual learning to organizational learning is not simple. Ideally, for an organization to learn, first individuals must acquire knowledge [43], [44]. There is also broad acceptance that knowledge gained at the individual level does not become organizational learning until it is shared, integrated and institutionalized [45].

2.2 Perspectives on learning

Although interest in the issue of learning in organizations dates back to the late 1950s, that interest grew up almost unnoticed until a sudden explosion in the late 1980s [46]. Despite a lack of a consensus on a definition of organizational learning, there is agreement on three broad perspectives that form the foundation of the definitions [47]:

- *Cognitive.* From this perspective, learning is described as a system of information acquisition, storage, retrieval, and transfer, regardless of whether knowledge is converted into actions [48]. From this perspective, learning is attained by gaining insights into and identifying associations between past actions, the effectiveness of those actions, and possible future actions. Thus, lessons learned are mainly shared understandings of organizational problems and possible remedies, and they constitute the knowledge base of the organization [49].

- *Behavioral.* This action-oriented perspective focuses on changing behaviors as a result of learning [50]. The lessons learned from this perspective are the changes that must be implemented to change individuals' or organizations' future behavior, thereby institutionalizing the lessons learned [48].

- *Social constructivist.* There are two schools of constructivism [51]. In cognitive constructivism, an individual's reactions to experiences lead to (or fail to lead to) learning. In social constructivism, meaning it is not simply constructed, but is co-constructed. The social constructivist perspective challenges the traditional idea that

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learning takes place within the heads of individuals through information processing. It starts from the assumption that individuals learn through constructing knowledge in practice, and that learning is situated and occurs mainly through conversations between people within their socio-cultural settings [46]. This perspective suggest that learners are social beings who construct their understanding and learn from social interaction [52]. Hence, compared with the other two perspectives, it places stronger emphasis on socially oriented approaches to the understanding of learning and knowing.

Hussein [40] argues that each of the above three perspectives is important in order to understand how learning takes place within and between projects, as well as to understand how learning impacts organizations' rules, systems and structure. For example, the *behavioral perspective* (i.e. action-oriented perspective) of the organizational learning is useful for understanding how accumulated knowledge contributes to the implementation of changes at either the project level or the organizational level, such as through changing procedures and processes [53]. The *cognitive perspective* is useful in order to understand knowledge as a utility and how receivers of knowledge interpret, process, frame, and reframe the knowledge utility in their own contexts in order to update or modify their mental models [44]. The *social constructivist perspective* is useful to understand how learning is linked to social interaction and particularly useful to understand social processes in cooperation with the cognitive perspective of learning support learning within projects or between projects [54].

The main criticism regarding the organization learning literature is that to a large extent it is too abstract and conceptual, and does not provide concrete guidelines on how to achieve learning in organizations or to measure that achievement [55], [56]. Additionally, there are many views on organizational learning that complicate understandings of organization learning as a concept. Tsang [48] even argues that the number of definitions of organizational learning is equivalent to the number of writers on the subject.

Fiol and Lyles [50] attribute the confusion about organizational learning to the original definition provided by Simon [57], who defines organizational learning as the growing insights into and successful restructurings of organizational problems by individuals as reflected in the structural elements and outcomes of the organization itself. Simon's definition suggest that learning consists of both the development of insights, and the development of structural and action outcomes. Furthermore, the two elements often do not occur simultaneously, which makes the problem of distinguishing between them difficult. As a result of this confusion, scholars have understood organizational learning from various perspectives such as new knowledge, new structures, new systems, or mere actions, or some combinations of the aforementioned.

2.3 Learning in project-based organizations

Project-based organizations often are more customer oriented than other types of organizations, and primarily operate with short-term projects that are specific to identified customer needs [58]. Additionally, project-based organizations share some distinct knowledge and learning characteristics:

1. The projects follow a stage gate model with predefined deliverables, and predefined performance goals and specifications. Thus, the teams involved in the project have then to come up with more or less customized solutions, within a strictly limited period of time. Subsequently, individuals and teams have little time for reflecting on their own collective experiences.
2. Individuals or teams may form a knowledge silo that is not accessible to members of other projects or the wider organization.

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In addition, learning in project-based organizations consist of intertwined learning activities that complicate knowledge sharing and reuse [40]:

- active experimentation, reflection, accumulation of knowledge, and probably capture of knowledge within the focal project. This type of learning activities is denoted as learning within projects [59], intra-project learning [60], project-based learning [61], or simply project learning [62];
- deliberate seeking and utilization of knowledge and experience from other individuals, other projects (even outside the organization), or from completed projects, or from the organizations' asset bases to support the learning process. This dimension of learning is denoted as learning between projects [63], inter-project learning [64], and cross-project learning [62].

Intra-project learning materializes when individuals are given the opportunity to experiment, reflect and accumulate knowledge individually or in groups while being engaged in a project. This is primarily a learning-by-doing approach and is a part of the experiential type of learning [65, 66]. Experiential learning is defined by Kolb [67] as "*the process whereby knowledge is created through transformation of experience*." Kolb's experiential learning cycle has become a widely accepted model to explain the role of experience in learning (Fig. 1). Kolb's model demonstrates that experience alone without conscious reflection is not enough [68]. Rather, reflection is needed to conceptualize experiences as insights. Only then can new insights be shared and tested in new situations that in turn lead to new experiences, and ideally the cycle repeats itself.

By contrast, inter-project learning has more to do with deliberate capture, dissemination and reuse of knowledge across projects in the organization, in order to avoid repeating earlier mistakes, to improve performance, or to avoid "reinventing the wheel". Inter-project learning is about making the knowledge gained from one project available for the next project and reusing the available knowledge in the organization effectively.
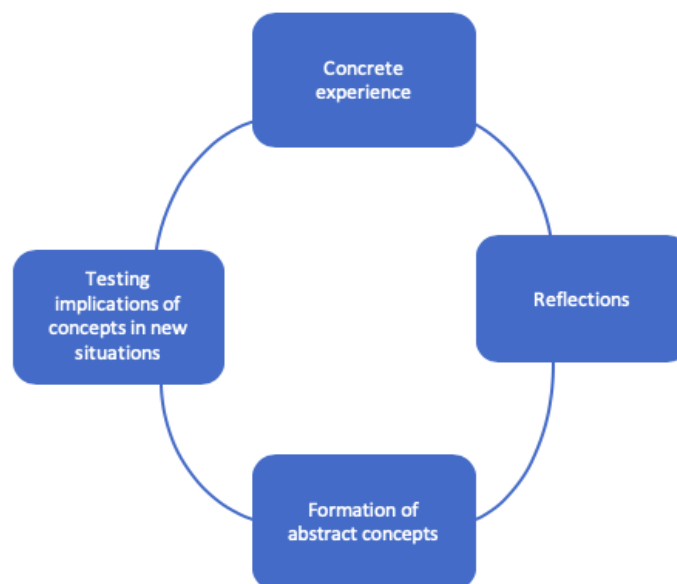

Fig. 1. Experiential learning (Kolb 1984).

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2.4 Learning for innovation

With digitalization challenges facing various organization, it is imperative that they equip themselves with various capabilities including both technology and innovation related [69]. Extant studies have identified the existence of a positive relationship between learning and innovation in organizations [3, 70, 71]. A research by Tamayo-Torres et al. [70], confirmed that organizations can innovate in dynamic environments if they have a high learning capability and they further emphasize on the need to encourage learning among employees if the aim is to be innovative. Thus, for an organization to be capable of adapting to the current dynamic business environment, there must be a favorable learning environment [70].

Learning has also been found to increase employees' capabilities and competencies in their work and hence facilitates the generation of new ideas, processes, products and services [72]. As literature indicates, learning can be considered as a pre-requisite for innovation as generating new ideas requires acquiring new knowledge both from within or outside the organization, sharing the knowledge among organizational members and utilization of such knowledge to improve the nature of the existing work processes. Top management support is a crucial factor that facilitates the creation of a good learning environment because if an organization has a shared vision for instance on learning, it will tend to be more innovative [73]. Due to the positive relationship between learning and innovation, this study investigates learning as a pre-requisite for innovation and therefore adopts the term *"learning for innovation"*.

3. Method

3.1 Research sample

The aim of the study was to gain insights into project team members' preconditions for learning for innovation from projects in different organizations. Therefore, we targeted employees in several organizations who were at various levels in the organizations and actively involved in projects. There was a wide range of projects involved in the study including; information systems (IS) projects, IT projects, construction projects, administrative projects, engineering projects, product development and research projects. Furthermore, these organizations were from various sectors including manufacturing, education, oil and gas, finance, accounting and banking, engineering and health sectors. Participants were randomly selected from each sector based on work experience (i.e., working years).

The sampling frame used was from a pre-existing database that the authors had kept containing information and contacts of various organizations and professionals that they have previously collaborated in other studies. Although the pre-existing relationship of authors with the organizations and the employees facilitated easy gaining of access of the target participants, it limited the access to more participants outside the database. Furthermore, the pre-existing relationship may have influenced some of the responses and could potentially have impacted our findings. From the existing database, 120 participants were sampled.

3.2 Research approach

The questionnaire consisted of a total of four open-ended questions. The questions aimed at gaining several insights on learning for innovation in the digitalization projects. The questions were designed to collect insights on project team members' perception of learning for innovation, which pre-conditions they consider as enablers for learning for innovation and which hinder them to learn for innovation and how they are able to know if they have actually learned for the purpose of innovating. The questionnaires were sent by e-mail to each participant by the authors. The method was chosen because it enabled coverage of a wide variety of geographically spread participants. Since the participants were all professionals, both the wording and participants' ability to understand the questions was not a major concern. Rather, the concerns were the response time, response rate and the straightforwardness of the questions. To ensure that

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the participants' responses would yield useful results, a pilot was conducted which led to some modifications to the questionnaire based on the feedback from the pilot. Subsequently, the questionnaire was sent to all 120 identified participants. To ensure a high number of responses, participants were assured of their anonymity. Follow ups were done through e-mail and phone for a period of one month (March 18, 2020 to April 18, 2020). A total of 97 completed responses were collected. The demographic profiles of the respondents are presented in Table 1. The data was then imported into NVIVO software where coding into relevant themes was done to facilitate performing a qualitative analysis of the data.

Table 1. Demographic profile of respondents

Age		Work experience		Sector		Role	
Range	N	Range	N	Type	N	Type	N
$20 \leq - \leq 29$	18	$0 \leq - \leq 5$	31	Manufacturing	13	Project manager	21
$30 \leq - \leq 39$	71	$6 \leq - \leq 10$	49	Education	14	Project team leader	13
$40 \leq - \leq 49$	7	$11 \leq - \leq 15$	12	Oil and gas	16	Project team member	21
$50 \leq - \leq 59$	1	$16 \leq - \leq 20$	5	Engineering	19	Project coordinator	12
				Health	15	Project engineer	19
				Finance, accounting and banking	20	Project consultant	7
						Not disclosed	4
Total	**97**	**Total**	**97**	**Total**	**97**	**Total**	**97**

4. Findings

The findings of the data are presented in this section.

4.1 The perception of learning for innovation in digitalization projects

The findings indicated that the majority of participants had adequate understanding on both learning and innovation and the dependence of one on the other. Although the perceptions of learning for innovation among the project team members were fairly similar, there were two viewpoints observed. Some perceived learning for innovation as acquisition of new knowledge, or adding knowledge to what one already possesses;

"means to gain knowledge or skill in something by studying, experience or being mentored"

"is the process of gaining knowledge and skills and putting them to use in our daily lives"

Others associated it with the adoption of a new way of doing things i.e., change in behavior;

"is becoming aware of other means and ways to do what we do in an inclusive, efficient, effective and context tailored manner"

4.2 Enablers of learning for innovation in digitalization projects

When asked on what factors they considered necessary to enable their learning for innovation, four factors appeared to stand out. These were; a supportive work environment, the support of top management, the nature of a job itself, and willingness to learn.

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4.2.1 A supportive work environment

Majority of the participants acknowledged that a supportive work environment is necessary to facilitate learning for innovation. For team members to learn, a welcoming environment that supports openness and sharing opinions without fear of being penalized is required. To achieve innovation, there must be an opportunity of trial and error;

"a work environment that does not penalize human error"

"a work environment that is open and allows staff to express opinions with no fear of repercussions"

4.2.2 Support of top management

There was consensus that the support of top management is crucial to enable learning for innovation in an organization. Individual effort without top management approval or support would be in vain since they are responsible for the overall strategic direction of the organization;

"through top management's approval for continuous learning coupled with efforts to create an enabling environment that enhances learning"

"my organization has a budgeted plan to ensure all employees attend different trainings relevant to their jobs"

4.2.3 Nature of the job/task

It was also observed that the nature/ type of job can have influence on people to learn for innovation. For instance, some jobs are more dynamic than others and thus require people to be highly up-to-date with the knowledge change;

"due to the nature of my job, I have to keep up with technology development and dynamics of the oil and gas industry"

However, some people are given more autonomy in their tasks to discover solutions. This facilitates them to learn more during the accomplishment of tasks;

"I learn frequently because I get the opportunity to explore and find solutions to my work-related challenges"

Some jobs are naturally more practical and therefore more engaging which facilitates learning through doing;

"I learn more through doing things in a more practical manner"

Work flexibility can also facilitate learning for innovation as it provides enough time for people to learn new things. For instance, with flexibility in work schedule, employees can attend classes or trainings online that may add value to their work;

"I have managed to learn outside work because of flexibility of my working schedule"

4.2.4 Willingness to learn

Apart from external factors, willingness to learn was observed to be another important enabler. Even if the organization provides all the other necessary enablers, if the employee is not willing then it will all be incapable of producing useful output. There was consensus among the participants on the importance of internal motivation to learn;

"the desire to do better and deliver more efficiently is what motivates me to learn"

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4.3 Hinderances of learning for innovation in digitalization projects

When asked on what factors they considered hinderances to learning for innovation, factors mentioned were: internal competition among peers, leadership style that does not support learning, heavy workload, and lack of performance appraisals.

4.3.1 Internal competition among peers

The team members stated that if their peers worked in a competitive manner rather than collaborative, it was likely that learning would be hindered. This is because people tend to hide knowledge from each other instead of sharing it openly. This is a negative attitude which does not support learning among team members and the organization at large;

"skewed competition among peers leading to hiding of particular knowledge from each other"

4.3.2 Leadership style that does support learning

A leadership/management style that does not support learning is a hinderance to learning for innovation. Some participants stated that some leaders can be a hinderance if they take the credit for the work done by their subordinates;

"overshadowing bosses are a hinderance to learning"

Moreover, some participants stated that some leaders/management chose not to support continuous learning of their employees because they fear that once they become more valuable, they may opt to search for employment elsewhere for a higher pay. Although this is a possibility, it also means that there is loss of value which could be attained with more knowledgeable employees;

"top management fears that their staff would leave for greener pastures elsewhere once they are better off"

Leadership style that focuses more on results rather than employee growth does not provide opportunity for team members to learn for innovation. Team members tend to focus on doing only what is expected of them and because they do not feel motivated to learn;

"lack of staff motivation hinders them to involve in learning"

4.3.3 Heavy workload

The participants stated that having a high workload coupled with very close supervision limited their opportunities to learn;

"being overwhelmed with work load is a big hinderance towards learning for innovation"

4.3.4 Lack of performance appraisals

The team members stated that the lack of individual performance appraisals could hinder learning because being faced with learning expectations provide the challenge to learn. Having performance objectives facilitates employees to find different ways to meet and even surpass them, hence learn and innovate during the process. As stated by participant,

"poor learning plans or arrangements hinder our learning"

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4.4 Immediate impact/evidence for learning for innovation in digitalization projects

When the participants were asked how they are able to know that they have learned, the results revolved around four factors; work efficiency improvement, change in behavior, problem solving ability and knowledge sharing ability.

4.4.1 Work efficiency improvement

The project team members stated that they can identify they have learned for innovation when they observe a noticeable improvement in their work efficiency. For instance, if they take less time in performing the same amount of work or they become more confident in making decisions related to their tasks;

"when I observe an increased efficiency in my work"

Some participants associated the evidence of learning for innovation with proper resource use in achieving their goals;

"when I can effectively utilize the resources to attain goals"

Moreover, we observed that recognitions from the organization are considered as evidence that they have learnt something new and utilized it differently such that it has been acknowledged;

"when I get recognition from the organization"

4.4.2 Change in behavior

Another factor that enabled the team members to identify that they have learned and are able to innovate is when they noticed a change in their own ways of working (i.e., change in behavior);

"when I am able to do things differently from before"

In addition, they expressed a noticeable change in how others view and treat them pertaining to work related tasks;

"the increasing number of people who need my consultation in their tasks"

4.4.3 Problem solving ability

The team members also stated that when they noticed an increase in their ability to solve problems encountered during the accomplishment of tasks then they know that they have learnt for innovation. Also when their confidence increases such that, they are comfortable to accomplish tasks without fully depending on others;

"when I am able to utilize what I have learnt in solving different problems in my daily tasks"

4.4.4 Knowledge sharing ability

The team members' also stated that when they are able to share knowledge with ease, it is another evidence that they have learnt for innovation. One participant said:

"I know I have learnt when I am able to execute a task and pass the same skills to someone else"

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5. Discussion

The aim of this study was to examine the preconditions of learning to facilitate innovation in digitalization projects from the perspective of project team members. Numerous studies have been done on the preconditions of learning, however, not much attention has been done in the current digitalization context, which is the focus of this study.

Our study shows that project team members have a significant understanding and a positive perception towards learning for innovation. This can be attributed to both learning and innovation being commonly used terms in the digitalization context. Moreover, digitalization process facilitates learning and in turn learning leads to the success of digital transformation [14]. In addition, learning and innovation are mutually related i.e., in order to innovate, one requires to learn and through innovation, one keeps learning. This is in line with existing studies [1, 3, 27, 40, 70, 71].

Most of the preconditions found in our study are in agreement with extant studies. For example, top management support has been found to be an extremely critical factor in facilitating learning in dynamic environments [59, 73, 74], which was further proved by our study. To achieve learning for innovation, organizations cannot expect to stick to the old way of doing things. In this respect, leadership plays an important role as they are responsible for ensuring that the necessary factors are implemented [35]. For example financially through investing in trainings, socially through encouraging employees to collaborate and ask for help and strategically through encouraging managers to develop mentoring and learning schemes for their subordinates as supported by Rhoades and Eisenberger [33] and Bassett-Jones [34].

Similarly, individual willingness to learn and a supportive work environment have also been mentioned in several extant literature [4, 24, 25, 35, 40]. Moreover, existing studies suggest that the best way to ensure that new knowledge is created, is for organizations to allow room to put newly acquired knowledge into practice, which is the essence of innovation itself. One way to facilitate this is through having a favorable climate/environment that supports employee practice [35] as this may lead to errors reduction, problems solving, tackling challenges, developing creativity and enhancing motivation. Because this requires putting effort, it can only be achieved if the employees are proactive as stated by Escrig-Tena et al. [29].

The findings of this study are in line with Hussein [40] who emphasizes that for an organizational environment to be supportive of learning in organizations it must have the following characteristics:

- Encourage individuals to recognize their *own limitations and encourage individuals and teams to* seek and ask for help when needed.

- Encourage individuals/team members to avoid being trapped by old habits but to be open to new ideas and concepts.

- Encourage individuals/team members to challenge the established truths, norms and rules.

- Creating a work environment characterized by psychological safety and tolerance for mishaps in order to encourage experimentation, sharing and challenging of the rules, and to find innovative solutions encountered during project development.

- Encourage collective engagement in order to understand the perspectives of the various parties involved in a project.

However, our findings showed that the nature of the task/job as one of the preconditions for learning, that has not been mentioned in the literature reviewed for this study. It is our belief that this factor appeared in this study because of the dynamism of digitalization projects and may therefore be particularly relevant in this context. The demanding

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environment compels employees to stay updated to remain valuable and competitive. Although digitalization attracts new opportunities that facilitate effectiveness and add value, it simultaneously disturbs existing operations [75], thus demands employees to continuously keep their knowledge and skills up to date.

Regarding the hindrances of learning for innovation, most factors are relevant to those in existing literature. For example, excessive workload and a leadership style that is not supportive of learning; are commonly known factors in existing literature [76-78]. However, two factors from this study were not observed in our reviewed literature; (i) internal competition among team members and (ii) lack of performance appraisals. In digitalization projects, collaboration is crucial, therefore internal competition should be highly discouraged. Similarly, appraisals are important to evaluate and determine how and where employees are adding value to the overall organizational performance.

Additionally, extant literature has shown the association between employee learning and overall organizational performance [12, 13, 37, 40]. However, our findings also revealed the immediate outcomes/evidence of learning. As mentioned earlier, practice is a significant part of the learning process if innovation is the goal. Evaluations are important because they improve the decision making process [38]. These learning outcomes can only be evaluated after new knowledge has been acquired and acted upon, and new concepts formulated and tested through practice i.e., trial and errors [67]. The improvements observed as a result of such practice are in themselves the essence of learning for innovation. This information can be useful for organizations to assess individual learning of their employees. We therefore suggest that managers/ team leaders to conduct periodic evaluations of their team members' problem-solving abilities, knowledge sharing abilities and work efficiency improvements as this may play a vital role in motivating team members to continue learning.

6. Conclusion

In this article, the preconditions for learning to support innovation in digitalization projects were investigated from the perspective of the project team members. We addressed this through four research questions and our findings revealed the following conclusions:

- The perceptions of the team members were based on two viewpoints; some members perceived learning for innovation as acquisition of knowledge, while others perceived learning for innovation as a change in behavior.

- Willingness to learn, support of top management, a supportive work environment and the nature of the job/task were identified as enablers of learning in digitalization projects. While the three former enablers can be found in several literature reviewed for this study, none mentioned the latter. Our contribution is that, since digitalization projects are characterized by constant change, the nature of the job/task compels people to learn, thus innovate.

- Internal competition from peers, lack of appraisals, leadership that does not support learning, focusing on results rather than growth and heavy workload were identified as hinderances towards learning for innovation. Whereas the latter three are quite common in existing literature, the former two are new contributions in the digitalization context.

- However, it is not sufficient to provide the preconditions for learning for innovation without a means to evaluate if the employees are actually learning. Immediate outcomes of learning were identified as; improvement in knowledge sharing ability, improvement in problem solving ability, improvement in work efficiency and behavior change.

In addition, this study has limited focus on the team members' perception on learning for innovation, further studies can be explored from the management perspective so as to compare the results and identify if there are any major differences in their perspectives.

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