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Human Resource Competence with Capacity Development: The Perspective of E-Assessment and E-Learning

Cut Aviyanti[1*], Zahara Tussoleha Rony[2], Hapzi Ali[3]
[1]ATI Tunas Bangsa, Jakarta, Indonesia, cutaviyanti@mhs.ubharajaya.ac.id
[2]Universitas Bhayangkara Jakarta Raya, Jakarta, Indonesia, zahara.tussoleha@dsn.ubharajaya.ac.id
[3]Universitas Bhayangkara Jakarta Raya, Jakarta, Indonesia, hapzi@dsn.ubharajaya.ac.id

[*]Corresponding Author: cutaviyanti@mhs.ubhara.ac.id

Abstract: This research aims to provide an overview of the systematic findings of dozens of pieces of literature compiled to strengthen the variables in this research. The research method applied in this scientific article is a structured literature review. Relevant scientific articles were selected, identified, and evaluated during the literature review process. Determination of study scope was carried out using the PICO (population/problem, intervention, comparison) framework, which provides a score to determine study boundaries. Providing research results that are far from perfect as an illustration of the research results and also a reference for continuing this research with various types of the same variables with different objects.

Keywords: Information Technology, HR Competence, Institutional, Capacity Development, E-Learning, E-Assessment

INTRODUCTION

Capacity building of an organization or institution, the relationship between various variables such as Information Technology (IT), Human Resources Competency (HR), Institutional, E-Assessment, E-Learning, and Project Management plays a crucial role in an organization. IT has become an integral part of the transformation of modern organizations. The use of this technology not only affects operational efficiency but can also expand the institution's ability to access and analyze information, improve the quality of decisions, and accelerate innovation (Mugoni, Nyagadza and Hove, 2022). HR competencies refer to the qualities and skills of individuals in an organization. In the context of capacity building, competent HR not only has the necessary technical knowledge but also managerial skills, leadership, and adaptability to new technologies (Mangezi, Thalia and Abas, 2020).

Institutional or organizational structure provides an important framework in regulating how resources, including HR and technology, are managed and implemented to achieve organizational goals (Mahrool and Athambawa, 2019). Strong and flexible institutions are able to facilitate IT integration and HR development effectively. E-Assessment (electronic assessment) and E-Learning (electronic learning) are innovations that Leveraging Technology to Improve Efficiency dan the effectiveness of the learning process and the development of

human resources in the organization. Both can improve accessibility, flexibility, and quality of education and skill development (MBA, 2019). Project management is a structured approach to planning, executing, and controlling a project with the goal of achieving the desired outcome within set boundaries. In this context, project management plays the role of an intervening variable (intervention) that helps manage the complex interaction between IT, HR competencies, and institutions in order to achieve capacity building goals (Karanja and Malone, 2021; Oyekunle, Darkwah and Olusesi, 2024).

The use of IT in an organization not only improves operational efficiency but also influences strategy and innovation. SLRs have identified that good technology integration can increase an organization's capacity to manage information more effectively, support better decision-making, and accelerate response to environmental changes. High HR competence is a key factor in organizational capacity development. The study emphasizes the importance of not only technical skills but also adaptability, leadership, and collaboration in improving organizational performance (Bielefeldt, 2018). A good institutional structure is a prerequisite for the effective use of IT and the development of human resource competencies. Organizations with flexible, learning-oriented institutions tend to be more successful in adopting technological innovations and increasing capacity (Lashch, 2019).

In the context of learning and human resource development, E-Assessment and E-Learning have shown significant positive impacts. SLR highlights that this approach not only improves the accessibility and flexibility of education but also allows for a more objective and in-depth evaluation of individual progress in skill development. Effective project management is key to managing complexity in IT implementation, HR competency development, and the integration of E-Assessment and E-Learning. A structural and systematic approach to project management can help organizations overcome challenges and better achieve capacity building goals (Paknahad *et al.*, 2022). The relationship between IT, HR competencies, institutions, E-Assessment, E-Learning, and project management forms a complex network that is interrelated. IT serves as the foundation of technology that supports the implementation of E-Assessment and E-Learning, while strong HR competencies and supportive institutions facilitate the application of technology and effective project management (Tian, 2020).

The relationship between IT, HR competencies, institutions, E-Assessment, E-Learning, and project management forms a complex network that is interrelated. IT serves as the foundation of technology that supports the implementation of E-Assessment and E-Learning, while strong HR competencies and supporting institutions facilitate the application of technology and effective project management (Zimmerman and Kulikowich, 2016). The systematic literature review approach provides a solid foundation for understanding the complexity of the relationship between IT, HR competencies, institutions, E-Assessment, E-Learning, and project management in the context of organizational capacity building. The integration of findings from various studies allows the development of more effective strategies in increasing the capacity of organizations to face the ever-evolving challenges of this digital age. The purpose of this study is to provide an overview of the findings of dozens of literature systematically compiled to strengthen the variables in this study.

Information Technology on Capacity Development

Refers to the use of computers, hardware, software, communication networks, and infrastructure to store, retrieve, transmit, and manipulate data digitally. IT plays an important role in supporting business operations, communication, and information management in various sectors, including industry, government, education, and others (Turban, Pollard and Wood, 2018) Another definition also states Focus on how IT not only facilitates efficient business operations but also changes business models and creates added value for

organizations. This includes technology integration for product innovation, digital marketing, data analysis, and business intelligence (Laudon and Laudon, 2004)

The results of the research suggest that expanding these capabilities requires more comprehensive measures than the current fragmented approach to building research capacity to holistically strengthen the different social, political, and economic structures that make up a country's innovation system (Mormina, 2019). Their ability in information technology, especially in research skills in this field, requires significant improvement. As a result, several constructive recommendations were submitted to the relevant departments (Wang, 2015).

Human Resources Competence on Capacity Development

Human Resources Competence refers to the combination of knowledge, skills, attitudes, and behaviors possessed by individuals or groups in the context of a particular job or organization. These competencies include the ability to complete assigned tasks effectively and efficiently, as well as the ability to adapt to change, collaborate with teams, and take initiative (Armstrong and Taylor, 2020) Another definition states that Human Resources Competence can also be understood as a combination of knowledge, skills, and attitudes that individuals or groups have in the context of a particular job or organization, which allow them to succeed in the roles and responsibilities they carry (Miller and Gordon, 2014)

The results of previous studies stated that technical performance-based assessments should be complemented by capacity-based assessments to fairly show the contribution of knowledge capacity building interventions (Mvulirwenande, Alaerts and De Montalvo, 2013) Another thing was also stated that the combination of the two approaches, namely competency-based and game-based, can be significantly improved. This will increase the effectiveness of the training process. For example, a competency-based approach can be enriched by using game-based simulations to introduce trainees to various technologies in water management. This approach can result in resource and cost savings and enrich the training experience. Further, it is important to modify the game-based approach by applying a competency-based approach to focus on specific competencies and utilize competency standards in assessments (Sewilam *et al.*, 2017).

Institutional on Capacity Development

Institutions or entities that play a role in providing formal education, be it primary, secondary, or higher levels. These educational institutions include schools, colleges, universities, and various other educational institutions that have an organizational structure and organized system to provide learning, teaching, and development of students or students (Isin and Nyers, 2014) Another meaning with another context states stable and well-established structures, norms, and practices in society that affect the behavior of individuals and groups. Institutions can include formal institutions such as governments, schools, and companies, as well as unwritten norms such as customs, cultural values, and social systems (Biesta, 2015)

Previous research has suggested that new coalitions and alliances are emerging, which challenge previous conventions on planning processes and outcomes. These changes are analyzed through the Institutional Capacity Building Framework, which considers institutional change as a measure of actors' ability to mobilize existing and emerging institutional resources (Barry, 2012) Other research results also state field experience, which shows the superiority of Japanese aid compared to European aid, especially in improving the effectiveness of the program's approach. The integration between micro circles (field experience) and macro (top-down) is an important factor for the effectiveness of assistance (Matsuoka and Studies, 2008)

Information Technology on Project Management

Project execution, with due regard to the use of energy-efficient technologies and information technology (Shvets, Vorontsova and Sheina, 2020) IT project managers must define the processes needed to transition a particular system to the cloud by leveraging industry best practices to accelerate the transition to the cloud. Information technology managers can leverage these findings to understand policies, necessary support, training, communication, and transition strategies to the cloud to improve cloud transition initiatives in federal government organizations (Griffith and Kaspszak, 2020)The use of information technology and computer engineering concepts in Document Management (DM) reduces labor requirements and improves efficiency. Web-based DM systems are also implemented in many organizations, which improves communication systems between participants involved in the project (Poriya, Shah and Pitroda, 2020)

The combination of students' individual analytical work, mastery of teamwork skills, study of MS Project tools, and IT project management methods at various stages allows the achievement of expected learning outcomes and the development of cross-disciplinary competencies (Kopishynska *et al.*, 2021).

Human Resources Competence on Project Management

The description of the research results that support this variable includes stating that the data shows that communication, commitment, and leadership are the three most significant aspects. Through multivariate analysis, seven groups of competencies were identified: leadership, self-management, interpersonal, communication, technical, productivity, and managerial (Alvarenga *et al.*, 2020). The lack of awareness and the results of the association point to the importance of conducting further research on educational approaches, as well as reconsidering and targeting education and training policies to improve Gen Z soft skills (Magano *et al.*, 2020).

Institutional on Project Management

The existing ITCPM has developed through three stages, and the intellectual core of ITCPM research can be grouped into five clusters. In addition, the paper proposes that future research can be expanded from two existing streams: the institutional response of the project actors and the institutional outcome of the construction project. suggests some key questions that project management scholars working in both streams should address in order to develop an understanding of construction projects from an institutional perspective (Qiu and Chen, 2022) Institutional-based and subjective factors influencing the successful implementation of project management in the legal subjects of the Russian Federation, Also describes a set of resources for the development of project approaches in regional authorities and autonomous regional governments in the Russian Federation: political and administrative, socio-economic, communication networks, and personnel (Miroshnichenko, Tereshina and Shpiro, 2022)

Exploring the role of institutional development, differences, and change in project management disciplines, by emphasizing the need for institutions that are able to adapt and respond (Bresnen, 2016)

Project Management on Capacity Development

Monitoring and evaluating Disaster Risk Reduction (DRM) capacity building efforts is a major challenge. Current approaches often lack a clear understanding of terminology, are results- and impact-oriented, and rarely involve independent evaluation. Greater involvement of participants is required in the monitoring and evaluation process (Scott *et al.*, 2016). Other things express the results where effective project management practices can help overcome these challenges, such as lack of technical capacity, information regarding project status,

stakeholder engagement, cost estimation, allocation sumber daya, infrastruktur, komunikasi, as well as vendors and suppliers. This step is important to ensure the continued support of donors as well as the successful implementation of sustainable interventions (Batti, 2015)

International development projects in Africa often face major challenges, such as one-size-fits-all technical pitfalls, accountability pitfalls to results, lack of project management capacity, and cultural differences. To address these challenges, a refocus on project management is needed to achieve long-term development goals, improve oversight, and adapt project management approaches to local culture (Ika, 2012)

METHOD

Before discussing the results and discussion, it is better to provide a summary of the variables in this article as follows: information technology The use of computers, hardware, software, communication networks, and infrastructure to store, retrieve, transmit, and manipulate data digitally. IT plays an important role in supporting business operations, communication, and information management in various sectors, including industry, government, education, and others (Turban, Pollard and Wood, 2018). Human Resources Competence refers to the combination of knowledge, skills, attitudes, and behaviors possessed by individuals or groups in the context of a particular job or organization. These competencies include the ability to complete assigned tasks effectively and efficiently, as well as the ability to adapt to change, collaborate with teams, and take initiative (Armstrong and Taylor, 2020)

The research method applied in this scientific article is a structured literature review. Relevant scientific articles are selected, identified, and evaluated during the literature review process. The determination of the study scope was carried out using the PICO framework (population/problem, intervention, comparison), which provides a score to establish the study limitations. A collection of relevant scientific articles is selected, excavated, and reviewed during a literature review. Using the PICO framework (population/problem, intervention, comparison), the scope of the study is determined by the score). Table 1 lists the limitations of the scope of the research, with a literature review from several existing journals. Below is table 2. Using metrics from scientific articles that will be explained and presented along with the findings in the article, as follows;

Table.1 Summary of PICO

Component	Information
Population/problem	Human/Employee
Intervetion Comparison	n.a
Human/Employee	Reinforcement comes from literature which is the result of research for other researchers

The research stages include making research questions, searching the literature, and selecting data extraction studies, feasibility requirements, and quality evaluations carried out, In the research paper, ask research questions, This includes literature search using the database of all existing international journals, the importance of capacity development and project management in the organization where it is supported by information technology, human resources competence, institutions, and periods. search during June 2024, using PRISMA (Selected Reporting Items for Systematic Review and) which is used to select the Meta-analysis of literature sources), based on eligibility requirements, the articles were selected Qualification criteria include inclusion and exclusion standards, 1) Scientific articles written in Indonesian are participation requirements, 2) Literature in the form of scientific articles published in

journals or, in English or Indonesian, Research articles are excluded, Published articles are not limited to the year of search.

Improvement, discussion of research articles on the importance of capacity development and project management in organizations which are supported by information technology, human resources competence, institutions, the article is written in the style of literature review; The full text is not available, the article is simple in science, in this investigation, the criteria are not applied to complete the procedure for selecting sources. Figure 1 shows the body of literature, by comparing the literature that supports the assessment, the process of material synthesis is carried out. The last step is data, i.e. the quality of the synthesized data that refers to the research findings, data mining Fabrication matrix tables represent the results of data extraction.

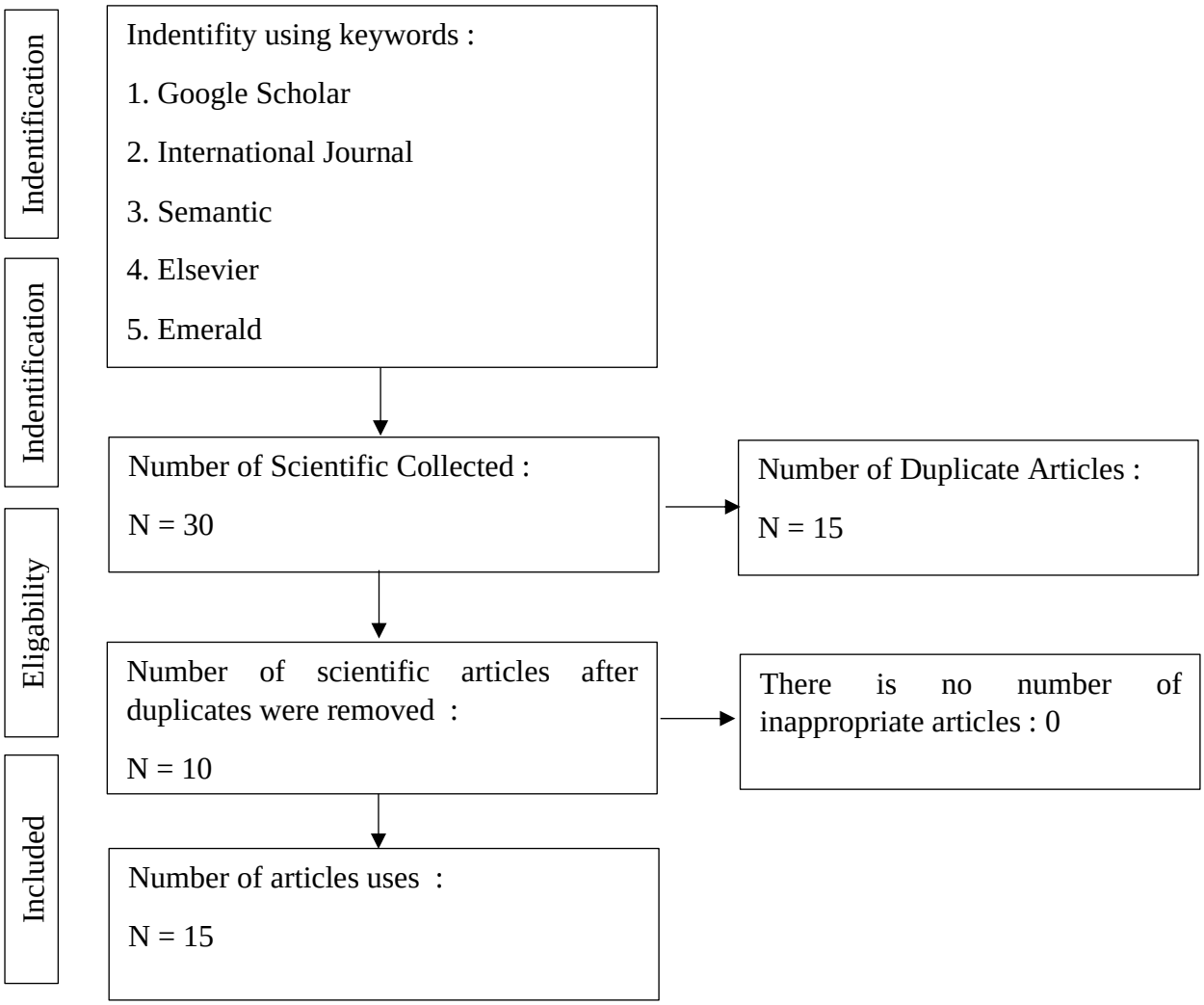

Figure.1 Scientific Article Selection Process

Table. 2 Distribution of Journals , Publishers , and Findings

Number	Article Name	Authors	Journal	Publisher	Findings
1	Capacity management process and availability for an information technology service systems development model	(Gómez Barroso and Valcarcel Martínez, 2019)	RIDTEC | Vol. 15, no. 2, julio - diciembre 2019.	http://revistas.utp.ac.pa	A strategic area within the model is Service Capacity and Availability Management, a discipline that focuses on ensuring that service providers have the capacity to meet agreed

					demands, current as well as future, of client needs and ensuring that agreed continuity and availability commitments can be met in all circumstances
2	Development of Village Applicant Capacity Training Model Based on Village Information System in Village CommunityEmpowerment Department in Langkat District	(Robinson Hutagaol, Abdul Hasan Saragih and Sahat Siagian, 2020)	Britain International of Humanities and Social Sciences (BIoHS) Journal	Biarjurnal.com	The assessment from material experts reached a very good level, namely 82.94%, the assessment from learning design experts reached a very good level, namely 81.58%, the assessment from experts on the learning model met the very good criteria with a percentage of 94.42%, the assessment from media experts reached the very good criteria, namely 85%, the assessment of individual trials reached the very good criteria, namely 81.03%, the assessment of small group trials also achieved very good criteria, which is 90.09%, and the assessment of the limited field trial meets the very good criteria, which is 92.08%.
3	Analysis of capacity of information technology of college teachers	(Wang, 2015)	International Conference on Mechatronics, Electronic, Industrial and Control Engineering (MEIC 2015)	Atlantis Press	Their ability in information technology, especially in research skills in this field, requires significant improvement. As a result, several constructive recommendations were submitted to the relevant departments
4	Competence-based and game-based capacity development for sustainable water management in Germany	(Sewilam *et al.*, 2017)	Environ Earth Sci (2017) 76:131	Springer	The first part introduces and categorizes tantangan air di Jerman. Pada The second and third parts, both approaches are described in detail. A competency-based approach is applied to WASS, while a game-based approach is used for flood risk management. Finally, conclusions and recommendations are presented.
5	From knowledge and capacity development to performance improvement in water supply: the importance of competence integration and use	(Sewilam *et al.*, 2017)	Water Policy 15 (2013) 267–281	IWA Publishing 2013	The concept of knowledge management that is common in the private sector is equally applicable in the public sector, but the latter may be hampered by short-term goals and a lack of insight into the management process. It was concluded that technical performance-based assessments should be complemented by capacity-based assessments to demonstrate the equitable

					contribution of KCD interventions.
6	Capacity Development and Institutional Change in International Development Cooperation	(Matsuoka and Studies, 2008)	Journal of Asia-Pacific Studies No. 12 (March 2008)		The importance of field experience, which means the advantage of Japanese aid over European aid, is especially important in making the program approach more effective. Micro-cycles (field experience) and macro (top-down) are important factors for aid effectiveness.
7	USE OF INFORMATION TECHNOLOGY (IT) FOR DOCUMENTATION IN PROJECT MANAGEMENT: A REVIEW	(Poriya, Shah and Pitroda, 2020)	Our Heritage, ISSN: 0474-9030 Vol-68-Issue-30-February-2020		The use of Electronic Document Management (EDM) systems has proven to be an effective tool for handling and managing documents. This article concludes that the use of information technology concepts and computer techniques in Document Management (DM) reduces labor requirements and increases efficiency Web-based DM systems are also used in many organizations which improves communication systems between participants involved in the project.
8	Case Method in the Study of Information Technologies and IT Project Management	(Kopishynska *et al.*, 2021)	Journal of Systemics, Cybernetics and Informatics (2021) 19(8), 198-211		The role of the dedicated software for the visualization of the various stages of project execution management within the MS Project environment at all stages of the life cycle is described. The combination of students' individual analytical work, mastery of teamwork skills, study of MS Project tools, and IT project management methods at various stages allows the achievement of planned learning outcomes and the development of interdisciplinary competencies
9	Strategies Federal Government IT Project Managers Use to Migrate IT Systems to the	(Griffith and Kaspszak, 2020)		ProQuest LLC (2020).	Cloud Transition Strategy to improve the cloud transition initiatives of federal government organizations. Implications for positive social change include the potential for reducing carbon footprints in homes and workplaces by consolidating data and allowing data to be stored, managed, and processed remotely in data centers rather than locally.

10	DSTU business center construction project management using energy-saving and information BIM technologies	(Shvets, Vorontsova and Sheina, 2020)	Materials Science and Engineering 913 (2020) 052009	IOP Publishing	Measures and technologies to improve the energy efficiency of buildings at all stages of the life cycle are considered. The social and economic effects that can be obtained when creating a BIM model of a central business building at the operation stage and further use during the operation phase disajikan. This article contains an analysis of the financial costs associated with the operation phase of a building. Expected results from the implementation of the project, taking into account the use of energy-efficient technology and information technology.
11.	The project manager core competencies to project success	(Alvarenga *et al.*, 2020)	International Journal of Managing Projects in Business Vol. 13 No. 2, 2020 pp. 277-292	Emerald Publishing	Communication, commitment, and leadership are the three most important aspects. The multivariate analysis found seven groups of competencies: leadership, self-management, interpersonal skills, communication, technical, productivity, and managerial.
12.	Generation Z: Fitting Project Management Soft Skills Competencies—A Mixed-Method Approach	(Magano *et al.*, 2020)	Educ. Sci. 2020, 10, 187; doi:10.3390/educsci10070187	MDPI	Communication, commitment, and leadership are the three most important aspects. The multivariate analysis found seven groups of competencies: leadership, self-management, interpersonal skills, communication, technical, productivity, and managerial.
13	A systematic review of the knowledge domain of institutional theory in construction project management	(Qiu and Chen, 2022)	Engineering, Construction and Architectural Management		Communication, commitment, and leadership are the three most important aspects. The multivariate analysis found seven groups of competencies: leadership, self-management, interpersonal skills, communication, technical, productivity, and managerial.
14	Project Management in State Authorities of Subjects of The Russian Federation: Development Factors and Resources	(Miroshnichenko, Tereshina and Shpiro, 2022)	Scientific Conference on Economics and Entrepreneurship Proceedings	Semanticscholar	Institutional-based and subjective factors that affect the successful implementation of project management in the subject of law of the Russian Federation, Also describes a set of resources for the development of project approaches in regional authorities and autonomous regional governments of the Russian Federation: political

					and administrative, socio-economic, communication networks, and personnel
15	Monitoring and evaluating disaster risk management capacity	(Scott et al., 2016).	Disaster Prevention and Management, 25, pp. 412–422	Semanticscholar	Current approaches often lack a clear understanding of terminology, are results- and impact-oriented, and rarely involve independent evaluation. Greater involvement of participants is required in the monitoring and evaluation process

RESULTS AND DISCUSSION

From the description of the systemic literature above with 15 articles, the discussion is already in the findings of each study. Representing the variables present in the study, the results state that capacity development with information technology Capacity Management and Service Availability, a discipline that focuses on ensuring that service providers have the capacity to meet agreed demands (Gómez Barroso and Valcarcel Martínez, 2019), as well as project implementation, taking into account the use of energy-efficient technologies and information technology (Alvarenga et al., 2020).

Generation Z characteristics match the project management competencies sought by organizations (Magano et al., 2020). The discussion of the results of the literature research above by adding a contribution that is summarized into a perception. The first is based on the order above, then, the researcher's perspective states that Capacity and Service Availability management is a key element that must be strategically integrated in the operations of service providers to achieve better efficiency, continuity, and client satisfaction. The second is the success of the program in fulfilling various important aspects in learning. This gives confidence that the program not only has great potential to be implemented widely but can also have a significant positive impact on learners. The researcher also acknowledged the importance of feedback from the various stages of this trial to continue to improve the program in the future.

Third, although there are challenges in participants' information technology abilities, appropriate steps can be taken to overcome these shortcomings. With the implementation of the recommendations submitted, it is hoped that participants will be more prepared and competent in research in the field of information technology, which will make a positive contribution to the development of science and industry. Fourth, organizations need to focus on developing these seven competency groups to achieve optimal performance. By emphasizing communication, commitment, and leadership, as well as developing other competencies such as self-management, interpersonal, technical, productivity, and managerial skills, organizations can build stronger and more efficient teams. Fifth, there is an urgent need to review and target education and policy Training to strengthen soft skills Training to strengthen soft skills.

CONCLUSION

Representativeness from the researcher's perspective that the results of this study are from the results of the literature selected in this systematic literature, the management of Service Capacity and Availability is a key element that must be strategically integrated in the operation of service providers to achieve better efficiency, continuity, and client satisfaction, the success of the program in fulfilling various important aspects in learning. This gives confidence that the program not only has great potential to be widely implemented but can also have a significant positive impact on learners, there are challenges in the participants' information technology abilities, the right steps can be taken to overcome these short comings.

With the implementation of the recommendations submitted, it is hoped that participants will be more prepared and competent in research in the field of information technology, which will make a positive contribution to the development of science and industry. Organizations need to focus on developing these seven competency groups to achieve optimal performance. By emphasizing communication, commitment, and leadership, as well as developing other competencies such as self-management, interpersonal, technical, productivity, and managerial skills, organizations can build stronger and more efficient teams. Fifth, there is an urgent need to review and target education and training policies to strengthen Generation Z soft skills.

Developing an understanding of construction projects from an institutional perspective is crucial to identifying and addressing challenges faced in project management. So the researcher provides this far from perfect research result as an illustration as a research result and also a reference to continue this research with various kinds of the same variables with different objects.

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