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Challenges In Implementing EKSA in Malaysian Vocational College: A Virtual NGT Analysis

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Abstract

The Public Sector Conducive Ecosystem (EKSA) is an initiative aimed at enhancing the quality, productivity, and workplace environment within public sector institutions in Malaysia. Despite its strategic importance, EKSA implementation in Malaysian Vocational Colleges faces significant challenges. This study employs the virtual Nominal Group Technique (vNGT) to identify and analyze these challenges. Seven participants with extensive experience in EKSA implementation were selected, ensuring a balanced representation of roles within vocational colleges. The findings reveal six key challenges: time constraints, financial and resource limitations, high implementation commitment, insufficient training, an unsuitable assessment rubric, and lack of promotion. These challenges underscore the need for effective scheduling, financial support, tailored assessment frameworks, comprehensive training programs, and enhanced communication strategies to facilitate successful EKSA implementation. This study provides valuable insights into the obstacles faced by vocational colleges and offers a foundation for developing targeted strategies to overcome these challenges, ultimately supporting the mission of effective education and training in Malaysia.

Keywords: *EKSA, Nominal Group Technique, Virtual NGT, TVET, Vocational College*

INTRODUCTION

The Public Sector Conducive Ecosystem (EKSA) was introduced in January 2014 by the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) as part of the government's efforts to enhance organisational efficiency and public service quality. MAMPU was rebranded as Jabatan Digital Negara (JDN) on 12 December 2023 to lead national digital initiatives and promote the adoption of emerging technologies, with the aim of delivering efficient, secure, and responsive public services (Jabatan Digital Negara, 2024). EKSA serves as a rebranding of the Japanese-origin 5S practice (Sort, Set in Order, Shine, Standardize, and Sustain), with an expanded scope aligned with Malaysia's public sector transformation goals. It introduces five additional elements: Corporate Image, Creativity and Innovation, Green Practices, Conducive Environment, and Agency Diversity (Jabatan Perkhidmatan Awam Malaysia, 2021; MAMPU, 2015).

The implementation of EKSA also extends to the Ministry of Education. In Malaysian vocational colleges, EKSA has been adopted to improve teaching and learning environments through better workspace organisation, efficient resource management, and the promotion of eco-friendly practices (KV Kota Tinggi, 2017). Its adoption has been linked to increased productivity, reduced

operational costs, and an enhanced institutional image (KV Slim River, 2024; Zulkeflee et al., 2023). Empirical studies such as Freskayani et al. (2023) and Abd Rahim and Adam (2022) have reported tangible outcomes, including energy savings and measurable environmental improvements within technical education institutions.

While Malaysia has institutionalised EKSA as a formal framework for workplace organisation and public sector excellence, other countries have adopted similar approaches to varying extents. For instance, Japan extensively integrates 5S and Kaizen principles in public agencies to cultivate a culture of continuous improvement. Kaizen is a Japanese term that means "continuous improvement". It emphasizes the implementation of small, incremental changes in processes, products, or services with the aim of enhancing efficiency, quality, and overall organisational performance (Helmold, 2022; Saxena, 2022). These methodologies focus on organizing the workplace, reducing waste, and improving efficiency and productivity through small, incremental changes (Hammami et al., 2022; Ortiz, 2010; Prucha, 2014; Titu et al., 2010). In line with Japan's application of 5S and Kaizen in public sector management, other structured initiatives such as Health and Productivity Management (HPM) also prioritise continuous improvement through formal training, regular audits, and systematic monitoring (Mori et al., 2021). These implementation features reflect the fundamental principles of Total Quality Management (TQM) and Kaizen, which advocate for data-driven, incremental improvements and strong organisational discipline. In contrast, Indonesia localises 5S into 5R (Ringkas, Rapi, Resik, Rawat, Rajin) within its government institutions without a formal certification mechanism (Viranda et al., 2020). The implementation is more informal and relies on internal initiatives and local adaptations rather than standardized audits and certifications.

EKSA practices are subject to internal audits based on the EKSA Assessment Rubric provided by MAMPU, prior to submission for external evaluation and certification (KV Kota Tinggi, 2017; KV Slim River, 2024). The certification is valid for two years and must be renewed thereafter, underscoring the importance of continuous compliance with EKSA standards, especially within vocational institutions. This structured process, comprising internal and external audits and the integration of values such as green practices and corporate image demonstrates the unique positioning of EKSA within the Malaysian public sector.

Although several studies have highlighted the benefits of EKSA, there is limited understanding of the specific implementation challenges faced by vocational colleges, particularly from the perspective of those directly responsible for managing and applying EKSA principles. Kamariah Kamaruddin et al. (2022) found that the level of EKSA practices in public agencies, including educational institutions, remains at a low to moderate level. This is supported by Jalal et al. (2023), who noted the limited availability of research on EKSA implementation. These findings indicate a lack of empirical evidence on the specific challenges encountered by vocational colleges in sustaining EKSA certification. Addressing this gap requires methodological approaches that capture expert insights and enable collaborative prioritisation of key issues. Therefore, this study employs the Virtual Nominal Group Technique (vNGT) as its primary method.

Unlike focus group discussions (FGDs) or individual interviews, which may be influenced by dominant voices or lack structured prioritization, the Nominal Group Technique (NGT) offers a highly structured format that ensures balanced participation and systematic idea ranking (Maguire et al., 2025; Mohd Raffi et al., 2025). Furthermore, NGT is a structured, consensus-building tool suitable for exploratory research involving expert participants (Oliveros et al., 2025). It has also been effectively applied in organisational studies to identify priorities, generate ideas, and clarify complex, practice-based issues (Van de Ven & Delbecq, 1972).

The modified virtual version of NGT (vNGT) enables inclusive and systematic engagement with geographically dispersed stakeholders (Humphrey-Murto Id et al., 2023; Khurshid et al., 2023; Smith et al., 2024). This is particularly important in the context of EKSA, where identifying and prioritising implementation challenges requires consensus among experts with practical, institution-level experience. The ability of vNGT to generate both qualitative insights and quantifiable priorities aligns well with the practical goals of this study and supports a more actionable understanding of EKSA implementation challenges.

Thus, this study applies vNGT to identify and analyse the challenges vocational colleges face in implementing EKSA and achieving certification. The findings aim to provide practical insights for institutional leaders, policymakers, and MAMPU (now known as Jabatan Digital Negara), with the goal

of enhancing EKSA implementation, supporting continuous improvement, and strengthening organisational management practices in vocational education institutions.

METHODS

This study employs the virtual Nominal Group Technique (vNGT) to identify and analyze the challenges of implementing EKSA in achieving EKSA certification in Malaysian vocational colleges. The popularity of Nominal Group technique (NGT) was first popularized by Delbecq Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1972) in their articles titled *"The Nominal Group Technique as a Research Instrument for the Exploratory Health Studies"*(Olsen, 2019). NGT is an approach that entails face-to-face discussion in small groups, and provides a prompt result for researchers (McMillan et al., 2016). It is a structured method for group brainstorming that encourages contributions from all participants, followed by prioritization through a suitable voting scheme (Bailey, 2013; Islam, 2018). According to Williams et al. (2006), the use of NGT is effective in obtaining more specific individual views or perceptions related to the topic and avoiding time-consuming activities.

Participants for this study were selected using purposive sampling to ensure that the group consisted of individuals with extensive knowledge and experience in EKSA implementation within Malaysian vocational colleges. Muqsith Ahmad et al. (2017) in their study suggested the criteria of the NGT participant are: i) having extensive knowledge related to the issue being discussed; ii) willing to participate in the workshop together; iii) possessing good communication skills, not individuals who tend to criticize and value others' ideas during the discussion; and iv) having more than 5 years of experience in the field related with the study.

The participants included faculty members and management personnel who are directly involved in the planning, execution, or monitoring of EKSA practices from various Vocational College. According to Harvey and Holmes (2012), the suggested group sized for NGT is five to sixteen people. In addition, Khurshid et al. (2023) recommend a minimum of three and a maximum seven participants should be assembled in a virtual setting that is easily accessible for all participants, regardless of their geographical location, and at a time that is suitable for everyone. Therefore, a total of seven participants were invited to participate in the NGT sessions, with the aim of obtaining a balanced representation of different roles and responsibilities within the vocational colleges (refer to Table 1). This is supported by Zhong Yuan and Mohd Affandi (2018), stated that the NGT group is considered sufficient if the selected members are qualified to answer the research questions.

Table 1 Participants involved in the virtual NGT session

Participant	Experience*	Programme	Vocational College States
Participant 1	17 years	Welding Technology	Perak
Participant 2	13 years	Tourism Management	Terengganu
Participant 3	13 years	Landscape Architecture	Perak
Participant 4	16 years	Automotive Technology	Johor
Participant 5	16 years	Culinary Art	Johor
Participant 6	14 years	Electronics Technology	Selangor
Participant 7	16 years	Electrical Technology	Perak

*Experience in this context refers to the participants' years of experience as lecturers at Vocational Colleges.

The data collection process involved organizing NGT sessions in several stages. According to Muqsith Ahmad et al. (2017); Potter et al., (2004), the data collection process involved organizing NGT sessions in several stages or protocol: 1) Introduction and explanation; 2) Silent generation of ideas; 3) Sharing ideas; 4) Group discussion/clarifying; and 5) Voting and ranking. The protocols for each of these stages explained in Figure 1.

In the voting stages, participants' concessions will determine which ideas are accepted or rejected. At the same time, the ideas will also be ranked based on the voting scores. The voting scale used in this study is a 7-point likert scale: 1 = Strongly Disagree, 2 = Moderately Disagree, 3 = Disagree,

4 = Somewhat Disagree, 5 = Agree, 6 = Moderately Agree, and 7 = Strongly Agree, as applied in Muqsith Ahmad et al., (2017) and Saunders et al., (2023). According to Joshi et al., (2015), a 7-point scale may yield more reliable survey responses than a 5-point scale because it offers a greater variety of options, increasing the likelihood of accurately capturing participants' true opinions.

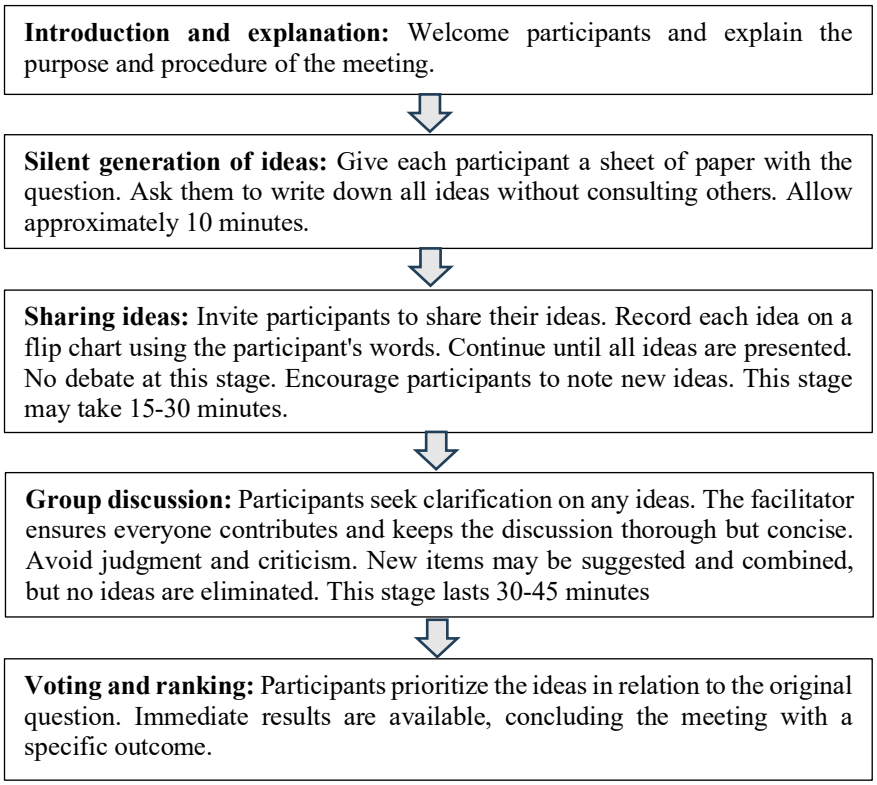

Figure 1 The Nominal Group Technique Protocol suggested by Potter et al. (2004)

The procedure to run the NGT in this study is via an online medium called virtual NGT or online NGT as applied in (Saunders et al., 2023; Tseng et al., 2006) studies. The procedures for virtual NGT based on the modification of the NGT Protocol suggested by Potter et al. (2004) presented in Figure 2. All participants should be gathered in a virtual setting that is easily accessible to them, irrespective of their geographical location, and at a mutually convenient time. The participants were recruited via purposive sampling by e-mail invitation. The details related to the procedures of the NGT session were explained to them and they were then individually tasked with identifying challenges they perceived in the EKSA implementation and certification process in their institutions. According to (Khurshid et al. 2023), with the virtual format of the NGT, the time-saving activity prepares participants better for the session, as some of the silent generation phase of the NGT can be completed prior to entering the session.

The virtual meeting for the NGT session conducted via Google Meet application. Google Meet was chosen because the interface allows users to easily join live video conferences from their homes, providing a face-to-face experience that is both efficient and fast (Sofian Hadi & Rosiana Dewi, 2021). Every participant presented their ideas to the group by list down in the chat box section, and each idea was documented on a medium visible to all participants using Google Docs through screen sharing by moderator. After all ideas were presented, a discussion was held to clarify and elaborate on each point. Subsequently, participants ranked the challenges in order of importance using a voting system. The voting system are conducted using Google Form using 7-point Likert scale. The rankings were then aggregated to identify the most significant challenges.

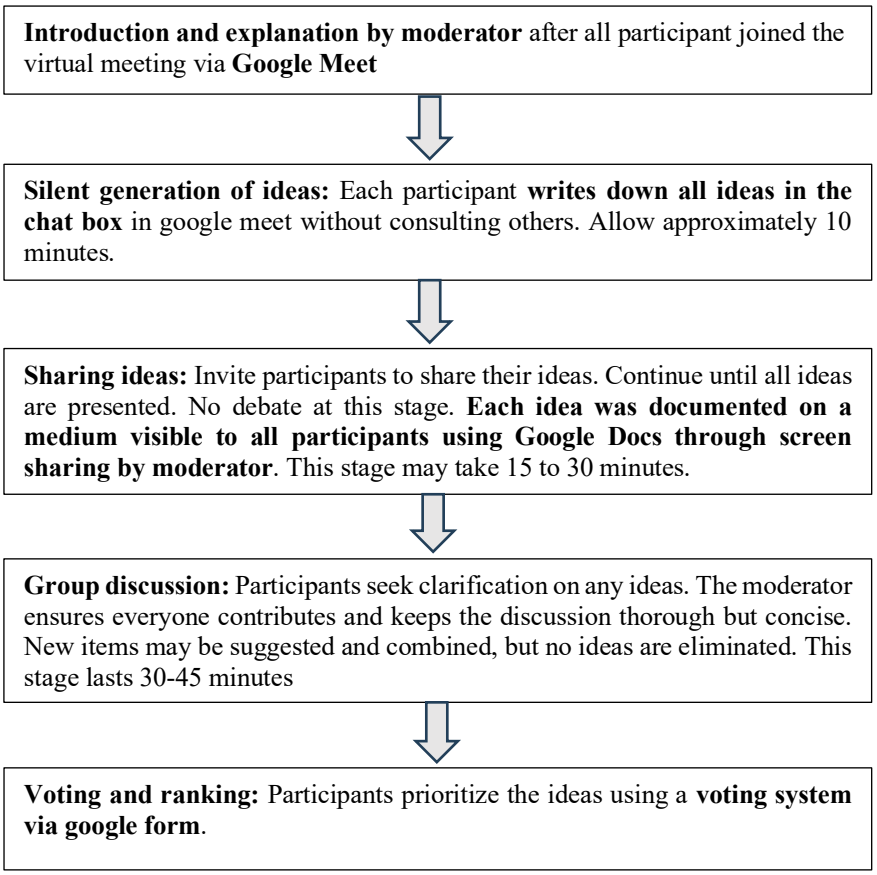

Figure 2 The virtual Nominal Group Technique protocol, modified from Potter et al. (2004)

RESULT AND DISCUSSION

The data collected from the NGT sessions were analyzed using both qualitative and quantitative methods (Manera et al., 2019). The qualitative analysis involved thematic coding of the challenges identified by participants, categorizing similar issues, and identifying overarching themes. To ensure the accuracy of this analysis, two co-authors, who are EKSA coordinators at vocational colleges and both familiar with qualitative (thematic) analysis, participated in reviewing the identified themes. One co-author holds a doctorate in TVET, while the other has a master's degree in TVET. Their involvement was intended to ensure the trustworthiness and validation of the thematic analysis derived from the NGT discussions.

The thematic analysis followed the approach outlined by Braun and Clarke (2006), which focuses on identifying 'semantic' or 'explicit' themes that capture significant patterns within the data, alongside their broader meanings and implications. The co-authors re-read the notes and compared them with the final list of priorities. Independently, they developed thematic summaries of the key issues that emerged during the sessions, which were later discussed in detail. After extensive discussion, they agreed on six final themes, which provided significant insights into the challenges Malaysian vocational colleges face in implementing the Public Sector Conducive Ecosystem (EKSA) and achieving EKSA certification.

The quantitative analysis involved calculating the frequency and ranking of each challenge based on participant votes. From this analysis, six key challenges in implementing EKSA in Vocational Colleges were identified through the virtual Nominal Group Technique (vNGT). These challenges were: 1) Time constraints faced by Vocational College members in implementing EKSA; 2) Financial and resource constraints in implementing EKSA; 3) High commitment to implementation from the Vocational College community (including Administrators, Coordinators, and Students); 4) Insufficient training in EKSA practices among the Vocational College community; 5) The EKSA Implementation

Assessment Rubric being less suitable for Vocational Colleges; and 6) Lack of promotion and exposure to EKSA within the Vocational College community. The votes collected during the brainstorming and discussion sessions were analyzed according to priority, using percentages and expert consensus, as shown in Table 2.

Table 2 Key Challenges in EKSA Implementation at Vocational Colleges: vNGT Analysis Results

Challenges in EKSA Implementation	P 1	P 2	P 3	P 4	P 5	P 6	P 7	Total score	%	Rank	Voter Consensus
High implementation commitment from Vocational College community (Administrators, Coordinators, including Students)	6	7	6	6	5	6	5	41	83.67	2	Suitable
Lack of promotion and exposure to EKSA among Vocational College community	5	6	5	5	7	5	4	37	75.51	3	Suitable
Insufficient training in EKSA practices among Vocational College community	6	6	7	6	5	5	6	41	83.67	2	Suitable
Time constraints faced by Vocational College members in implementing EKSA	6	6	5	7	6	6	6	42	85.71	1	Suitable
Financial and resources constraints for Implementing EKSA in Vocational Colleges	6	7	5	5	6	6	7	42	85.71	1	Suitable
EKSA implementation Assessment Rubric that is less suitable for application in Vocational Colleges	7	5	6	7	5	6	5	41	83.67	2	Suitable

According to Deslandes et al. (2010), an item or finding is considered accepted if the voting agreement among NGT participants exceeds 70%. This threshold indicates a strong consensus and reflects the collective views of the participants. When an item reaches this level of agreement, it is deemed reliable and significant, warranting further consideration. In this study, all of the identified challenges (refer to Table 2) had voting agreement percentages above 75%, confirming their relevance and prioritization.

1. Challenge 1: Time constraints faced by Vocational College members in implementing EKSA

Time constraints faced by the members of Vocational Colleges were identified as the primary challenge, with a percentage of 85.71%. These time constraints refer to difficulties in scheduling time to carry out EKSA activities due to busy daily schedules. It requires a dedicated time allocation to conduct the activities audited under EKSA. There are many other important programs that overlap with the implementation of EKSA; these overlapping programs make scheduling and effective implementation of EKSA challenging.

Participant 2 noted, "*At Vocational College, various programs and ad hoc activities that overlap with EKSA implementation make time constraints a challenge."*

This is supported by Participant 4, who mentioned, "*I agree, lecturers are already burdened with MQA, JPK, MBOT and they pay less attention with EKSA*."

This results in difficult allocating time for the continuous execution of EKSA and indicates the need for more effective scheduling and sufficient time support to ensure the successful implementation of EKSA, especially in improving the corporate image and green practices aspects.

2. Challenge 2: Financial and resources constraints for Implementing EKSA in Vocational Colleges

The second challenge, with a percentage of 85.71% and sharing the same rank as time constraints, is the financial and resource constraints in implementing EKSA. EKSA practices involve enhancing the corporate image and creating a conducive environment, which may require funding and resources, especially if the vocational college needs major renovations. These renovations could include new painting, new wiring, and new equipment, which are necessary due to outdated facilities, furniture, and buildings. Funds are also needed to carry out EKSA activities, such as communal work, zonal competitions, and benchmarking visits, to maintain EKSA practices. This underscores the importance of strong financial support to ensure effective EKSA implementation.

As stated by Participant 6, "*Lecturers are often burdened with the lack of management funds for EKSA, but at the same time, directives have been issued*."

Additionally, Participant 2 added, "*The lack of facilities to carry out EKSA is also a major challenge for the implementers. A4 paper, labels, partitions need to be provided by themselves or with a limited budget*."

3. Challenge 3: High implementation commitment from Vocational College community

High commitment from the staff and students of Vocational Colleges, including administrators, coordinators, and students, is another significant challenge, with a percentage of 83.67%. Despite this high level of commitment, continuous efforts are needed to ensure that all parties remain engaged and committed to EKSA implementation. The workload on lecturers also contributes to a lack of commitment to implementing EKSA.

According to Participant 5, "*Management has already initiated efforts to mobilize residents to implement EKSA, such as organizing competitions between programs, but the implementers themselves are not enthusiastic*."

4. Challenge 4: Insufficient training in EKSA practices among Vocational College community

The lack of training in EKSA practices among the residents of Vocational Colleges received a percentage of 83.67%, indicating a pressing need for more comprehensive training programs to equip staff and students with the knowledge and skills required to effectively implement EKSA. Additionally, there is a shortage of workshops and courses, as training for EKSA coordinators, implementers, and internal assessors is insufficient.

Participant 7 also add that "*The credibility of EKSA internal assessors needs to be enhanced through relevant workshops to ensure fair and accurate evaluations*."

5. Challenge 5: EKSA implementation Assessment Rubric that is less suitable for application in Vocational Colleges

The assessment rubric for EKSA implementation, which is less suitable for application in Vocational Colleges, is another major challenge, with a percentage of 83.67%. This suggests the need for a review and adjustment of the assessment rubric to ensure it is relevant and can be effectively used in the Vocational College context.
Participant 3 noted, "*At vocational college, there is no solid explanation on how the measurement mechanism to assess the effectiveness of EKSA implementation works*."

Participant 4 added, "*The existing assessment rubric is seen as less suitable for the KV environment, which has many workshops and laboratories. The rubric seems more suitable for offices and is too general to be used*."

6. Challenge 6: Lack of promotion and exposure to EKSA among Vocational College community

Finally, the lack of promotion and exposure of EKSA among the members of Vocational Colleges recorded a percentage of 75.51%. This lack of promotion indicates the need for more effective communication strategies to increase awareness and understanding of the importance and benefits of EKSA among vocational college community.

Participant 1 stated, "*Our lecturers do not see the importance of EKSA implementation, perhaps because of the lack of exposure, the spirit of EKSA is missing."*

Participant 6 added, "*Lack of awareness of the importance of EKSA itself is a result of insufficient promotion to make KV residents understand the importance of its implementation*."

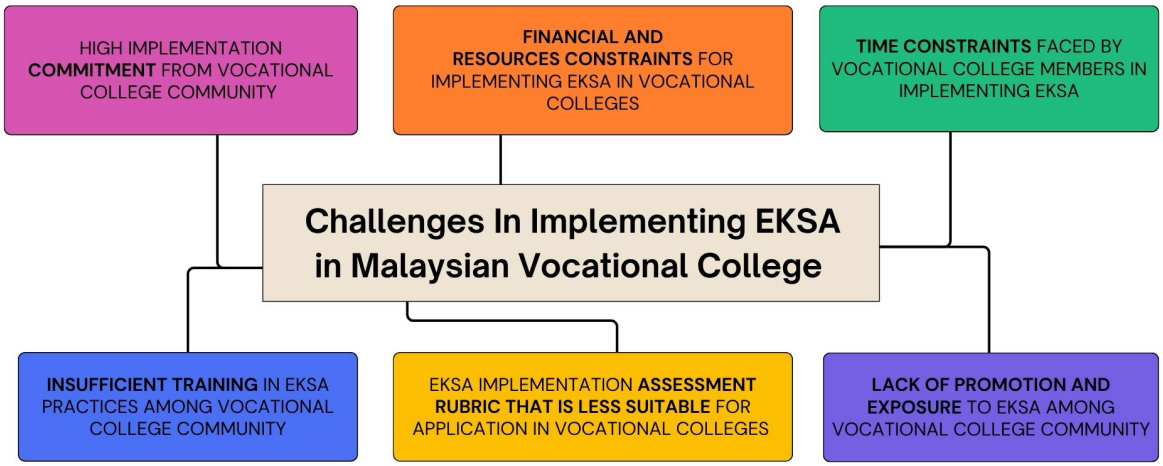

Figure 3 Six challenge identified in implementing EKSA in Malaysian Vocational College

The six key challenges identified in this study provide a foundation for deeper reflection on the implementation of EKSA in vocational college (refer to Figure 3). These challenges highlight structural, financial, environmental, and policy-related barriers that must be addressed to ensure the success of this initiative. A key focus in achieving EKSA's goals is the creation of conducive environments in vocational college workshops and laboratories, where most teaching and learning occur.

Workshops and laboratories are essential for cultivating hands-on competencies among students. Maintaining such environments requires a collective commitment from the community in vocational college. This includes adhering to 5S practices and organizing workspaces efficiently, especially for sorting and managing damaged equipment. In addition, older facilities often require additional funding for repairs, repainting, renovations, and updated wiring. Investments in energy efficient appliances such as LED lighting and DC motor ceiling fans also need to be address to support sustainable practices. These concerns are echoed by Bakri & Zakaria (2018), who highlighted persistent issues in the maintenance management of laboratories and workshops, specifically in relation to insufficient budget allocations, inadequately trained staff, ineffective monitoring systems, and reliance on conventional maintenance approaches.

To implement EKSA practices more effectively, all members, including students, need to embrace them. Training for all levels of members in the institution, especially coordinators and internal auditors, should be conducted regularly. This ensures that the requirements needed for EKSA certification can be met based on the current conditions in the vocational college. The training can be conducted through various means, such as online courses, inviting EKSA facilitators from other agencies, and benchmark visits to government agencies that have received EKSA certification. It is

recommended to initiate at least one pilot project on full EKSA implementation in a vocational college to serve as guidance or best practice for other institutions as recommended by (Hanson et al., 2023). This pilot project will also raise awareness and promote EKSA implementation across all vocational colleges in Malaysia.

The EKSA practice is a strategic initiative by the government to enhance the 5S practice, with proper guidance provided through the EKSA Rubric assessment by MAMPU (2015). There are six components (Components A, B, C, D, E, and F) used as guidelines for assessing EKSA implementation in vocational colleges. Each component includes specific items, and each item contributes to the overall score for auditing. The EKSA qualification scoring for certification requires a score of 80% or above. However, the weighting of the scoring for vocational colleges needs improvement. Only three items in Component F (item no. 29, 30, and 31 in school section) assess workshops, where students and lecturers spend most of their time in the teaching and learning process. Most of the items (Component B – 49 items) are more suitable for administrative offices. This discrepancy can affect the assessment scoring and the qualification for EKSA certification.

The strength of the current EKSA assessment rubric, which is deemed suitable and relevant for vocational colleges, lies in Component D, which focuses on environmental safety. According to (Purohit, 2018; Threeton et al., 2019), it is essential to cultivate an authentic safety culture within research and teaching laboratories at academic institutions. This is also supported by Jiménez et al. (2019); Sukdeo (2017); Wang and Liu (2023), who suggest incorporating the safety element into the 5S practice, thereby promoting the 6S practice. Indirectly, the implementation of EKSA practices somewhat encourages the adoption of 6S practices in vocational colleges.

There are 14 items in Component D that emphasize safety, including D1) Safety action plans, D2) Electrical/Cable safety, D3) Fire prevention equipment, D4) Pathway/Staircase safety, and D5) Keys. However, it is recommended to include the first aid kit as one of the assessment criteria, as it is also a necessary precautionary measure. According to Doofan and Emmanuel Idemudia (2022), first aid in a laboratory is the immediate assistance given to an injury victim to reduce pain, prevent the situation from worsening, and potentially save lives, such as by managing bleeding and treating wounds. Sanjana and Prathilothamai (2020) also added that a first aid kit can help decrease the risk of infection and lessen the severity of both minor and serious injuries

Another area for improvement in the EKSA rubric assessment for vocational colleges, under Component F, is the inclusion of an item related to the inventory or equipment record system, similar to those used in assessing EKSA in hospitals, district health offices, and dental clinics. This system should be implemented in vocational colleges due to the significant expenses involved in using machines, equipment, and materials for practical work in workshops.

The transition from manual record-keeping to digital solutions is essential to align with current digital practices. Setiawan et al. (2019) emphasize that an efficient workshop or laboratory management system requires shifting from manual records to digital platforms. Research by Abdelrahman et al., (2020); Oktavia and Wongso (2015); and Setiawan et al. (2019) further highlights the benefits of using digital management systems in academic settings. Additionally, Mohd Raffi et al. (2024) suggest that this shift streamlines administrative tasks and facilitates real-time data retrieval, improving decision-making processes. This strategic move also promotes green practices in vocational colleges by reducing paper use, cutting printing costs, and saving space in workshops while implementing EKSA standards.

Therefore, it is recommended that the Ministry of Education, in collaboration with JDN, develop a centralized EKSA training module that is mandatory for all vocational colleges. Funding allocations could be tied to annual EKSA audit outcomes to incentivize compliance. Furthermore, the assessment rubric should be revised with input from vocational college practitioners to ensure its relevance and applicability to workshop-based environments.

CONCLUSION

This study offers meaningful insights into the challenges faced by Malaysian vocational colleges in implementing the Public Sector Conducive Ecosystem (EKSA) and obtaining EKSA certification. The findings emphasize the need for improved resource allocation, enhanced training, and revisions to the

EKSA assessment rubric to better reflect the unique operational environment of vocational colleges. The six key challenges identified include time constraints, financial limitations, the high level of commitment required from staff and students, insufficient training, an unsuitable assessment rubric, and a lack of promotion and awareness of EKSA practices.

However, this study is not without limitations. First, the participant pool consisted of only seven individuals from selected vocational colleges, which may not fully capture the diverse experiences across all institutions nationwide. Second, although the virtual Nominal Group Technique (vNGT) enabled the participation of geographically dispersed experts, it may have limited the depth of discussion typically achievable in face-to-face settings. Lastly, the data collected were based on self-reported perceptions, which could introduce bias. Future research should involve a larger and more diverse sample and incorporate additional data sources such as interviews, observations, or document analysis to triangulate findings and strengthen validity.

Despite these limitations, the use of the vNGT method proved effective in eliciting expert opinions and prioritizing the challenges faced. This approach allowed for inclusive participation and yielded both qualitative and quantitative insights. The implications of this study suggest that vocational colleges must adopt a more systematic approach to EKSA implementation, particularly in enhancing workshop and laboratory environments, ensuring safety, and embedding sustainable practices.

In addition, the study recommends the integration of digital solutions for managing inventory and equipment, which would align with current digitalization efforts and support green practices. The inclusion of first aid kits in the EKSA assessment rubric is also proposed, reflecting the essential role of safety in educational environments. Overall, this research provides a practical foundation for strengthening EKSA implementation in vocational colleges and contributes to advancing Malaysia's broader educational and public sector transformation objectives.

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DATA AVAILABILITY STATEMENT

The authors do not have permission to share data.

CONFLICT OF INTEREST

The authors declare no conflicts of interest

DECLARATION OF GENERATIVE AI

During the preparation of this work, the author(s) used ChatGPT to proofread the paper. After using this tool, the author(s) reviewed and edited the content as necessary and take full responsibility for the final version of the publication.

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