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Article

Innovative Work Behaviour among Malaysian Education Officials: A MANOVA Analysis

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Abstract: Organisations must adapt quickly and innovate to improve. Therefore, the goal of this study is to determine the level of Innovative Work Behaviour (IWB) of the State Education Official (SEO) in Malaysia from the dimensions of opportunity exploration, idea generation, idea promotion, idea realisation, and idea sustainability as well as to explore the differences in IWB of the SEO in Malaysia across demographic factors. Respondents represented every region of Malaysia. Analysis of data utilising quantitative research method. To ensure regional representation, 450 SEO from Northern Region, Central Region, Southern Region, East Coast, and East Malaysia were selected via stratified random sampling and sent online structured questionnaires. The level of IWB was found to be very high (M=4.31, SD=0.51). The SEO's frequency of participation in governance, leadership, and educational management courses during the tenure at the State Education Department (SED) was found to be significant according to Multiple Analysis of Variance (MANOVA) results (Wilks' λ= 0.939, F (15, 445) =1.878; p=0.022). However, the SEO IWB did not differ by age, position, experience, and academic credentials. Ministry of Education (MOE) Malaysia and SED may leverage the results of this study to re-evaluate and redesign IWB concepts to improve educational management.

Keywords: Innovative work behaviour; state education department; educational management; demography; MANOVA

Introduction

Innovation is a requirement for the majority of organisations in today's world. The achievement and growth of organisations are directly correlated to the degree to which they innovate. In order organisations to be successful under new circumstances, like as the pandemic that followed the COVID19 outbreak, they require innovative workers who are able to rapidly generate new ideas and strategies and put them into action. Therefore, IWB inspires organisational innovation, which helps increase performance and ensures the organisation's continuing success.

In addition, it is important to note that predetermined actions and existing processes may not yield the desired results in the workplace. This is primarily due to the fact that work environments are becoming less predictable, competition is intensifying, and technology is continuously advancing (El Alfy & Naithani, 2021). According to El Alfy and Naithani (2021), organisations must demonstrate innovation in order to effectively navigate unexpected changes. The implementation of employee-driven innovations has the potential to differentiate an organisation from its competitors and establish a distinct competitive advantage. According to Azinga et al. (2023), the purpose of implementing IWB is to enhance the efficiency and effectiveness of the organisation. The role of employees in driving innovation within an organisation is vital, making the

implementation of an innovation-driven work environment essential for achieving success. In order to thrive in today's highly competitive landscape, it is imperative for organisations to actively encourage and foster employee IWB.

On the other note, the rise in the quality of life of individuals and their exposure to global services has resulted in a more refined demand from the public at large. The aforementioned circumstances have posed challenges in the delivery of public services, particularly within the realm of the educational sector. The question of how the skills of public servants can be brought into alignment with the overall strategy for the public service initiative still has to be answered. This can be done through the design of programmes and learning modules as well as the development of specific implementation plans (Muhaini, 2020). It is the responsibility of public servants to deliver high-quality services that meet both the needs of the community and the expectations of society.

Lukes and Stephan (2017) and Manso (2017) argue that in today's rapidly changing knowledge-based global economic system, organisations face a challenging environment and rapid technological advancements. As a result, innovation has become the key factor that determines an organisation's success and resilience. Due to this, many organisations are actively striving to enhance their innovative capabilities in order to gain a competitive edge across all aspects of their operations. This is crucial for them to remain relevant in the ever-evolving trends and dynamics of the field. IWB encompass various activities such as identifying emerging technologies that are relevant to the organisation, proposing innovative approaches to achieve organisational key performance indicators (KPIs), acquiring the required resources to implement new ideas, and embracing new approaches within the organisation. One possible avenue for exploration is generating innovative strategies to enhance key performance indicators within an organisation.

Moreover, previous research has identified weaknesses and deficiencies in the implementation of innovation in educational management and governance. However, despite these findings, these practices continue to be implemented. Concerns have been raised regarding the quality of operational and governance practices, specifically in terms of their effectiveness and the criteria used to measure their implementation (Mohammed Afandi et al., 2020; Nur Atiqah et al., 2016). In addition, the limited research on IWB in the educational context in Malaysia has led to concerns about accurately assessing the IWB of individuals who contribute to the development of high-quality ideas and innovations within the local context (Mohammed Afandi et al., 2020). Given this information, it is important to analyse the concept of IWB in the field of educational management, specifically focusing on the State Education Department, which serve as the anchor and the key players in education at the state level.

Consequently, since the significance of IWB has been underlined, rapid responses along with extensive research are needed to ensure that it will not cause any adverse effects to the existing educational system. Thus, a quantitative method employing a cross-sectional survey of 450 Malaysian SEO was implemented. This study will shed light on the level of IWB of Malaysian SEO, and MANOVA was used to see if there were any differences in the innovative behaviour of SEO based on demographic variables. This study could provide a summary of Malaysian SEO's IWB. To enhance educational management, the findings could be utilised to make recommendations to the MOE and SED. The objective of this research is to determine the level of IWB among SEO in Malaysia. This will be determined based on various dimensions including opportunity exploration, idea generation, idea promotion, idea realization, and idea sustainability. Additionally, the study aims to investigate any differences in IWB among SEO in Malaysia based on factors such as age, position in the organisation, work experience, academic qualifications, and frequency of participation in courses related to governance, leadership, or educational management during their tenure at the SED.

Literature Review

IWB can be defined as the manifestation of behaviour that results in the introduction and implementation of new ideas, products, or procedures within the context of the workplace, whether it be at the team or organisational level (De Jong & Den Hartog, 2010). The characteristics of IWB are classified into four distinct categories, namely idea exploration, idea generation, idea promotion, and idea implementation. According to Messmann et al. (2010), the concept of IWB encompasses the various activities undertaken by an individual during the course of the innovation process. This process can be broken down into four separate stages as well.

The aforementioned processes exhibit interdependence, yet lack a predetermined sequence, hence giving rise to a multifaceted, ever-changing, and non-linear framework of IWB (Messmann & Mulder, 2012). When promoting a new idea, for example, people of an organisation also try to find new ways to be innovative. Additionally, the concept of IWB is defined by Anderson et al. (2014) as the whole process, output, and result of efforts aimed at creating and implementing new approaches and enhancements within the organisational setting. The inclusion of creativity is crucial in the manifestation of IWB (De Jong & Den Hartog, 2010; Tang, 2017). However, it is important to note that the concept of innovation extends beyond creativity, as it encompasses not only the generation of innovative concepts but also their practical implementation (Gilson & Litchfield, 2017; Janssen, 2000; West & Farr, 1989).

Mohd Helmi (2016) describes IWB as the behaviour of individuals or employees as a factor in an organisation's success, measured by idea exploration, idea generation, idea championing, and idea implementation in the local study. Fern and Nurazwa (2018) define IWB as creative individual innovations through knowledge acquisition, environmental exploration, and idea generation to develop new technologies, improve items, or solve problems. IWB is a multi-step process. Leadership in an organisation influences high performance and goals based on IWB. In addition, Norulhuda et al. (2019) provide a definition of IWB. They describe it as a behaviour exhibited by individuals with the intention of introducing or implementing new and valuable ideas, processes, products, or procedures within their work, work unit, or organisation. According to Nurain Afini and Nurazwa (2020), IWB is described as a voluntary action that involves the generation of new ideas, ultimately contributing to the development of innovative work outcomes. This behaviour is seen as beneficial for enhancing performance as well as benefiting groups and organisations as a whole. According to Mohammed Afandi et al. (2020), IWB in the field of education refers to the individual actions that involve generating, processing, and applying new ideas or approaches to tasks and processes. This includes ideas for products, technologies, procedures, or work processes that aim to increase the organisation's efficacy and achievements.

Unlike other scholars, Lambriex-Schmitz et al. (2020) define IWB as a multi-stage iterative process in which management and implementer groups explore opportunities, generate ideas, promote ideas, realise ideas, and sustain ideas at individual, group, or organisational levels to meet organisational needs. Lambriex-Schmitz et al. (2020) added sustainability to their definition of IWB as a multi-stage iterative process in innovation implementation. Idea sustainability is infrequently integrated into IWB, especially in local research. After adding sustainability to the innovation cycle of West and Farr (1989) and Fullan (2007), the cycle of change through IWB is complete. Lambriex-Schmitz et al. (2020) found that IWB fails during and after concept realisation. During idea realisation, organisations often fail to assess the effectiveness of new idea implementation and fail to implement continuous improvements before applying and practising the new idea across sectors to achieve optimum effectiveness and long-term sustainability. IWB is a multi-stage, non-linear process, yet each phase and dimension must be met to institutionalise and distribute new ideas outside the organisation.

Overall, the conceptualization and implementation of IWB require further attention, especially in the context of governance within the SED, to anticipate effective preventive measures and improvements in the face of increasingly complex changes. The Lambriex-Schmitz et al. (2020) model was chosen to underpin this study in order to explain individual IWB. In this context, the SEO within the SED serves as an analytical unit involved in every stage of the innovation process within SED.

In IWB, new ideas are developed and implemented to improve work quality and performance. Previous research has focused on how well people handle adversity (Mohammed Afandi & Mohd Effendi Ewan, 2020). IWB is one of the most essential parts of the more demanding 21st century due to the rapid social and technological change in modern technology. Innovative behaviour promotes organisational innovation and effectiveness. When an organisation promotes innovation, people become more interested in it, establishing the platform for IWB. But when it comes to education, discussions about innovative behaviour are still few and far between (Mohammed Afandi et al., 2020;Wan Ali Akhbar et al., 2020). For educational institutions to be successful in an ever-changing world, they must demonstrate innovative ways of working.

Awang et al. (2019), who studied organisational learning and work environment's impact on IWB, suggested that personnel factors like academic qualifications and years of work experience should be

examined to provide a more holistic view of individual learning and career development. Despite the fact innovation in public service delivery is well known to improve efficiency and quality, however, Lee (2018) found that principals in Central Melaka district differed in their IWB based on their years of teaching experience. Jung et al. (2020) found that management and implementers groups differ in the new idea generation. This suggests that position in the organisation affect the results of the study. Wahyuni et al. (2021) found substantial disparities in lecturers' IWB regarding organisational learning and commitment depending on academic credentials and years of service. Lambriex-Schmitz et al. (2020) also found that vocational college trainee's IWB differ by age. Jotabá et al. (2022) identified age variations in academic staff's IWB at Croatian universities. Younger staff members were more innovative when confronted with complicated problems than senior employees. This shows that demographic factors affect IWB and should be examined in this study.

Methodology

A cross-sectional survey was conducted to assess the levels of Malaysian SEO IWB and identify any differences. 1995 SEO from Northern, Central, Southern, East Coast, and East Malaysia were studied. Table 1 shows how stratified random selection selected 450 SEO to ensure representation. Using these procedures, every stratum (Malaysian zone) was represented in the sample. Notably, the proposed sample size of 322 respondents based on the table of Krejci and Morgan (1970) has been increased to 450 respondents by adding 28.44%, as suggested by Fraenkel et al. (2012) to increase the number of samples by 20% to account for respondents who withdrew and damaged the instrument.

Table 1. Population and sample

Regions in Malaysia	State Education Departments	Population By State	Population by Region	Sample Size by State	Sample Size by Region	% of Sample by Region
Northern	Kedah	147	420	33	95	21.0
	Pulau Pinang	120		27		
	*Perlis (115) -Pilot study	NIL		NIL		
	Perak	153		35		
Central	Selangor	170	341	39	78	17.2
	WP Kuala Lumpur	108		24		
	WP Putrajaya	63		14		
Southern	Negeri Sembilan	119	401	27	90	20.0
	Melaka	120		27		
	Johor	162		37		
East Coast	Pahang	151	428	34	97	21.5
	Kelantan	152		34		
	Terengganu	125		28		
East Malaysia	Wilayah Persekutuan Labuan	57	405	13	91	20.3
	Sabah	180		41		
	Sarawak	168		38		
Total		**1995**	**1995**	**450**	**450**	**100%**

The questionnaire has two parts. The first component of the survey gathered demographic data such as age, position in the organisation, work experience, academic qualifications, and frequency of participation in courses related to governance, leadership, or educational management during their tenure at the SED. As derived from Lambriex-Schmitz et al. (2020) and modified for the research's operational definitions, a total of 19 measurement items were observed for IWB. Revisions were made to the wording of the items to make them more comprehensible. Responses ranged from strong agreement (1) to strong disagreement (5) on a five-point likert scale.

A dean of the faculty of educational studies, a deputy director at one of the universities in Malaysia, and a deputy director at the MOE Malaysia were the three individuals that the researchers consulted in order to ensure the content validity of the findings. These individuals are known for their expertise in educational management, innovation, and human resource development. The pilot study involving 102 SEO participants found that Cronbach's alpha ranged from 0.946 to 0.978. Additionally, the study revealed that the composite reliability value of each component fell between 0.956 and 0.981. The data were analysed by SPSS 26.

Table 2. Cronbach's Alpha and Composite Reliability

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Opportunity exploration	0.977	0.981	0.864
Idea generation	0.946	0.956	0.759
Idea promotion	0.978	0.980	0.808
Idea realization	0.961	0.967	0.766
Idea sustainability	0.954	0.962	0.785

The Findings

The data was encoded using SPSS 26 for the purpose of conducting descriptive and inferential analysis. A descriptive analysis was conducted to determine the mean and standard deviation of the responses. The first objective of the study was met. Malaysian SEO were assessed for IWB using Nunnally (1994) mean score interpretation This interpretation was also used by Azerai (2020) and Nor Azlin (2021) . As part of the second research objective, MANOVA was used to find differences in IWB based on age, position in the organisation, work experience, academic credentials, and the frequency of the participant took governance, leadership, or educational management courses while they serve at the SED.

Table 3. SEOs' overall means of IWB

Dimension	Mean	Standard Deviation	Score Interpretation
Opportunity exploration	4.35	0.52	Very High
Idea generation	4.38	0.55	Very High
Idea promotion	4.35	0.54	Very High
Idea realization	4.32	0.57	Very High
Idea sustainability	4.29	0.62	Very High
Total	**4.34**	**0.51**	**Very High**

This research sought to understand how innovative SEO in Malaysia explore new opportunities, generate new ideas, promote those ideas, put them into action, and sustain them through the dimensions of opportunity exploration, idea generation, idea promotion, idea realisation, and idea sustainability. Table 3 demonstrates that the mean of IWB among SEO was 4.34 (SD = 0.51). Idea generation had the highest mean (4.38, SD = 0.55), with a very high score interpretation. The very high IWB of this study is similar to that of Voo et al. (2019), because workers employed by UTM in the academic sector also demonstrated an equal capacity for idea generation, exploration, and implementation of those ideas.

Next, MANOVA was used to identify differences in IWB based on demographic factors such as age, position, experience, academic credentials, and the frequency of participation in courses related to governance, leadership, or educational management during the respondent's tenure at the SED. Matrix variance-covariance homogeneity was determined using Box's M test for covariance equality. The dependent variables' covariance matrices were significant and unequal between groups, indicating that their covariances were not homogeneous across the independent variables, as illustrated in Tables 4, 6, 8, 10 and 12. However, Tabachnick and Fidell (2007) as well as Pallant (2010) agreed that Type I error was very minor if the research had a high sample size and advocated MANOVA testing even if Box's M was significant ($p<.05$). Hence, multivariate analysis results are presented in Tables 5, 7, 9, 11 and 13.

Table 4. Box's M Test of the age factor

Effect	Box's M	F Value	df1	df2	p-value
Age	83.247	2.718	30	168007.159	.000

Significant at the p<.05 (Tabachnick & Fidell, 2007)

Table 5. MANOVA analysis of Malaysian SEOs' IWB dimensions by the age

Effects	Wilks' lambda	F	df1	df2	p-value
Age	.971	1.321	10	446	.214

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 5 displays a comprehensive analysis of the mean scores for opportunity exploration, idea generation, idea promotion, idea realisation, and idea sustainability. The MANOVA analysis revealed that there was no statistically significant difference in the mean scores of IWB among different age groups of SEO at the SED. This conclusion is based on the results of Wilks' λ test, which yielded a value of 0.971(Wilks' λ= 0.971, F (10, 446) =1.321; p=0.214). The data indicated that SEO IWB at the SED was not affected by different age groups.

Table 6. Box's M Test of the position factor

Effect	Box's M	F Value	df1	df2	p-value
Position	75.968203	2.428	30	35833.672	.000

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 7. MANOVA analysis of Malaysian SEOs' IWB dimensions by the position

Effects	Wilks' lambda	F	df1	df2	p-value
Position	.926	1.127	30	442	.290

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 7 displays the MANOVA analysis and it revealed that there was no statistically significant difference in the mean scores of IWB among different job positions at SED. This was determined by examining the aspects of opportunity exploration, idea generation, idea promotion, idea realisation, and idea sustainability (Wilks' λ = 0.926, F (30, 442) = 1.127; p = 0.290). The findings indicated that SEO IWB at the SED was not affected by the SEO job position.

Table 8. Box's M Test of the experience factor

Effect	Box's M	F Value	df1	df2	p-value
Experience	85.984	1.857	45	115115.424	.000

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 9. MANOVA analysis of Malaysian SEOs' IWB dimensions by the experience

Effects	Wilks' lambda	F	df1	df2	p-value
Experience	.966	1.024	15	445	.427

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 9 reveals that there was no significant difference in the mean scores of IWB across the dimensions of opportunity exploration, idea generation, idea promotion, idea realisation, and idea

sustainability by length of service at the SED (Wilks' = 0.966, F (9, 445) =1.024; p=0.427). This indicated that SEO IWB at the SED was not affected by duration of service.

Table 10. Box's M Test of the academic credentials factor

Effect	Box's M	F Value	df1	df2	p-value
Academic	63.431	1.961	30	5303.935	.001

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 11. MANOVA analysis of Malaysian SEOs' IWB dimensions by the academic credentials

Effects	Wilks' lambda	F	df1	df2	p-value
Academic	.987	.559	10	446	.848

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 11 demonstrates the results of the MANOVA analysis, which revealed that there was no significant difference in the mean scores of IWB across the dimensions of opportunity exploration, idea generation, idea promotion, idea realisation, and idea sustainability based on the academic credentials of SEO at the SED (Wilks' = 0.987, F (10, 446) =0.559; p=0.848). In other words, SEO IWB at the SED was not affected by academic credentials.

Table 12. Box's M Test of the course's participation factor

Effect	Box's M	F Value	df1	df2	p-value
Courses	110.477	2.391	45	118509.580	.000

Significant at the p<.05(Tabachnick & Fidell, 2007)

Table 13. MANOVA analysis of Malaysian SEOs' IWB dimensions by the courses participation

Effects	Wilks' lambda	F	df1	df2	p-value
Courses	.939	1.878	15	445	.022

Significant at the p<.05(Tabachnick & Fidell, 2007)

With reference to the aforementioned analysis, the MANOVA results for age, position, experience, and academic credentials were insignificant. Nevertheless, Wilks' λ= 0.939, F (15, 445) =1.878; p=0.022, and p<.05 showed a statistically significant difference in the respondent's participation in governance, leadership, and educational management courses across their tenure at SED. This finding offers valuable insights into the factors influencing the implementation of IWB. It suggests that age, position within the organisation, length of service, and academic qualifications do not significantly impact this behaviour. The only variable that appears to make a difference is the frequency of attending courses related to administration, leadership, or educational management.

The MANOVA showed a significant difference in the mean score of IWB of SEO in Malaysia across the dimensions of opportunity exploration (F=2.975 and p=0.031 (p<.05)), idea generation (F=4.073 and p=0.007 (p<.05)), idea promotion (F=5.791 and p=0.001 (p<.05)) , idea realisation (F=4.635 and p=0.003 (p<.05) , and idea sustainability (F=4.199 and p=0.006 (p<.05) based on course attendances. The Test of Between-Subject Effects was performed on each dependent variable. Table 14 shows that all dimensions of the IWB of SEO in Malaysia were significant based on the frequency of participation in courses related to governance, leadership, or educational management during the respondent's tenancy at the SED. This shows that the level of IWB from the perspectives of opportunity exploration, idea generation, idea promotion, idea realisation, and idea sustainability among SEO varies across the frequency of SEO attending governance-related courses, leadership, or educational management when they serve at SED.

Table 14. Test analysis of between-subject effects: Differences in IWB based on the frequency of course attendance

Dimension	Frequency	Mean	Std. Deviation	Sum of Squares	df	Mean Square	F	*p*-value	Partial Eta squared
Opportunity exploration	1 time- 3 times	4.259	0.522	2.411	3	.804	2.975	.031	0.020
	4 times- 7 times	4.368	0.485						
	8 times- 12 times	4.472	0.604						
	> 12 times	4.407	0.522						
Idea generation	1 time- 3 times	4.347	0.523	3.571	3	1.190	4.073	.007	0.027
	4 times- 7 times	4.289	0.566						
	8 times- 12 times	4.373	0.536						
	> 12 times	4.449	0.588						
Idea promotion	1 time- 3 times	4.522	0.478	4.966	3	1.655	5.791	.001	0.038
	4 times- 7 times	4.383	0.546						
	8 times- 12 times	4.227	0.584						
	> 12 times	4.355	0.503						
Idea realization	1 time- 3 times	4.478	0.544	4.434	3	1.478	4.635	.003	0.030
	4 times- 7 times	4.483	0.486						
	8 times- 12 times	4.349	0.543						
	> 12 times	4.212	0.591						
Idea sustainability	1 time- 3 times	4.321	0.536	4.667	3	1.556	4.199	.006	0.028
	4 times- 7 times	4.375	0.619						
	8 times- 12 times	4.476	0.533						
	> 12 times	4.321	0.572						

Significant at the p<.05 (Tabachnick & Fidell, 2007)

Discussion

The study revealed a significant prevalence of IWB among SEO (M=4.31, SD=0.51), suggesting that SEO are actively engaging in IWB within the context of the SED. The very high scores across all dimensions serve as evidence for this claim. Additionally, it is worth noting that there were no significant differences in the SEO IWB when considering factors such as age, position, experience, or academic credentials. The results clearly indicated that Malaysian SEO consistently demonstrates a high level of IWB, regardless of factors such as age, position, years of experience, or academic qualifications. The study's findings suggest that the SEO's participation in governance, leadership, and educational management courses during their time at the SED had a significant impact, as indicated by the MANOVA results (Wilks' λ= 0.939, F (15, 445) =1.878; p=0.022). The results are consistent with those of Juraime (2016), who discovered that the number of completed courses had a significant impact on the level of educational digital leadership practices. Training is one example of a contextual component that Yaqoot et al. (2017) also showed to have a significant effect on public sector programme. Especially in Bahrain, this is a much-needed addition to the canon of training manuals for the public sector. This study's findings are consistent with those of Kanapathipillai and Azam (2020), who asserted that training has a strong positive correlation with job performance within an organisation and is statistically significant. Syafiqah et al. (2020), in the meantime, lay a major focus on the necessity for human resource managers to obtain training in order to progress their professional development goals. This training is designed to facilitate human resource managers in advancing their careers and improving their knowledge.

The key contribution of this study to the field of knowledge is the augmentation of the current body of literature pertaining to IWB. It is one of the limited research that has been carried out by several government sectors in Malaysia, particularly the MOE, and its findings may assist education officials in understanding how IWB can improve organisational performance. Innovative workers will be in demand as education at all levels undergoes enormous transformations. Education officials are responding to fast-changing educational management. Thus, learning how to innovate requires different conduct (Steyn & de Bruin, 2019). Today's educational leaders need the requisite expertise and experience, especially in the realm of digital learning. From conventional to digital, education officials must deal with ICT changes, such as online and digital learning. To successfully execute these reforms, educational officials will need to be innovative and versatile.

On top of that, the level of idea sustainability of IWB at SED was found to be the lowest of all the dimensions, which indicates that if the sustainability of ideas is addressed, it would be possible to increase the long-term success of innovations. This finding is a significant point of interest that also needs to be taken into account as well. Therefore, in order to maximise the likelihood of effective and long-lasting education innovations, it is essential to select the appropriate personnel for each phase of the innovation process, to provide training that is rich in resources, and to develop work cultures in which education officials can feel independent and competent.

Conclusion

This study explored and broadened the comprehension of IWB, as well as identified variations in IWB based on Malaysian SEO demographics. Using data from 450 samples drawn from the 1995 total population of SEO in Malaysia, as determined by 1) IWB was very high among Malaysian SEO; 2) The MANOVA results were insignificant for age, position, experience, and academic credentials. However, frequency of participation in governance, leadership, and educational management courses during the tenure at the SED varied significantly. The findings highlight the significance of these variables in Malaysian education. The MOE can encourage IWB by implementing a variety of training and development programmes. These programmes can be tailored to facilitate SEO in developing skills and knowledge required to think creatively and exploit new prospects for innovation. For a better understanding of SEO innovation, additional empirical research similar to these studies is required because they serve as a proxy for the organisation's human capital and contribute to the development of an innovative society.

Due to limitations imposed by practicality, this study cannot provide a comprehensive analysis of certain facets. First, the data were obtained exclusively from the SED of Malaysia, so the results may not be applicable to other educational institutions. Second, the data were gathered solely through self-reported questionnaires; therefore, this study should employ a variety of methods, such as qualitative or mixed method. Last but not least, the demographic scope of the research was limited to age, academic credentials, position, work experience, and the frequency of participation in governance, leadership, and educational management courses during their tenure at the SED, so more research is needed beyond this demographic scope to gain a better understanding of IWB. Factors such as the learning organisation and commitment to change can also be explored in order to create a sustainable post-pandemic society.

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