

Nominal Group Technique: Factors of public sector employees innovative work behaviour

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Abstract

Innovative Work Behaviour (IWB) is an important source of organisational competitiveness for sustainable long-term success. Despite the growing attention given to IWB in research, there is still a deficiency of studies examining its antecedents over public sector employees. Based on that, this study suggests a structured approach to promote IWB using the Nominal Group Technique (NGT) to obtain expert consensus. Using this approach, 11 factors to increase IWB were identified. This study's results will help guide future research as the basis for practices that give rise to a culture of innovation in public organisations.

Keywords: Innovative Work Behaviour; Public Sector Employee; Nominal Group Technique; Leadership Style

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1.0 Introduction

Globalisation and technological advances have made the world a village, and innovation has become a fundamental competence that organisations all over the globe need to develop to be competitive and relevant. The ability to innovate is the key to how well organisations across private and public sectors adapt to new challenges, respond to economic pressures, and meet shifting requirements from customers and stakeholders. This means increasingly working more effectively for public sector organisations, improving service delivery, and tackling complex societal challenges. While the private sector is typically the first to embrace new working methods, it is also becoming clear that public sector organisations should encourage innovative work behaviour to provide agile, high-quality public services (Afsar et al., 2020).

This need for innovation is felt more acutely in the Malaysian public sector, where changing societal needs, high-performance expectations, and accountability demand that organisations innovate and manage change effectively. Nevertheless, promoting IWB in public organisations may be difficult as these organisations are constrained by solid control structures, strict samplings, and less flexible work-process management. Public organisations also tend to be formalised, creating structural constraints that limit and inhibit employees from generating and implementing new ideas. Furthermore, public sector employees often face personal and organisational challenges, including work-life balance problems, insufficient managerial support and financial constraints, which can restrict their readiness or ability to be involved in innovative work (Alheet et al., 2021).

The present study is intended to close that gap and investigate the following research questions: (1) What are the individual factors and determinants influencing IWB among the employees working in the Malaysian public sector? This study employs the NGT to engage experts in discovering and ranking the top enablers of IWB. The NGT method is a systematic way of gaining knowledge of and accessing expert views in this area. It enables systematic examination of the ranks of factors that may influence innovation within this sector. Thus, the findings from this study are crucial for policymakers, human resource managers and public sector leaders who wish to devise strategies that underpin an innovation-oriented culture in public organisations.

Probing more dimensions affecting IWB is pivotal for this purpose, as it helps in building the foundations to formalise types of interventions to foster innovative behaviour, creative thinking, and experimentation in service delivery. Therefore, given the focus of this study on individual-level factors, such as psychological empowerment and agile learning, the hope is to provide practical recommendations that help enable IWB for the public sector in Malaysia. This research focuses on building a broader theory of public sector innovation, but specifically to provide practitioners with lessons that can help them improve public services' effectiveness, responsiveness, and impact.

2.0 Literature Review

Particularly the original idea of IWB by Farr and Ford (1990) and later developed by Scott et al. (1994), who linked this with creative processes yielding new concepts. This definition was further developed by Janssen (2000), who defined IWB as the individual employees' intentional generation, proposal and application of new ideas relevant to their work role, intending to improve organisational performance. IWB is a stage-by-stage behavioural process that involves generating, creating, and implementing ideas. Such initiatives benefit the individual employee, teams and the organisation, establishing the foundation for openness in practice and improving productivity and flexibility (De Jong & Den Hartog, 2010).

At the organisational level, IWB is essential for creating a proactive workforce that finds innovative solutions to complex problems, thus maintaining a competitive advantage (Mansoor, Farrukh et al., 2021). Organisational innovativeness brings innovative practices and solutions to an organisation's processes, products, and systems. Innovative workplace behaviour (IWB) relates to employees who are constantly going one step ahead of their job descriptions to find ways to develop and innovate processes and results. Ven (1986) reported that high levels of IWB promote an organisational culture that encourages problem-solving, creativity and adaptability, which are all qualities that stakeholders require to navigate an evolving business landscape. Then, the employee should write down ways to engage in IWB to improve the overall organisation. Farrukh et al. (2022) add that IWB is a combined contribution of individual and group efforts to offer new products, services, or processes that demonstrate financial or productive advantages and ensure growth to the organisation.

The amount of research about IWB has kept increasing accordingly, as it plays an essential role in driving performance at the organisational level. Thus, a steady barrage of individual innovation is necessary to generate incremental change that fits organisational goals (De Jong & Den Hartog, 2010). Previous studies have proposed many IWB-related factors, including individual characteristics and organisation and environmental factors. External environmental forces can also affect various IWB determinants operating at the individual, team, or organisational levels. This diversity of factors indicates that fostering IWB is a multifaceted strategy encompassing various factors such as leadership style, organisational climate and job characteristics.

Although more and more studies investigate IWB-related antecedents, the results in this research area rarely converge and are sometimes even contradictory. Whereas transformational leadership and supportive organisational cultures have been identified as important antecedents of IWB, the literature also reaches different conclusions about when on IWB has been conducted piecemeal, analysing either personal attributes or organisational factors without considering their interaction. Therefore, further exploration of the drivers of IWB is imperative, especially in public sector contexts, whose innovation challenges and drivers are often different from those in the private sector (Carlucci et al., 2020). Understanding the drivers of innovation in an organisation is critical as it can arise from the individual, group or organisation. Innovation starts with an idea, and the organisation or the world can scale ideas at large. Those who display IWB behaviours also

seem to share some traits, such as cognitive flexibility, resiliency, and a proactive threshold allowing creative thoughts and problem-solving. Scholars have identified several antecedents of IWB, including psychological empowerment, emotional intelligence, agile learning, work engagement, social capital, and readiness for change.

3.0 Methodology

NGT is a structured, consensus-based data collection and problem-solving method that facilitates effective group decision-making. Initially introduced by Van De Ven and Delbecq (1971), NGT has gained popularity in fields such as business, healthcare, social sciences, and public administration, where diverse input is critical for accurate and inclusive decision-making. NGT is particularly effective in contexts where a broad range of perspectives is necessary, as it ensures equal participation and mitigates the influence of dominant voices. NGT encourages each group member to have an equal voice, allowing a well-rounded perspective on the issues while collaboratively working towards the solution. By using this technique, the study was able to capture and focus on the essential factors, guaranteeing that the solutions which have been suggested are practical and applicable to actual circumstances in public organisations

The NGT process typically consists of two main stages: (1) problem identification and discussion and (2) structured voting to prioritise solutions. NGT participants are selected based on expertise, ensuring that they bring in-depth knowledge and varied perspectives. Participants often have at least five years of experience, which enhances the quality of the ideas generated during discussions. These contributions are systematically organised and improved upon before final voting, leading to more reliable decisions than those derived from traditional group methods. The NGT approach offers high-quality insights that benefit from experts' diverse and structured input, making it particularly suited to exploring complex topics like fostering IWB within Malaysia's public sector.

Table 1. Sample size of the NGT method of previous researchers

Researcher	Sample Size
Van de Ven and Delbecq (1971)	5-9 participants
Abdullah & Islam (2011)	7-10 participants
Harvey & Holmes (2012)	6-12 participants
Odu and Okereke (2012)	9-12 participants
Alabibah et al. (2016)	7-14 participants

(Source: Muqsith Ahmad et al., 2017)

The effectiveness of NGT is highly contingent on selecting an optimal sample size to balance interaction quality with time efficiency. This study's sample of 11 participants with 15 to 20 years of working experience was chosen, reflecting prior research on effective NGT sample sizes, which generally range from 5 to 14 participants, as specified in Table1.

Previous studies have shown that smaller groups enhance the quality of discussion, as participants can fully express their viewpoints and engage in meaningful exchanges without overwhelming the process. By choosing experienced public sector professionals with diverse backgrounds, this study ensured that the final consensus would be insightful and relevant to public sector innovation needs.

The NGT employed in this study followed a four-step process. The process begins with identifying the main issue or question to be discussed. In this phase, the researcher determines the problem requiring a solution and selects participants with relevant experience and expertise. Choosing the right participants is critical because NGT relies on inputs from across perspectives to yield accurate and productive results. Participants are usually selected among professionals and experts from different backgrounds so they can provide an in-depth analysis of the issue.

The first step in NGT is the idea generation session, where participants are asked to write their ideas or suggestions individually. This session occurs without interacting with participants, ensuring that each idea shared is original and not influenced by other group members. This approach also helps prevent dominance by more vocal participants, allowing all ideas to be presented equally. Each participant writes down as many ideas as they find relevant to the issue.

Once all ideas have been gathered, the next step is to share and document them in response to guiding questions. In this phase, each participant is asked to share their ideas with the group, and the researcher notes each suggestion in detail on a paper. This enables other participants to view all the opinions presented without any evaluation or criticism at this stage. This step aims to create an open and respectful atmosphere among participants. The third step is in-depth discussion. In this phase, the group thoroughly discusses each idea to understand better each suggestion's strengths, weaknesses, and possible impacts. Participants may ask questions or provide additional comments to refine the ideas presented. The researcher plays a crucial role in guiding the discussion to ensure it runs smoothly and that each participant has the opportunity to voice their thoughts. This session enriches and refines each idea, resulting in more viable suggestions.

The final step is the voting and ranking process. Each participant is asked to assign a score or rating to the ideas discussed. A five-point rating scale was utilised in the voting process, with each participant assigning scores from 1 (least important) to 5 (most important) for each factor discussed. This voting produces a prioritised list of ideas, ranked according to their relevance and suitability for addressing the issue. The results of this ranking enable the researcher to identify the most practical ideas for further action. By emphasising structured voting and refinement, this methodology helped distil public sector experts' collective knowledge, resulting in a clear and prioritised list of factors essential to promoting IWB in Malaysian public organisations.

NGT is highly effective in achieving more objective and structured decisions as it involves collective insights with fair evaluation from each participant. NGT reduces the risk of bias or undue influence in decision-making by ensuring that all ideas are heard and considered. Additionally, NGT produces a more substantial consensus, as every participant

is allowed to contribute their views and opinions. This method is precious in research or studies where input from various parties is required to achieve more holistic and realistic solutions.

4.0 Results

This section presents the primary findings of this study, which focuses on the individual factors that shape IWB among public sector employees in Malaysia. Expert insights were systematically collected and analysed using the structured NGT, providing a robust understanding of how various factors impact innovation within the public sector. The voting results in Table 2 reveal that certain vital factors, specifically psychological empowerment, agile learning, and emotional intelligence, are most influential in promoting IWB, aligning with prior research on determinants of IWB in organisational settings.

Table 2. NGT voting result

Individual Factors	Voters											Total item score	%	Rank Priority	Voter Consensus
	1	2	3	4	5	6	7	8	9	10	11				
Psychological Empowerment	5	5	5	5	5	5	4	4	5	5	5	53	96.36	1	Suitable
Perceived Role Clarity	4	5	5	4	5	5	4	4	5	4	5	50	90.91	4	Suitable
Social Capital	5	5	5	3	5	5	4	4	5	4	4	49	89.09	5	Suitable
Emotional Intelligence	5	5	5	4	5	5	4	4	5	5	4	51	92.73	3	Suitable
Proactive Behaviour	4	5	5	4	5	5	4	4	5	4	4	49	89.09	5	Suitable
Competency	5	5	5	4	5	4	4	4	5	4	4	49	89.09	5	Suitable
Self-efficacy	5	5	5	3	5	4	4	4	5	4	4	48	87.27	6	Suitable
Readiness to Change	4	5	5	3	5	4	4	4	5	4	5	48	87.27	6	Suitable
Agile Learning	5	5	5	5	5	5	4	4	5	4	5	52	94.55	2	Suitable
Work Engagement	5	5	5	4	5	4	4	4	5	4	5	50	90.91	4	Suitable

Organisational Commitment	5	5	5	4	5	4	4	4	5	4	5	50	90.91	4	Suitable
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4.1 Analysis

The detailed analysis of the voting outcomes underscores the relative importance of each factor, as evaluated by the study participants. The NGT-Plus approach, incorporating Mustapha et al.'s (2022) 70% criterion, was used to evaluate the acceptability and potential impact of the proposed factors on public sector innovation. Based on the findings, it can be concluded that all participating experts reached a consensus, agreeing that the identified factors are both relevant and practical for enhancing IWB within their organisations. The findings from this study indicate that IWB in the public sector is shaped by individual factors that significantly influence employees' ability to adapt and contribute creatively.

By employing the NGT, the study identified and validated 11 critical factors for IWB among public sector employees in Malaysia. These factors were grouped into individual-level factors, such as psychological empowerment and emotional intelligence to innovation. This structured approach revealed that fostering individual capabilities is essential for creating a culture of continuous innovation within the public sector. The ranked findings are presented in Table 3, with psychological empowerment emerging as the highest-rated factor, followed by agile learning and emotional intelligence. These top-ranking factors reflect a consensus among experts on the individual-level determinants of IWB in the public sector.

Table 3. The rank of individual factors on innovative work behaviour

Individual Factors	Previous Rank	Rank
Psychological Empowerment	1	1
Agile Learning	9	2
Emotional Intelligence	4	3
Perceived Role Clarity	2	4
Work Engagement	10	4
Organisational Commitment	11	4
Social Capital	3	5
Proactive Behaviour	5	5
Competency	6	5
Self-efficacy	7	6
Readiness to Change	8	6

As in previous analysis, psychological empowerment ranks first as the top factor influencing IWB. Its consistent ranking underscores the significance of employees feeling empowered in their roles, which enhances their willingness and motivation to engage in innovative behaviour. Psychological empowerment includes a sense of autonomy, purpose, and impact, which collectively boost employees' confidence in contributing creatively within their roles. The stability of psychological empowerment at the top suggests it is foundational for fostering IWB, as employees who feel psychologically supported and

capable are more likely to engage in initiatives that push boundaries and explore novel solutions.

Agile learning has risen significantly in rank, moving from ninth to second, indicating a growing emphasis on the need for adaptability and continuous learning in today's work environment. This increase may reflect the dynamic nature of public sector work, which increasingly requires employees to adapt quickly to policy changes, technological advancements, and shifting societal needs. Agile learning refers to acquiring new skills, adjusting to changes, and remaining resilient in the face of evolving challenges. The shift in ranking for agile learning suggests that employees and organisations recognise the importance of continuous learning as a strategic tool for maintaining competitiveness and effectiveness in public service delivery.

Emotional intelligence has also increased in importance, moving from fourth to third position. This shift indicates a greater recognition of the value of interpersonal skills and emotional regulation in supporting a collaborative and innovative work environment. Emotional intelligence, which includes self-awareness, empathy, and effective communication, is critical for managing relationships and fostering a positive workplace culture. Since innovation often requires teamwork and the ability to navigate complex social dynamics, emotional intelligence is essential for encouraging employees to share ideas, resolve conflicts, and build supportive networks. The rise in rank highlights how emotional intelligence is increasingly viewed as a catalyst for IWB, particularly in team-oriented public sector roles.

Conversely, perceived role clarity has dropped from second to fourth, though it remains a high-ranking factor. Role clarity is essential as it provides employees with a clear understanding of their responsibilities, enabling them to focus their creativity within defined boundaries. The slight drop may suggest that while role clarity is still valued, it is considered slightly less critical than factors such as adaptability and interpersonal skills. This change reflects a shift in emphasis from strictly defined roles to a more flexible approach that values the ability to respond dynamically to changing situations. Although role clarity is essential for guiding employees, the increase in importance of agile learning and emotional intelligence implies a need for employees to go beyond their roles and proactively engage with broader organisational goals.

Work engagement and organisational commitment have experienced a significant rise in rank, moving from tenth and eleventh positions to a shared fourth rank. These factors are crucial for building an engaged workforce committed to the organisation's mission. Work engagement involves employees' emotional investment in their tasks, while organisational commitment reflects their loyalty. The improved ranking suggests that organisations now place greater value on cultivating a workforce that is productive and deeply invested in their work. This shift could stem from recognising that engaged and committed employees are more likely to innovate, as they are motivated to contribute to the organisation's long-term success.

Social capital has dropped from third to fifth, indicating a slight decrease in perceived importance. Social capital encompasses an organisation's networks, relationships, and

trust, facilitating information sharing and collaboration. While still valued, the lower ranking suggests that emotional intelligence and agile learning are now seen as more direct enablers of IWB. The decline in social capital's rank may also reflect a shift toward valuing individual competencies over collective networks in driving innovation. However, it remains relevant, as it supports collaboration and provides the relational foundation for teamwork.

The competency factor, which refers to the skills and knowledge required to perform tasks effectively, holds steady in fifth place. Competency ensures that employees have the technical abilities to implement innovative ideas, bridging the gap between conceptual ideas and practical applications. The stable ranking suggests that while technical skills are fundamental, they complement psychological and interpersonal factors. Similarly, proactivity and self-efficacy underscore the importance of personal initiative and confidence in the workplace. Although these factors are slightly lower in ranking, they are necessary for empowering employees to contribute actively to organisational innovation.

Lastly, self-efficacy and readiness to change share the sixth position, reflecting their importance in equipping employees to embrace innovation. Self-efficacy, or an individual's belief in their capabilities, supports resilience and a proactive approach to challenges, while readiness to change indicates an openness to new methods and ideas. The consistency in these factors' rankings suggests that organisations value employees' confidence and flexibility as foundational for sustaining IWB, particularly in environments that demand ongoing adaptation.

5.0 Discussion

This study empirically outlines the critical factors for the IWB of public sector employees in Malaysia as filtered by experts using the NGT. In particular, psychological empowerment emerged as the most important factor, signifying the need to give employees autonomy and control over their work. This sense of empowerment inspires employees to be open to possibilities, experiment with novel techniques, and think outside the box. Psychological empowerment has been associated with proactive behaviour since employees who score higher on self-efficacy and perceived control are more likely to take initiative and find new ways to solve problems. As highlighted in this study, the importance of IWB among the employees in public sector organisations in Malaysia suggests that programmes or training that enhance employees' confidence and autonomy may be beneficial in increasing IWB. Agile learning came second, clarifying the importance of flexibility and dynamic skill development in a rapidly changing public sector environment. In this rapidly changing landscape, employees with the essential learning agility will adapt and thrive under new challenges while keeping themselves competitive. With a focus on constant enhancement, agile learning enables employees to sharpen their abilities and develop revolutionary concepts. Consequently, public organisations should explore embedding agile learning frameworks in professional development programs, whereby employees can study independently and respond to change faster.

The third most important factor, emotional intelligence, also indicates the value of soft skills and emotional regulation to a cooperative climate that stimulates innovation. Public sector employees typically work in teams much more diverse than the average private sector team and regularly interface with multiple stakeholders, making navigating these complex relationships more challenging and increasing the need for vital emotional intelligence. Workers with Emotional Intelligence tend to cope better with stress, are more likely to lead healthy conversations, feel at ease solving conflicts, and collaborate more efficiently. This means that by providing training programs that enhance emotional intelligence, one can further enrich teamwork, facilitate communication and thus reinforce IWB by building a supportive work environment that appreciates cooperation and open-mindedness.

Apart from the highest-ranked factors, perceived role clarity, work engagement, and organisational commitment must be nurtured for IWB. A clear perception of their role helps employees have a lucid understanding of their responsibility, where they can develop new ideas without confusion or doubt. The scope of the duties allows employees to concentrate on adapting innovative ideas that align with the organisation's goals. Organisational leaders can help promote clarity of role by providing clear guidelines and defined targets, and employees should also be encouraged to use their initiative and innovate in their role.

Additionally, having high work engagement will further strengthen IWB since committed employees tend to focus more on creative problem-solving. An engaged employee also has a higher probability of facing the tasks with a positive attitude, accepting the challenges and looking for ways to improve the existing processes. To quote a colleague, this degree of involvement raises satisfaction in their work and improves IWB because staff feel emotionally engaged in the organisation's success. Egalitarianism is also a building block of work engagement, and managers can create egalitarian organisational cultures through systems that regularly recognise work, offer flexible work arrangements, and develop an inclusive culture that recognises employees' contributions.

Finally, social capital, proactive behaviour and competency are drivers of innovation culture. Social capital, which encompasses support networks and encouraging interpersonal relationships at work, gives employees access to the resources to execute new ideas. Proactive behaviour, which is the tendency to search for and take advantage of new opportunities, lets the employees go for IWB without waiting for such orders from higher management. Competence, possessing the relevant skills and knowledge, is crucial as employees must be able to create and implement. All these factors combined create a work environment that allows employees to think differently, work together, and add value to the organisation.

The findings of this study provide actionable ways for public sector policymakers and human resource managers in Malaysia to foster and endure IWB. Fostering a culture of creativity and adaptability by focusing on psychological empowerment, agile learning, and emotional intelligence. For example, instigating a mentoring system can open the channels of knowledge sharing so that employees can learn from one another and increase their innovative capabilities. Employers can foster agile learning by integrating digital learning

tools and workshops to help employees stay abreast of everchanging demands and implement innovative solutions. Leadership training in emotional intelligence and situational management strategies can go far in creating a supportive culture of collaboration and valuing employee contributions and creativity. Public organisations focusing on these areas may boost their internal efficacy as well as the delivery of services with greater public satisfaction and trust.

6.0 Conclusion and Recommendation

In summary, this research indicates it is important to promote IWB among public employees in Malaysia. The NGT results established that psychological empowerment, agile learning, and emotional intelligence are significant enablers of the organisational environment to ensure an environment for creativity and adaptability. By applying these factors through policies, training and culture, public sector organisations can increase the quality of services they provide, innovate and respond effectively to the evolving demands of the public.

From a public administration standpoint, the factors behind IWB are valuable as they provide policymakers, managers, and leaders critical insight about cultivating a climate of innovation in the public sector. Psychological empowerment, for example, could be nurtured with increased autonomy and a sense of ownership that is intrinsically motivating in creatively solving problems. Agile learning programs can further prepare employees with crucial skills, allowing them to quickly adjust to policy changes, new technologies, and evolving expectations. On the other hand, emotional intelligence encourages constructive collaboration, enabling employees to face hurdles and nurturing the professional bonds needed for an innovative work experience together.

Organisations can encourage empowerment by giving employees more control over decisions and participatory goal-setting to provide practical strategies that enhance IWB. Ongoing learning programs that include digital and problem-solving capabilities keep employees nimble and creative. Training and development in emotional intelligence, using communication and compassion as tools, nurtures workplace culture and contributes to ongoing innovation. Acknowledging and appreciating creative contributions among various units of the organisation also reinforces the need for IWB and motivates employees to engage in creative projects.

Finally, structured goal-setting, proactive behaviour, and clearly defined role expectations also give employees a sense of direction and, paradoxically, space to innovate. Resource digital tools such as collaborative platforms and data analysis software can be used to simplify tasks, allowing employees to focus on strategic, innovative projects. This study could be a stepping stone to a better understanding IWB in Malaysia's public sector. However, future work must explore how different organisational, leadership and environmental factors impact innovation. Investigating IWB in different industries could expand the understanding of IWB influences beyond this context.

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Article Contribution to Related Field of Study

Such insights are critical in filling gaps in the literature concerning knowledge of individual factors that promote the IWB of public sector employees. This study provides an in-depth analysis of the IWB supported by identifying and prioritising the critical factors from the IWB perspective in line with the five-year Malaysia Plan and the Sustainable Development Goals 2030 agenda. Strengthening IWB in the public sector is essential because it can stimulate its adoption in practice, ultimately leading to more effective and citizen-sensitive public service delivery.

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