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Demystifying Knowledge Work Practices and Performance in the Public Sector

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Abstract

The performance of the public sector, especially its officers, is vital to a nation's growth in light of the challenges clouding public service. Despite numerous efforts and initiatives, the level of efficiency of Malaysian public sector officers remains feeble, and public dissatisfaction has led to criticism of the administration. Therefore, addressing issues surrounding the performance of public sector officers is imperative to improve public perception. Guided by Drucker's knowledge work productivity theory, this research aims to discover the relationship between knowledge work practices toward affective commitment (AC) and knowledge worker performance (KWP). This research adopted a cross-sectional design involving a survey of 395 administrative and diplomatic officers who were recruited via stratified random sampling. A variance-based structural equation modeling using Smart PLS 4.0 was conducted to analyze the data. Results show that job crafting (JC) and continuous learning (CL) improve KWP, job-related innovation (JRI) does not impact KWP, and AC exerts a mediating impact on the relationship between knowledge work practices and KWP. This study provides impetus to knowledge productivity and human behavior by integrating JC into Drucker's theory.

Keywords:

Knowledge Worker Performance;
Affective Commitment;
Productivity;
Practices; Public Sector;
PLS-SEM.

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1- Introduction

1-1- Research Background

The individual performance of knowledge workers drives the success of public or private knowledge-intensive organizations [1, 2]. Therefore, improving knowledge worker performance (KWP) presents a key challenge in the current knowledge era [3]. Knowledge workers involve those individuals who perform tasks built on knowledge and

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information, thus possessing a high level of education [4] and equipped with professional knowledge and skills [3, 5]. In addition to utilizing implicit and explicit knowledge, knowledge workers also possess personal knowledge that is difficult to imitate, thereby making them essential resources for enhancing an organization's performance [5]. The term "knowledge worker" was introduced by Drucker, who highlighted that those factors influencing KWP differ from those affecting the performance of manual workers. Therefore, Drucker identified several knowledge work practices that are required to improve the productivity and performance of knowledge workers. Drucker also emphasized the importance of continuous learning (CL) and teaching for knowledge workers, which significantly contribute to task accomplishment and organizational enhancement. Tasks given to knowledge workers should encourage continuous innovation and further recognize them as valuable assets in organizations. In this case, one of the major criteria for identifying knowledge workers is their ability to add value to their work [6].

KWP pertains to how individuals execute and accomplish their tasks and activities to achieve their organizational goals. This concept encompasses problem-solving abilities and requires strategic thinking and task management skills to achieve one's objectives and goals efficiently and effectively [6–8]. KWP is significantly affected by the dynamic and challenging environments often encountered in public service markets. A similar scenario is mirrored on Malaysian soil, prompting the Malaysian government to prioritize improving the efficiency and innovativeness of public service employees, which are key to achieving excellent performance [9] according to the 11th [10] and 12th Malaysian Plans [11]. The Malaysian government thus implemented several strategies to ensure the continuous commitment and improvement of its employees. Various initiatives were also launched to strengthen and ensure the effectiveness of public service delivery, such as the Government Transformation Program [12], Shared Prosperity Vision 2030 [13], and the *Malaysia Madani* concept, through which the Malaysian government set goals to ensure that all of its policies and their implementations are constantly improved [14]. As such, the Malaysian government has prioritized improving the performance of its public service officers, which are known as knowledge workers [15].

The public service department offers a variety of training programs for employees, including in-service courses, fellowship training awards, collaboration initiatives between the government and private sector, and internal training programs to produce highly skilled and effective public service officers [16, 17]. Despite these efforts, the Public Service Department Involvement Index (JPA) [18] reported that several public ministries in Malaysia have very limited involvement in these initiatives [19-21]. In addition, the Institute for Management Development (IMD) reported low Malaysian government efficiency in 2020, ranking 30th place in the world, which further declined to 38th in 2022 [22], thus corroborating the findings of JPA. In other words, the effectiveness of the Malaysian government, which is considered a factor in the IMD competitiveness assessment, has decreased compared with that of adjacent nations, such as Singapore (4th place), Thailand (31st place), and Indonesia (35th place) [22]. Moreover, the Auditor General Report in 2022 revealed a substantial increase in the loss of public funds from RM380.57 million in 2019 to RM680.71 million in 2021 due to certain deficiencies, such as lack of knowledge, ineffective information governance, and inadequate supervision [23]. Several scholars have noted the detrimental effects of these issues on the Malaysian government, such as delays in service delivery, poor quality of service, and dissemination of misleading information by government agencies [24, 25]. In this case, does the public sector possess the necessary personnel, capacities, resources, and motivations to meet the country's evolving needs? Such concerns have led taxpayers to voice their dissatisfaction, thereby resulting in heightened public criticism and condemnation of the administration.

This study focuses on the role of administrative and diplomatic officers (ADOs), whose primary responsibilities involve planning, developing, and implementing policies across various ministries [26]. These responsibilities also entail high cognitive demands, including complex problem solving, creative thinking, and effective decision-making [27, 28]. Innovative factors, such as job crafting (JC) and job-related innovation (JRI), and acquiring knowledge and skills through continuous learning (CL), are crucial in enhancing these abilities in terms of efficiency and effectiveness [29–31]. Wrzesniewski and Dutton [32] pointed out that the job acts as a building block between the organization and the employee [33]. Thus, improving the performance of public sector officers should focus on a job-related perspective. Another significant aspect of public sector performance is the level of commitment of public sector knowledge workers, which may result in high job performance and increased job satisfaction [34–37].

This study addresses several gaps in the current knowledge base. One of the most important contributions of this study is using Drucker's theory to fill the gaps in research related to knowledge work productivity and to understand KWP in the public sector, particularly in Malaysia. Recent studies have emphasized the need to understand the role of knowledge work productivity in improving KWP; however, most of the extant studies were carried out in Pakistan and China [38–41]. In addition, although several studies were already conducted in the context of the Malaysian government, the last empirical study was conducted in 2016 [42]. This study also acknowledges the importance of ADOs in enhancing the overall performance of the public sector. However, existing research on government efficiency in Malaysia tends to overlook issues from a job-related perspective and instead focus on top-bottom approaches, such as human capital development, knowledge management, and leadership perspectives [43–46]. While these approaches are valuable, they may not fully capture the complexities of ADOs' roles and responsibilities within knowledge-intensive organizations. In sum, a top-bottom approach alone cannot sufficiently address the changing nature of work conditions, thus creating a knowledge gap.

To bridge this gap, a bottom-top approach should be adopted to better understand and address the unique challenges being faced by ADOs in the current knowledge era [47–49]. These environments observe a growing demand for innovative and proactive employees [50]. Therefore, integrating a bottom-up approach, such as JC, into the framework can offer a comprehensive understanding of how ADOs shape their roles independently to meet the demands of knowledge-intensive organizations. Che et al. [5] also underscored the importance of addressing the research gaps related to the affective commitment (AC) of knowledge workers. Another meta-analysis and systematic literature review [51, 52] identified close ties between organizational commitment and employee performance. Therefore, investigating these issues simultaneously from the perspective of knowledge work productivity can provide a remarkable contribution to the literature. An ideal situation is having highly effective and productive knowledge workers who consistently deliver valuable contributions that advance the knowledge work practices of their organizations. For this reason, this research aims to develop a model for KWP based on Drucker's knowledge work practices [3]. The following objectives are thus proposed: (1) to investigate the relationship between knowledge work practices toward KWP and AC, (2) to examine the relationship between AC and KWP, and (3) to examine the mediating role of AC in the relationship between knowledge work practices and KWP.

1-2- Theoretical Background

Knowledge work productivity refers to individuals' ability to improve an organization's knowledge-based production process through their skills and knowledge. This concept determines how knowledge workers efficiently achieve their organizations' objectives and goals based on their ability, skills, and knowledge [53]. Drucker [3] argued that managing knowledge workers will be a major challenge for organizations in the 21st century. Therefore, knowledge workers require factors that enhance their productivity and translate their improved productivity into enhanced performance. According to Sahibzada et al. [54], knowledge work productivity significantly impacts knowledge-intensive organizations, whose success relies on the efforts of knowledge workers. These workers acquire knowledge systematically, obtain a high level of education (at least a bachelor's degree), work primarily with updated knowledge within their specialty area, and enforce such knowledge for their organizations' benefit [4]. They can utilize knowledge to solve problems and make proficient decisions; thus, organizations depend on the ability of these workers to deal with complex issues [55]. Bearing this in mind, many knowledge-intensive organizations have begun to embrace the idea that knowledge workers are essential to achieving high performance.

This study is grounded on Drucker's knowledge work productivity theory [3], which emphasizes the importance of implementing several knowledge work practices in an organization to enhance knowledge work productivity. These practices include promoting job autonomy, facilitating continuous teaching and learning, enhancing the qualitative and quantitative dimensions of performance, making innovation a job requirement, and ensuring fair treatment among knowledge workers [56, 38]. According to this theory, knowledge work involves intellectual and cognitive tasks that comprise creating and applying knowledge for organizational improvement [4, 57]. These practices reflect the unique nature of knowledge-intensive work in contrast to manual work; thus, knowledge work productivity improves the organizational performance of public and private sector agencies [56]. Drucker's theory also suggests that treating employees as valuable organizational assets can enhance their commitment and ultimately improve their performance [58]. This contention aligns with the findings of other scholars who suggest that employees are more likely to perform better when they are more engaged with their organizations [8, 56, 59]. In sum, employee organizational commitment drives employee productivity and performance.

However, the role of knowledge work productivity in enhancing the performance of knowledge workers requires further exploration using Drucker's theory [41, 60-62]. Although several studies have investigated the knowledge work productivity of public sector officers in Malaysia, the last empirical attempt was that of Yusoff et al. [42]. To date, the use of Drucker's knowledge work productivity theory in investigating KWP remains limited, with most studies focusing on the impact of knowledge management on knowledge work productivity [39, 40, 43]. Although knowledge work productivity concepts have been primarily featured in studies focusing on knowledge management, their application in understanding employee behavior has been relatively insufficient. Despite Drucker's focus on implementing various factors among employees to enhance knowledge worker productivity, such as task definition, job autonomy, lifelong learning, and innovation, many researchers have failed to comprehend the importance of these factors in improving the commitment and performance of knowledge workers, particularly in the public sector. Nevertheless, these studies have paved the way for the implementation of Drucker's knowledge work practices to enhance KWP. This research thus aims to investigate the determinants of KWP by applying the knowledge work productivity concept in the context of the Malaysian public sector. This study adopts Drucker's knowledge work productivity theory [3] to help the public sector understand the impact of the knowledge work practices of knowledge workers in the government sector. This theory also reveals characteristics of knowledge work practices that can improve the efficiency of organizations. According to Drucker, organizations should focus on knowledge work practices (e.g., job definition, job autonomy, lifelong learning, and innovation as job requirements) and their relationship with work outcomes to improve employee efficiency. Drucker also highlighted the importance of treating knowledge workers as assets to eventually enhance their organizational commitment.

This study aims to strengthen the existing knowledge work practices by including JC, an inadequately studied factor in the Malaysian government setting. This study also proposes AC as a mediator in the relationship between knowledge work practices and KWP. Figure 1 illustrates the conceptual framework comprising KWP, knowledge work practices, and AC as the mediators to enhance the relationships in this model.

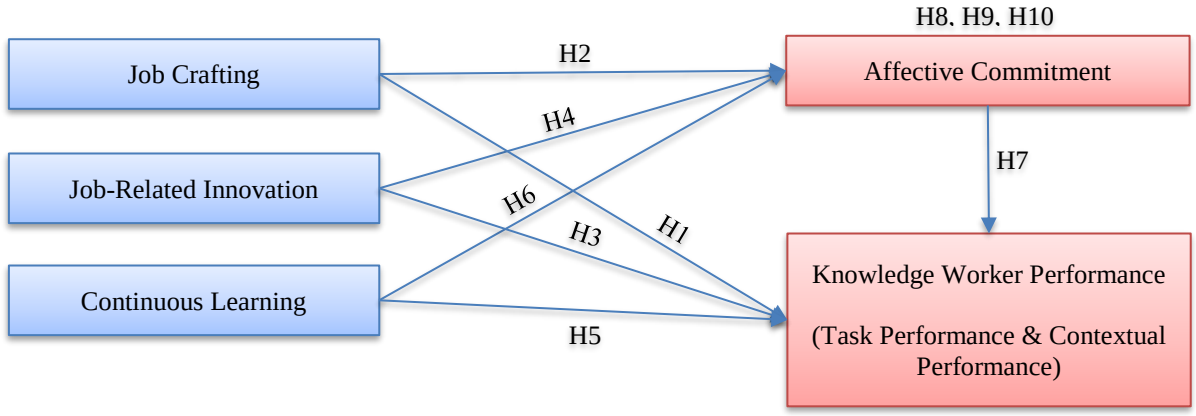

Figure 1. Research Model

2- Review of the Literature and Hypothesis Development

2-1- Knowledge Worker Performance

Employee performance or KWP refers to a set of behaviors that contribute to organizational goals [8, 63]. Employee performance is also seen as employee productivity or output, which assists organizations in achieving their goals efficiently and effectively [7, 8, 64]. As a result, employee performance significantly impacts an organization's success and continuity [1, 2].

According to Koopmans et al. [65], individual work performance is a multidimensional concept that consists of task performance, contextual performance, adaptive performance, and counterproductive performance. However, this study focuses only on task and contextual performance as suggested by Motowildo et al. [66]. Task performance refers to an employee's ability and efficiency in fulfilling his/her job duties as stated in his/her job description. Meanwhile, contextual performance is an extra-role behavior that mirrors an employee's effort in an organization outside the scope of his/her job description. Understanding individual work performance is critical in the scope of work behavior. For instance, individual work performance is crucial during an economic downturn when human activity is higher than economic activity [67]. Therefore, those factors that positively influence employee performance warrant further exploration to help organizations make the necessary changes and take action based on their needs.

2-2- Job Crafting

JC refers to the physical and cognitive changes that an employee initiates in his/her task [32, 68] without the direction of his/her supervisor. Accordingly, JC is classified as a bottom-top approach [69, 70] that allows employees to restructure their responsibilities and duties [48]. JC occurs when employees modify their jobs by increasing or reducing the time they spend on each task. For example, an employee who increases his/her time for task execution may manage to take on additional tasks, while those employees who reduce their time for task execution may pass their other tasks to their colleagues or subordinates [71].

Organizations should prioritize JC given its benefits for employees' work performance [68, 70, 72] and AC [49, 73, 74]. JC allows employees to tailor their jobs to their needs, preferences, and abilities and to the changing conditions of their work environment. Q. Iqbal [75] investigated the employees of Pakistan's banking sector that currently faces staff shortages and found that those employees who engage in JC demonstrate an improved alignment with their roles, thus increasing their organizational commitment. Sundar and Brucker [76] claimed that individuals with higher levels of education tend to engage in JC given their greater power or autonomy and better JC opportunities. This finding suggests that JC aligns well with the characteristics of knowledge workers. The following hypotheses are therefore proposed:

H1: *JC is positively related to KWP.*

H2: *JC is positively related to AC.*

2-3- Job-Related Innovation

JRI refers to the degree to which employees perceive innovation as part of their official responsibilities [62, 77]. JRI is a formal boundary condition that is expected to lead to the emergence of other outcomes, such as innovative behavior, creativity, problem-solving attributes, and knowledge-based behaviors [62, 78]. Many assume that public sector agencies

cannot innovate due to bureaucracy [77, 79, 80]. However, innovation is not solely characterized by novel ideas; instead, this concept involves the implementation of new practices, such as transforming ideas that add value to existing knowledge and improving processes or procedures [81]. Applying innovation in the public sector is not entirely impossible and may even help address crucial issues, such as budget limitations [82], and ensure that the high expectations of the public are satisfied [79, 83].

From an efficiency perspective, jobs that demand innovation tend to be successful as they enable employees to generate, adopt, and implement innovative ideas that benefit their work [77, 84]. According to Demircioglu [85], innovation climate positively impacts AC among public sector employees. Many studies have also documented the impacts of organizational commitment and AC on innovative work behaviors [86-89]. However, research on the effect of JRI on AC remains limited, and this paper aims to fill this gap by investigating the relationship between these factors and confirming whether JRI positively affects AC in the Malaysian public sector. The following hypotheses are therefore proposed:

H3: *JRI is positively related to KWP.*

H4: *JRI is positively related to AC.*

2-4- Continuous Learning

CL refers to ongoing progress and growth that helps employees acquire knowledge and skills to perform their jobs effectively and achieve their organizational objectives [90, 91]. Learning is one of the best ways to improve employee performance in unpredictable environments [36, 92, 93], such as in public organizations [94, 95]. Numerous studies have sought to elucidate the benefits of CL for organizations, such as increased commitment [96, 97], improved performance [98], increased work engagement [96, 99], and enhanced leadership behavior among employees [93, 100]. The bibliometric study by Anand & Brix [101] reveals a dearth of research on learning organization and performance in the public sector, particularly in Malaysia. Moreover, previous studies on learning organization are mostly conducted in West and European regions. The bibliometric study also suggests future research to focus on using organizational learning to address empirical problems in the public sector, reduce human errors, and enhance organizational performance.

Drawing on Drucker's management principles, knowledge workers are responsible for continuously learning and generating knowledge through self-reflection and teaching others [62]. Learning is crucial for knowledge workers, particularly ADOs, whose work primarily revolves around information retrieval and networking [47]. To commit themselves to their organizations' core values, knowledge workers should strengthen their competencies by developing knowledge through informal or formal learning. Hendri [102] empirically demonstrated the substantial impact of learning on an organization's commitment. Although many scholars define AC as the most prominent form of commitment compared with normative and continuous commitment [52, 85, 103, 104], the relationship between CL and AC has been widely ignored in previous research.

In sum, the literature has produced mixed results, thus necessitating further investigations into the correlation among CL, AC, and KWP in the public sector. The following hypotheses are then proposed:

H5: *CL is positively related to KWP.*

H6: *CL is positively related to AC.*

2-5- Affective Commitment

Organizational commitment refers to an employee's attachment, level of involvement, and bond with his/her organization [8, 81, 105]. A high organizational commitment is associated with positive outcomes, such as low turnover rate, improved job performance, increased job satisfaction, and high work involvement [1, 106]. The three major components of organizational commitment are affective, continuance, and normative commitment as coined by Meyer [107]. AC refers to an employee's emotional attachment and involvement in his/her organization, continuance commitment refers to an employee's attachment to his/her organization due to needs or perceived cost, and normative commitment refers to an employee's moral obligation due to his/her feeling of responsibility toward the organization [107]. Several researchers claim that AC is more straightforward to measure than continuance and normative commitment [85, 103, 108]. Other scholars [5, 107, 109, 110] define AC as an essential or central characteristic of organizational commitment that has a stronger influence on work behaviors compared with the other components of commitment. Mercurio [110] empirically confirmed that AC correlates with an extensive range of behavioral characteristics, such as helping coworkers, working longer, and knowledge sharing. Therefore, compared with the other commitment components, AC has a stronger correlation with work behavior and is thus employed in this study.

Uraon & Gupta [111] found that AC mediates the relationship between psychological climate and the task and contextual performance of public company officers in India. Raineri [112], Ribeiro et al. [113], and Torlak et al. [44] found that AC encourages employees to work more efficiently given that such commitment represents these

employees' positive feelings toward their organizations, thus inspiring them to further contribute to their organizations' goals. Park et al. [114] suggested that hypotheses regarding the relationship between AC and job performance should be formulated by using different sets of samples given the inconsistent findings on this relationship. Many studies have investigated the mediating role of AC and found that mediators play an essential role as an incremental character among variables [110, 113, 115]. Other scholars show that employees with higher AC are more faithful and dedicated to their organizations and are thus likely to contribute more and improve their performance [109, 111, 116]. However, other studies find no mediating effect on the relationship among leadership member exchange, AC, and task performance [5].

While AC traditionally serves as an incremental factor, Somaskandan et al. [117, 118] employed AC as a moderator to explain the relationship between organizational learning and continuous commitment and found that AC strengthens such relationship. While AC has been extensively investigated, the extant literature has produced fragmented findings [114, 119]. Therefore, a more comprehensive understanding of AC is needed, particularly in the context of knowledge workers in the Malaysian public sector. The following hypotheses are then proposed:

H7: *AC is positively related to KWP.*

H8: *AC mediates the positive relationship between JC and KWP.*

H9: *AC mediates the positive relationship between JRI and KWP.*

H10: *AC mediates the positive relationship between CL and KWP.*

3- Research Methodology

3-1- Sample, Procedure, and Respondents Profile

This study employed a cross-sectional quantitative approach where the respondents' perspectives were captured at a specific time [120]. The analysis was conducted at the individual level. The initial questionnaire was refined through a pre-test during the questionnaire development stage. This pre-test aimed to assess several crucial aspects, including the appropriateness of the scale, the instructions, the construct definition, the item representation, and the sequence of questions. The validation involved 6 academicians and 11 public sector officers. Cognitive interviews were also conducted among 11 public sector officers to ensure clarity and eliminate any potential ambiguity in the questionnaire. Several methods were employed during these interviews, including thinking aloud, probing questions, rephrasing the questions in the questionnaire, and assessing the respondents' recalling strategies [121, 122]. This comprehensive approach sought to enhance the overall quality of the instrument by refining its content, structure, and comprehensibility based on the feedback gathered from the 11 public sector officers. The primary data were collected from ADOs in the Malaysian government from grades M41 to M54 through an online survey. These ADOs participated on a voluntary basis, and their responses were collected within four months of distributing the questionnaires. To ensure a high response rate, the researcher followed up and sent reminder emails to the human resource department of each ministry. The ADOs were selected using a stratified random sampling technique to maintain homogeneity within each stratum or grade of ADOs. This sampling method also ensures that the selected ADOs are sufficiently representative of the overall population and its subgroups.

The Malaysian government has 27 ministries. The sample size was calculated following the approach of Krejcie and Morgan [123], and a total of 368 officers was deemed sufficient. To ensure that a sufficient number of ADOs would participate in the study, 750 questionnaires were emailed to the respective ministries, and 426 responses were received, yielding a 57% response rate. Among the 426 retrieved responses, 395 were deemed valid, and 31 were dropped due to outliers and straightlining issues. Most of the participants were aged 31–40 years (43.5%), 53.8%, 42.0%, and 4.3% held master's, bachelor's, and doctorate degrees, respectively, 33.7% had been serving in the public sector for 11–15 years, and 10.6% had been serving for more than 20 years.

3-2- Measurement of Study

A total of 10 items were adapted from Koopmans et al. [124], Pradhan & Jena [125], and Razzaq et al. [8] to measure KWP. This variable was measured as a second-order construct that comprises two first-order reflective constructs, namely, contextual performance [124] and task performance [125, 8], with each construct having five items. A total of six items were adapted from Meyer et al. [107] to measure AC, six items were adapted from Slemp [126] and Sundar & Brucker [76] to assess JC, six items were adapted from Shujahat et al. [62] and Yuan & Woodman [77] to measure JRI, six items were adapted from Yang et al. [91] to measure CL, and seven items were adapted from Miller & Simmering [127] to measure the marker variable. The respondents were asked to express their agreement or disagreement with each of these items on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Figure 2 shows the research methodology flowchart.

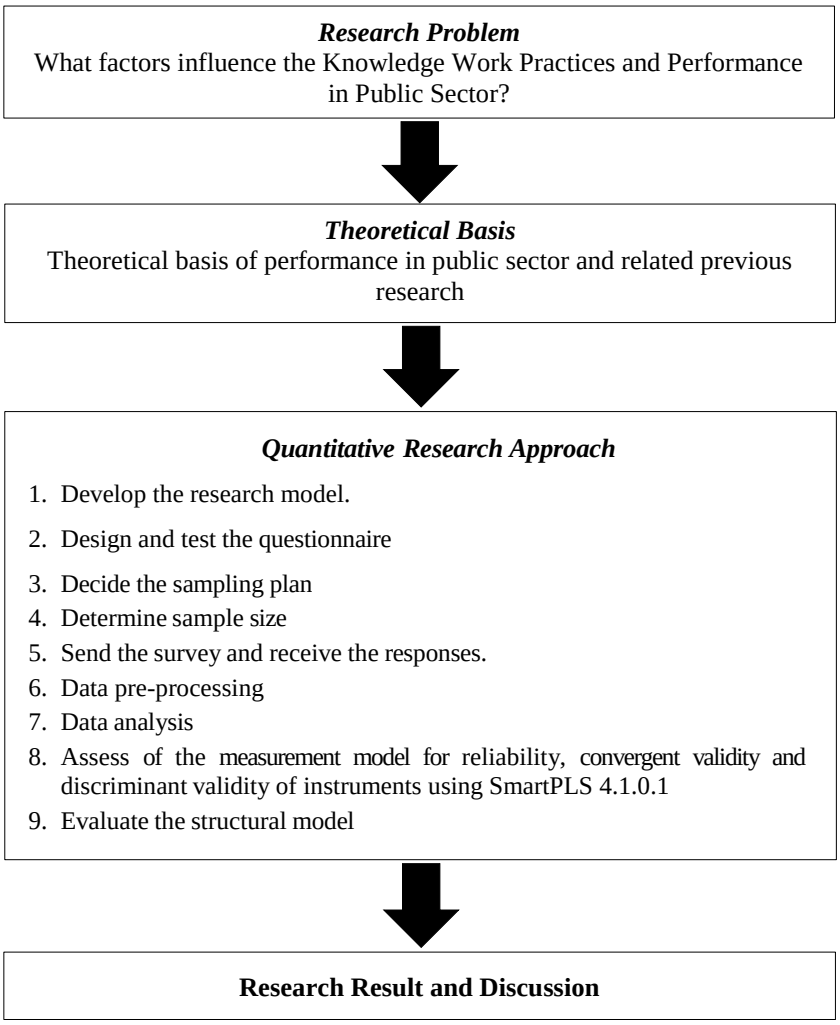

Figure 2. Research Methodology Flowchart

4- Data Analysis

4-1-Analytical Approach

Partial least squares (PLS)–structural equation modelling (SEM) was conducted using Smart PLS 4.0 [128] to validate the proposed structural and measurement model [129, 105]. Smart PLS 4.0 is deemed more suitable for analyzing complex models with a mediator, non-normal data, and a hierarchical component model [129]. SPSS version 26.0 was used to analyze the demographic variables.

4-2-Assessment of Measurement Model

The measurement model establishment in the PLS–SEM requires the assessment of convergent validity, construct reliability, and discriminant validity. A hierarchical components model (reflective–reflective) was then employed using a disjoint two-stage approach [130, 131]. KWP was treated as an endogenous variable. In the first stage of the assessment, the disjoint two-stage approach only drew on the lower-order constructs (LOCs) (i.e., task performance and contextual performance), and all other constructs in the model were connected to these LOCs. In the second stage, the LOC scores (latent variable score) were used as indicators for the higher-order construct (HOC), namely, KWP.

The initial assessment examined the convergent validity of the model's first- and second-order reflective constructs as shown in Table 1. Convergent validity was measured based on factor loadings and average variance extracted (AVE). The loading threshold was set to 0.5, indicating that the AVE should be greater than 0.5 [132]. The loading values ranged from 0.618 to 0.919, thus confirming that the indicators are consistent with their intended measures. Meanwhile, the AVE values ranged from 0.536 to 0.801, thereby indicating that each latent variable in the model can explain at least 50% of the variance in the corresponding indicator [133]. The results in Table 1 reveal that the measurement model meets all the predetermined thresholds.

Construct reliability consists of composite reliability (CR), whose threshold value was set to 0.7 [134]. Table 1 shows the CR values for the LOC and HOC that fulfill this criterion. Discriminant validity was then assessed using the

Heterotrait–Monotrait ratio (HTMT) criterion proposed by Henseler [135]. The HTMT value for this study was deemed acceptable because all values were less than the threshold of 0.85 [136] (Table 2). In sum, the constructs in this model are not correlated with one another [136].

Table 1. Measurement Model

Lower-Order Construct	Higher-Order Construct	Item	Factor Loadings	AVE	CR
	Knowledge Worker Performance	Task Performance	0.916	0.845	0.818
		Contextual Performance	0.922		
Task Performance		TP1	0.837	0.697	0.892
		TP2	0.781		
		TP3	0.842		
		TP4	0.880		
		TP5	0.831		
Contextual Performance		CP1	0.771	0.645	0.865
		CP2	0.825		
		CP3	0.798		
		CP4	0.806		
		CP5	0.816		
Affective Commitment		AC1	0.873	0.759	0.939
		AC2	0.871		
		AC3	0.820		
		AC4	0.907		
		AC5	0.852		
		AC6	0.902		
Job Crafting		JC1	0.618	0.536	0.805
		JC2	0.737		
		JC3	0.771		
		JC4	0.759		
		JC5	0.764		
		JC6	Deleted		
Job Related Innovation		JI1	0.864	0.801	0.941
		JI2	0.913		
		JI3	0.880		
		JI4	0.919		
		JI5	0.897		
Continuous Learning		CL1	0.744	0.631	0.896
		CL2	0.836		
		CL3	0.789		
		CL4	0.741		
		CL5	0.807		
		CL6	0.844		

Table 2. Discriminant Validity for LOC

Variable	AC	CL	CP	JC	JI	TP
AC						
CL	0.551					
CP	0.553	0.459				
JC	0.531	0.513	0.666			
JI	0.473	0.467	0.33	0.581		
TP	0.495	0.449	0.785	0.652	0.390	

4-3- Common Method Variance

Common method variance (CMV) poses a concern for cross-sectional studies and other works supported by data collected from the same respondents (single source bias). Following the suggestions of Podsakoff [137], procedural and statistical methods were adopted in this study to address CMV.

Among the procedural strategies used in this self-report survey was informing the respondents that they are expected to have different choices of responses. In this case, there are no right or wrong responses to each question, and the participation of these respondents was entirely voluntary. The terms for each variable were clearly defined, and the questionnaire was kept simple and concise. A statistical remedy was also applied to control the impact of CMV after data collection as suggested by Memon et al. [138] and Podsakoff et al. [137]. Marker variables based on attitude toward color blue were employed as a post-hoc statistical technique [127]. These variables were theoretically unrelated to the study [137, 139]. First, two measurement models were drawn, namely, baseline and method factor models [140]. The method factor model was created using the marker items as an independent variable that predicts each dependent variable in the model. Second, the two measurement models were compared in terms of their R^2 values and path coefficients. As shown in Table 3, the changes in the R^2 value of the endogenous variables were minimal and did not lead to any significant changes [141]. All relationships remained significant even after including the marker variable, thus confirming the absence of any substantial common method bias in this study.

Table 3. Common Method Variance Comparison

Relationship	Baseline Model (Without Marker Variable)			Method factor Model (With Marker Variable)		
	Path Coefficient	p-values	Remarks	Path Coefficient	p-values	Remarks
AC → KWP	0.250	0.000	Supported	0.239	0.000	Supported
CL → AC	0.323	0.000	Supported	0.316	0.000	Supported
CL → KWP	0.137	0.002	Supported	0.123	0.005	Supported
JC → AC	0.238	0.000	Supported	0.229	0.000	Supported
JC → KWP	0.467	0.000	Supported	0.449	0.000	Supported
JI → AC	0.186	0.001	Supported	0.188	0.000	Supported
JI → KWP	-0.050	0.166	Not Supported	-0.044	0.193	Not Supported
			R^2			R^2
AC			0.360			0.363
KWP			0.463			0.479

4-4- Assessment of Significance of the Structural Model

The significance of the path coefficients was then assessed. To test the hypothesized relationships, a bootstrapping procedure with 10,000 subsamples was employed [128, 129]. The inner VIF values, coefficient of determination (R^2), predictive relevance (Q^2), path coefficient (β), and significance (t-value and p-value) were all assessed for collinearity, and the predictive power was tested using PLS-Predict [129] with 10 folds.

According to Diamantopoulos and Siguaw [142], an acceptable VIF value should be less than 3.3. Table 4 shows that the VIF values for all endogenous constructs are below this threshold, thus confirming that collinearity among endogenous constructs is not a critical issue in this study. Meanwhile, the R^2 for AC was 0.360, thereby suggesting that 36% of the variance in AC was explained by JC, JRI, and CL. The R^2 for KWP was 0.463, which indicates that 46.3% of the variance in KWP was explained by the aforementioned factors, including AC. The predictive relevance (Q^2) of the model was then assessed using the Stone Geisser criterion. Any Q^2 value of more than 0 indicates that the model has predictive relevance [143-145]. This criterion provides evidence of the model's ability to predict the indicators of the endogenous construct, representing the model's out-of-sample predictive strength. The Q^2 values for the endogenous construct were greater than 0 (Q^2=0.342>0 for AC and Q^2=0.423>0 for KWP), thus establishing predictive relevance for this model.

Hair Junior et al. [129] suggested using PLS-Predict as a more reliable approach for testing the predictive power of the model compared with Q^2. PLS-Predict assesses not only the data that have been used in the model estimation but also other datasets that are not included in the estimation process. Following Shmueli et al. [146, 147], 10 folds of PLS-Predict were performed to examine predictive power. The root mean square error (RMSE) of the endogenous construct indicator was also compared with the naïve linear regression model (LM) benchmark. According to Shmueli et al. [147], a minimum prediction error in RMSE and a higher error in LM confirm the predictive power of the model. As shown in Table 5, the majority (6/10) of the predictive errors of the PLS model were lower than the LM benchmark model, thus confirming the medium predictive power of the model [147].

Table 4. Result of Structural Model Assessment

Hypothesis	Relationship	Std. Beta	Std. Dev.	t-value	p-value	PCI LL	PCI UL	VIF	f^2
H1	JC → KWP	0.467	0.052	9.058	0.000	0.378	0.549	0.26	0.467
H2	JC → AC	0.238	0.057	4.149	0.000	0.141	0.330	0.06	0.238
H3	JI → KWP	-0.050	0.052	0.969	0.166	-0.135	0.036	0.00	-0.050
H4	JI → AC	0.186	0.058	3.233	0.001	0.089	0.280	0.04	0.186
H5	CL → KWP	0.137	0.047	2.903	0.002	0.056	0.212	0.02	0.137
H6	CL → AC	0.323	0.057	5.661	0.000	0.224	0.413	0.12	0.323
H7	AC → KWP	0.250	0.052	4.769	0.000	0.165	0.338	0.07	0.250
H8	JC → AC → KWP	0.059	0.021	2.864	0.004	0.026	0.109	-	-
H9	JI → AC → KWP	0.046	0.016	2.949	0.003	0.020	0.084	-	-
H10	CL → AC → KWP	0.081	0.023	3.502	0.000	0.042	0.135	-	-

Table 5. PLS-Predict

MV	Q^2predict	PLS-SEM_RMSE	LM_RMSE	PLS-LM
CP1	0.188	0.732	0.737	-0.005
CP2	0.229	0.655	0.650	0.005
CP3	0.267	0.779	0.788	-0.009
CP4	0.195	0.640	0.634	0.006
CP5	0.223	0.639	0.640	-0.001
TP1	0.212	0.823	0.817	0.006
TP2	0.227	0.646	0.646	0.000
TP3	0.209	0.758	0.774	-0.016
TP4	0.279	0.717	0.728	-0.011
TP5	0.252	0.786	0.788	-0.002

The significance of the path coefficients was then assessed. To test the hypothesized relationships, a bootstrapping procedure with 10,000 subsamples and a 0.05 significance level was applied, and a bias-corrected and accelerated (BCa) bootstrap was employed as a confidence interval method [128, 129]. Results show that all direct structural relationships were significant, thereby confirming H1, H2, H4, H5, H6, and H7. The bootstrap critical t-value for these hypotheses exceeded 1.645 (one-tailed) with a p-value of less than 0.05, and the confidence interval bias-corrected value did not straddle a zero in between the lower and upper limits [129], thus supporting the findings. By contrast, the t-value for H3 was less than 1.645, exceeding the threshold value 0.05. The confidence interval bias-corrected value for this hypothesis also straddled a zero in between the lower and upper limits. JC obtained the strongest standardized estimate value (0.467), followed by CL (0.323). Similarly, JC (JC→KWP) showed the highest effect size (f^2) of 0.260, followed by CL (f^2=0.123), which is considered a medium effect size under Cohen's criteria [148]. The remaining variables showed a small effect size, except for JRI (JI→KWP), which showed no effect. As for the mediating effect (Table 4), AC mediated the relationship between JC and KWP (β=0.059, p<0.05), between JRI and KWP (β=0.046, p<0.05), and between CL and KWP (β=0.081, p<0.05), thus supporting H8 to H10.

4-5- Importance Performance Matrix Analysis

Importance performance matrix analysis (IPMA) is a post-hoc analysis conducted for managerial implications (Figure 3). IPMA was conducted using KWP as a target construct representing outcomes that allow researchers and managers to easily identify critical areas of attention and action [149]. Based on the IPMA model, JC emerged as one of the most important factors in determining KWP due to its relatively higher importance (0.527) compared with the other variables, including AC (0.250), CL (0.218), and JRI (-0.004). Although JRI scored relatively high in performance, this variable showed lesser relevance in improving KWP. Other constructs, such as AC and CL, exhibited intermediate importance. In sum, government ministries in Malaysia should encourage JC activities apart from building the importance of AC among knowledge workers given that these two factors have the greatest impact on improving KWP. However, JRI should not be ignored entirely. Further research should be conducted to investigate why JRI among public sector officers is not given high importance.

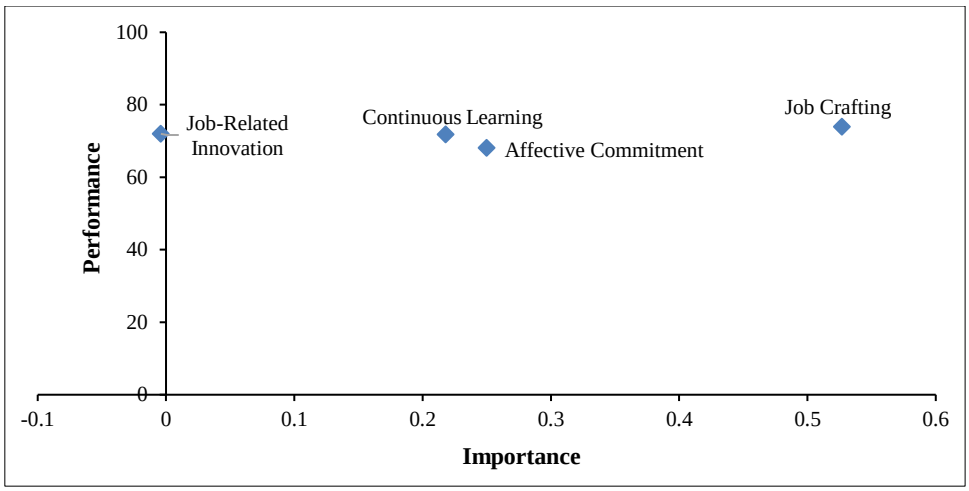

Figure 3. Importance Performance Matrix Analysis

5- Discussion

This paper aims to understand the drivers of KWP in the public sector based on the knowledge work practices identified by Drucker [3]. Guided by Drucker's theory, this study explains how knowledge work practices impact the performance of knowledge workers in public organizations. Empirical results confirmed the mediating effect of AC, thereby indicating that knowledge work practices based on Drucker's theory can be regarded as the driving factors of AC and KWP.

The relationship between JC and KWP is positive and significant. This finding is similar to those obtained by Luu [150] and Park & Park [70], who showed that JC allows employees to tailor their jobs to their abilities and work environment, thus improving their performance. Given that JC is a self-initiated and proactive behavior, employees can make changes to a task without the direction of their supervisors, thus contributing to their positive work behavior [69, 151]. Engaging in JC allows employees to take control over certain aspects of their work, increase their work motivation, improve their work quality, and avoid negative consequences [152, 153]. These changes eventually contribute toward improving the well-being of knowledge workers. These findings also complement the arguments of Sundar and Brucker [76], who found that individuals with higher education levels have better JC abilities. Therefore, JC is suitable for ADOs given that they are required to have a high level of education as a minimum job requirement.

JC also positively and significantly affects AC among ADOs in the public sector, which is consistent with the findings of previous work [49, 73, 74] Public organizations should find more ways to promote and encourage JC among knowledge workers to help improve their performance by completing their tasks on time and ensuring that results are achieved. These results also align with Drucker's theory, which asserts that knowledge workers should be allowed to define their work and identify activities that can restrict them from performing better. This practice may also build their organizational commitment given that knowledge workers who engage in JC become more involved in their work by utilizing their knowledge and skills in completing their tasks.

According to the first research objective, JRI should positively affect KWP. However, results show that JRI negatively and insignificantly impacts KWP. This result also contradicts earlier studies on Drucker's theory [40, 62], which suggest that encouraging the innovation of officers enhances idea generation and improves employee performance [78, 84]. Such contradiction may be explained by the fact that despite the numerous studies highlighting the importance of innovation in the public sector, their findings are insignificant due to the unique characteristics of this sector, including its bureaucracy, which impose many restrictions on innovation [79]. For example, public sector officers may have too many tasks, deadlines to meet, and procedures and SOPs to follow, thus discouraging them from dedicating their efforts to innovative activities. These arguments explain why JRI is not associated with KWP.

However, the above result supports the relationship between JRI and AC and are in line with Drucker's theory, which suggests that in order to distinguish manual workers from knowledge workers, those work practices that are intrinsic to knowledge workers, such as JRI, must be integrated into their responsibilities. This empirical finding demonstrates that despite the lack of prior studies examining the impact of JRI on AC, the current study addresses the gap by establishing a positive relationship between JRI and AC within the public sector. Previous studies (as discussed in paragraph 2.3) have extensively explored the impact of AC on innovative work behavior [154] and culture, and vice versa [155, 156]. However, only a few studies have focused on the impact of JRI on AC. Therefore, this study is the first to provide empirical evidence supporting a positive relationship between JRI and AC.

To further support the statistical analysis, Yuan & Woodman [77] identified perceived innovation job requirement as an essential external factor that can motivate employees to engage in innovative practices. Similarly, Demircioglu [85]

emphasized the importance of human resources in encouraging employees to participate in innovative activities to foster positive work behavior, including AC. This encouragement is expected to significantly influence the involvement of public sector employees in generating new ideas, viewing them as opportunities to explore their innovative potential and ultimately increasing their commitment to their organizations [82]. This study offers a novel contribution by highlighting the impact of JRI on employee attitudes, particularly AC. This research also examines innovation as a job requirement, positing that engaging in innovative practices fulfils the obligations and enhances the AC of public sector officials.

The hypothesis suggesting a positive relationship between CL and KWP was fully supported and highly significant. This result aligns with previous studies showing that knowledge workers with higher learning orientation show improvements in their task and contextual performance [93, 94, 157]. These findings are also in line with those of Budhiraja [93], Malik & Garg [158], Pradhan & Jena [125], and Shaheen et al. [159], who highlight that the correlation between learning and individual employee performance can eventually improve the overall performance of an organization [160, 161]. These findings are also consistent with Drucker's [3] perception that knowledge workers should embrace lifelong learning not only for personal improvement but also for the benefit of others. CL represents one of the most effective strategies for overcoming an unpredictable environment and responding to crises [36, 101]. These findings fill the gap that has been identified by Anand & Brix [101] in their bibliometric study.

The objective of this study is achieved as evidenced by the fulfillment of H6, which demonstrates that CL significantly affects AC. The findings of this study align with those of Islam et al. [162] and Lau et al. [163]. Employees who seek knowledge identify ways to acquire it through various learning activities. The acquisition and utilization of knowledge empower them and cultivate a profound sense of attachment to their organizations [163]. These empirical findings also support the assertion of Muzam [164], who claimed that critical thinking, interpersonal skills, and monitoring skills are essential to enhancing the competencies of knowledge workers. However, to acquire these skills effectively, a knowledge worker should be able to learn continuously. Due to insufficient training and knowledge, the concern raised earlier about poor employee involvement in the public sector can be addressed through learning initiatives.

These findings also support the hypothesis that AC positively influences KWP. These results align with the findings of many empirical studies [44, 52, 111-113] showing a positive association between commitment and employee performance. Increased commitment subsequently motivates knowledge workers to show additional effort beyond their assigned duties, thus improving their performance [8, 58]. The empirical support for H7 also resolves the debate regarding the importance of AC compared with other dimensions of commitment and echoes the findings of Che et al. [5], Goetz & Wald [104], and Zayed et al. [109]. Other scholars further prove that AC plays a greater role than the other dimensions in improving the performance of employees [52, 165, 166].

One of this study's primary objectives is to examine the mediating effects of AC on the relationship between knowledge work practices and KWP. Results show that AC mediates the relationship among JC, JRI, CL, and KWP and that job-related factors enhance workers' productivity, satisfaction, and performance. As Drucker [3] recommended, knowledge workers should be treated as an asset rather than a cost in order to build their organizational commitment. The results for H3 dispute the insignificant effect of AC on the relationship between JRI and KWP as reported in earlier studies; instead, such a relationship becomes significant with the mediating effect of AC. Therefore, AC plays a major role in mediating knowledge work practices and KWP in the public sector. Based on these findings, KWP is an outcome of social exchange, and the strength of the relationship between AC and KWP depends on how much benefit knowledge workers obtain from doing their jobs well.

Supported further by IPMA, the above findings shed light on JC as the central focus in the practical aspect of public sector KWP. Government ministries in Malaysia should encourage JC activities among their officers instead of merely emphasizing the importance of CL and AC; these three factors exert the greatest impact on improving KWP. Future research should also investigate how the JRI of public sector officers can be further enhanced.

Productivity and performance in knowledge work within the public sector remain a relatively underexplored research area, particularly in the Malaysian context. Knowledge work practices need to be introduced in the Malaysian public sector to stimulate the performance of knowledge workers and enhance the efficiency and effectiveness of government service delivery. This study posits that prioritizing knowledge work practices can be a valuable tool for elevating AC and improving the performance of ADOs in Malaysian ministries. This research confirms the mediating role of AC in the relationship between knowledge work practices and KWP. This study contributes theoretical contributions, practical implications, and future recommendations.

6- Contribution

6-1- Theoretical Contribution

A significant theoretical contribution of this study is its introduction of the concept of knowledge productivity impacting KWP. This study is among the first to explore knowledge work practices in the public sector by drawing inspiration from Drucker's knowledge worker productivity theory. Incorporating these factors is anticipated to boost the performance of public sector officers. The findings also offer the academia with new insights into knowledge

productivity and human behavior and the application of Drucker's theory in the public sector KWP context. This study also explores JC among public sector officers to bridge research gaps [167]. This introduction paves the way for subsequent researchers to further investigate JC activities within the Malaysian context. This study also addresses a gap in the organizational commitment literature, particularly the limited exploration of AC among knowledge workers as highlighted by Che et al. [5]. Examining AC among knowledge workers in the public sector can yield valuable insights into these workers' AC and performance. This study also highlights the significance of the bottom-top approach among knowledge workers, especially the JC practices that impact AC and performance in the Malaysian public sector context. Knowledge workers perform their jobs better in the presence of factors that are in line with bottom-top approaches. This study also empirically tests knowledge work practices as sources of fostering AC and KWP in the Malaysian public sector context.

6-2- Practical Contribution

This study offers several implications for policymakers. First, the government should strategize the right initiative to encourage its officers to initiate JC, JRI and CL practices and build its knowledge workers' commitment to enhance their deliverables. Job-related factors allow employees to make certain adjustments to their tasks, thereby encouraging knowledge workers to show more creativity in their jobs using their knowledge and skills. Policymakers should also strategically design and enhance the job descriptions for knowledge workers by incorporating innovation as an integral aspect of their roles. This inclusion ensures that generating ideas for improving tasks remains a continuous and systematic process in the public sector.

To support the Sustainable Development Goals (SDG), addressing certain challenges, such as the poor involvement of public sector officers and their lack of knowledge, is crucial for enhancing the efficiency of public service delivery. Organizations must take strategic steps to ensure that the performance of their knowledge workers aligns with the SDGs. These steps emphasize the importance of government reforms and public service effectiveness. The results of this study may also contribute to SDG 16 by promoting knowledge work practices, such as JC and job innovation. JC is a self-initiated behavior in which an employee makes changes to his/her work role independently, which can lead to positive outcomes and enhanced resilience [168]. Meanwhile, innovation involves the creation of new or improved products, processes, and social implementations, such as improved access to healthcare services or educational programs. Apart from contributing to SDG 9, this study also facilitates the achievement of other SDGs given that innovation is the driving force of productivity, long-term performance, and economic growth [169]. These practices have the potential to strengthen public sector capacity and service delivery, which are essential for promoting effective governance within society. CL initiatives can also support SDG 4 by providing lifelong learning opportunities for all individuals. In the context of risk governance, learning and teaching enhance the value of the existing knowledge of government officers, thus allowing them to prepare themselves better for future crisis management scenarios and build national resilience.

7- Conclusion, Limitations, and Future Research

Public sector officers are expected to play an essential role in providing the best services to satisfy public demand. In this context, the Malaysian government has consistently adopted strategies to improve the productivity and efficiency of its officers as aspired in the 11th and 12th Malaysian Plans. These agendas aim to strengthen the ability of public service officers to offer civil services. The government should take serious measures to improve the innovativeness, efficiency, and involvement of its officers by implementing certain strategies, such as revisiting job descriptions and issuing government circulars.

This study builds a theoretical framework to identify those factors that drive KWP. This study investigates the vital factors or knowledge work practices that can impact AC and KWP in the Malaysian public sector. The findings demonstrate that JC and CL have positive effects on AC and KWP, JRI does not impact KWP but positively affects AC, and AC mediates the relationship between knowledge work practices and KWP. The public sector should therefore understand and recognize how knowledge work practices can shape the behavior and attitude of its officers. The above theory strongly supports most of the hypotheses proposed in this research. These results can be employed to guide subsequent research on knowledge work productivity and KWP.

The research acknowledges some limitations and offers additional suggestions for future work. First, this study only focused on three knowledge work practices. Future work can explore the impact of other knowledge work practices, such as job definition, job autonomy, and knowledge sharing, on cultivating KWP in public organizations as suggested in Drucker's knowledge work productivity theory. Future research should also explore alternative dimensions of JC, specifically relational crafting and cognitive crafting, given its significant impact on improving KWP. Second, this study collected its data using a cross-sectional method, but considering the presence of a mediator in the model, a longitudinal approach would be more suitable. Third, the examination of KWP in this study was limited to two dimensions. Future research could explore additional dimensions, such as adaptive performance or counterproductive behaviors, to provide a more comprehensive understanding of performance across various dimensions.

8- Declarations

8-1- Author Contributions

Conceptualization, N.K.P., K.L.A., and M.A.; methodology, K.L.A. and Y.V.C.; software, T.R.; validation, K.L.A. and M.A.; formal analysis, N.K.P. and T.R.; investigation, N.K.P.; resources, K.L.A. and S.A.; data curation, N.K.P.; writing—original draft preparation, N.K.P.; writing—review and editing, K.L.A. and N.K.P.; visualization, N.K.P.; supervision, K.L.A. and M.A.; project administration, Y.V.C. and S.A.; funding acquisition, K.L.A. All authors have read and agreed to the published version of the manuscript.

8-2- Data Availability Statement

The data presented in this study are available upon request from the corresponding author.

8-3- Funding

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8-5- Institutional Review Board Statement

Not applicable.

8-6- Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

8-7- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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Appendix I: Measurement Scale Development

Constructs		Measurement Items	Source
Knowledge Worker Performance: Task Performance (TP) Contextual Performance (CP)	TP1	I am able to plan my work tasks so that I can finish it on time.	[18, 99, 100]
	TP2	I will always ensure that work task result is achieved.	
	TP3	I am able to set priorities.	
	TP4	I am able to carry out my work efficiently.	
	TP5	I manage my time well.	
	CP1	I extend help to others when asked or needed.	
	CP2	I use to maintain good coordination among fellow workers.	
	CP3	I guide new colleagues beyond my job purview.	
	CP4	I praise others in my division for their good work.	
	CP5	I extend my sympathy and empathy to others in my division when they have a problem.	
Job Crafting (JC)	JC1	I often think that what else should be or should not be part of my job.	[51, 101]
	JC2	I know what factors slow down my output in my division.	
	JC3	I often think about eliminating the factors that slow down my output in my division.	
	JC4	I know exactly the job scope I am responsible for.	
	JC5	I choose to take on additional tasks at work.	
	JC6	I give preference to work tasks that suit my skills or interests.	
Job-Related Innovation (JI)	JI1	My job duties include searching for new process or techniques.	[33, 52]
	JI2	Suggesting new ideas is part of my job.	
	JI3	I have to be creative to fulfil my job requirements.	
	JI4	My job requires me to try out new approaches to problems.	
	JI5	Introducing new ideas into the organization is part of my job.	
Continuous Learning (CL)	CL1	At my workplace, people openly discuss mistakes in order to learn from them.	[66]
	CL2	At my workplace, people identify skills they need for future work tasks.	
	CL3	At my workplace, people help each other to learn.	
	CL4	At my workplace, people get incentives and other resources to support their learning.	
	CL5	At my workplace, people are given time to support learning.	
	CL6	At my workplace, people view problems in their work as an opportunity to learn.	
Affective Commitment (AC)	AC1	My organization has a great deal of personal meaning for me.	[82]
	AC2	I feel emotionally attached to my organization.	
	AC3	I would be very happy to spend the rest of my career working for this organization.	
	AC4	I feel like part of the family at my organization.	
	AC5	I really feel as if my organization's problems are my own.	
	AC6	I feel a strong sense of belonging to my organization.	
Marker Variable (MV)	MV1	Blue is a beautiful colour.	[102]
	MV2	Blue is a lovely colour.	
	MV3	Blue is a pleasant colour.	
	MV4	The colour blue is wonderful.	
	MV5	Blue is a nice colour.	
	MV6	I think blue is a pretty colour.	
	MV7	I like the colour blue.	