


CONTEMPORARY PERFORMANCE MEASUREMENT SYSTEMS, ORGANIZATIONAL COMMITMENT AND MANAGERIAL PERFORMANCE OF TOP 100 COOPERATIVES IN MALAYSIA

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 10 March 2023</p> <p>Accepted 06 June 2023</p> <p>Keywords:</p> <p>Managerial Performance; Contemporary Performance; Measurement Systems; Organizational Commitment; Cooperatives.</p> <div data-bbox="172 1059 475 1305" style="text-align: center;">  </div>	<p>Purpose: The aim of this study is to examine the impact of contemporary performance measurement systems (PMS) on managerial performance in the cooperative sector. In addition, it investigates the mediating effect of organizational commitment between contemporary performance measurement system and managerial performance.</p> <p>Theoretical Framework: The Resource Based Theory used to explain the relationship between contemporary performance measurement, managerial commitment and managerial performance.</p> <p>Design / Methodology / Approach: The survey was carried out to investigate the research framework in the empirical field. The population investigation is composed of cooperative management in the top 100 cooperatives in Malaysia. Utilizing a quantitative approach, 395 valid cooperatives' managements were taken as the sample of this study</p> <p>Findings: The results of the study found that there is a positive relationship between contemporary performance measurement systems, organizational commitment, and managerial performance. Moreover, organizational commitment mediates the relationship between contemporary performance measurement systems and managerial performance.</p> <p>Research /, Practical & Social Implications: Practically, the model in this study can act as an important management tool for cooperatives to gain a sustainable competitive advantage that can affect managerial performance. Managerial performance is an essential element in a successful organization.</p> <p>Originality/ Value: The value of the study is to highlight the important of managerial commitment as mediating factor between contemporary performance measurement system and managerial performance. Furthermore, contemporary performance measurement system must apply three components: comprehensive, strategic and dynamic.</p> <p>Doi: https://doi.org/10.26668/businessreview/2023.v8i6.970</p>

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SISTEMAS CONTEMPORÂNEOS DE MEDIÇÃO DE DESEMPENHO, COMPROMETIMENTO ORGANIZACIONAL E DESEMPENHO GERENCIAL DAS 100 MAIORES COOPERATIVAS DA MALÁSIA

RESUMO

Objetivo: O objetivo deste estudo é examinar o impacto dos sistemas contemporâneos de medição de desempenho (PMS) sobre o desempenho gerencial no setor cooperativo. Além disso, ele investiga o efeito mediador do comprometimento organizacional entre o sistema contemporâneo de medição de desempenho e o desempenho gerencial.

Quadro teórico: A Teoria Baseada em Recursos é usada para explicar a relação entre a medição contemporânea do desempenho, o comprometimento gerencial e o desempenho gerencial.

Projeto / Metodologia / Abordagem: a pesquisa foi realizada para investigar a estrutura da pesquisa no campo empírico. A população da pesquisa consiste de gerentes de cooperativas das 100 maiores cooperativas da Malásia. Usando uma abordagem quantitativa, 395 gerentes de cooperativas válidos foram amostrados para este estudo.

Resultados: Os resultados do estudo indicam que há uma relação positiva entre os sistemas contemporâneos de medição de desempenho, o compromisso organizacional e o desempenho gerencial. Além disso, o comprometimento organizacional é o mediador da relação entre os sistemas contemporâneos de medição de desempenho e o desempenho gerencial.

Implicações práticas e sociais da pesquisa: Na prática, o modelo deste estudo pode funcionar como uma importante ferramenta de gestão para que as cooperativas obtenham uma vantagem competitiva sustentável que possa afetar o desempenho gerencial. O desempenho gerencial é um elemento essencial para o sucesso de uma organização.

Originalidade/valor: O valor deste estudo é destacar a importância do compromisso gerencial como fator mediador entre o sistema contemporâneo de medição de desempenho e o desempenho gerencial. Além disso, o sistema contemporâneo de medição de desempenho deve aplicar três componentes: holístico, estratégico e dinâmico.

Palavras-chave: Desempenho Gerencial, Sistemas Contemporâneos de Medição de Desempenho, Comprometimento Organizacional, Cooperativas.

SISTEMAS CONTEMPORÂNEOS DE MEDICIÓN DEL RENDIMIENTO, COMPROMISO ORGANIZATIVO Y RENDIMIENTO DIRECTIVO DE LAS 100 PRINCIPALES COOPERATIVAS DE MALASIA

RESUMEN

Propósito: El objetivo de este estudio es examinar el impacto de los sistemas contemporáneos de medición del rendimiento (PMS) en el rendimiento de la gestión en el sector cooperativo. Además, investiga el efecto mediador del compromiso organizativo entre el sistema contemporáneo de medición del rendimiento y el rendimiento directivo.

Marco teórico: Se utiliza la Teoría Basada en Recursos para explicar la relación entre la medición contemporánea del desempeño, el compromiso gerencial y el desempeño gerencial.

Diseño / Metodología / Enfoque: La encuesta se llevó a cabo para investigar el marco de investigación en el campo empírico. La población investigada está compuesta por directivos de cooperativas de las 100 principales cooperativas de Malasia. Utilizando un enfoque cuantitativo, se tomó como muestra de este estudio a 395 directivos de cooperativas válidas.

Resultados: Los resultados del estudio indican que existe una relación positiva entre los sistemas contemporáneos de medición del rendimiento, el compromiso organizativo y el rendimiento de los directivos. Además, el compromiso organizativo media en la relación entre los sistemas contemporáneos de medición del rendimiento y el rendimiento de los directivos.

Investigación / Implicaciones prácticas y sociales: En la práctica, el modelo de este estudio puede actuar como una importante herramienta de gestión para que las cooperativas obtengan una ventaja competitiva sostenible que pueda afectar al rendimiento de la gestión. El rendimiento de los directivos es un elemento esencial para el éxito de una organización.

Originalidad/valor: El valor de este estudio es poner de relieve la importancia del compromiso directivo como factor mediador entre el sistema contemporáneo de medición del rendimiento y el rendimiento directivo. Además, el sistema contemporáneo de medición del rendimiento debe aplicar tres componentes: integral, estratégico y dinámico.

Palabras clave: Rendimiento Directivo, Sistemas Contemporáneos de Medición del Rendimiento, Compromiso Organizativo, Cooperativas.

INTRODUCTION

Managerial performance is a critical topic that must be prioritized in any organization that values success. With the rapid growth of new information, management must be agile and responsive. As a result, they must adapt their professional practices to incorporate new knowledge and competencies in order to improve their managerial performance (Dragomir & Panzaru, 2014). By improving their managerial performance, the organization's performance will improve (Aunurrafiq et al., 2015). Thus, unsatisfactory managerial performance will have an effect on the planning and implementation strategy, and ultimately on the organization's performance. Management's thinking style must be adapted to the ever-changing business environment. This enables the organization to exert influence over the productivity of regulated individuals and teams, which in turn enables management contributions to be integrated via performance improvement (Dragomir & Panzaru, 2014). Top management commitment works as moderator between environmental dimension of corporate social responsibility and corporate sustainability (Tandoh et al., 2022).

Changes in the business environment have had a significant impact on management control systems, particularly performance measurement systems (Abdul Rasit et al., 2017). Performance measurement systems are one of the components of management control systems (Henri, 2006; Beuren & Dal Vesco, 2020). In management accounting, performance measurement systems assist organizations with planning, control, and decision making by encompassing processes for goal setting, data collection, analysis, and interpretation of performance data (Drury, 2018). As a result, performance measurement systems are an extremely valuable management tool for quantifying and improving decision-making and control processes (Mohd Amir et al., 2014).

Although numerous studies on performance measurement systems have been conducted previously, this field, particularly in the context of the cooperative movement, has received little attention (Hopper & Bui, 2016; Janudin et al., 2016). By examining the current situation, it is clear that the contemporary performance measurement system, which encompasses comprehensive, strategic, and dynamic dimensions, has not been adequately discussed in the context of Malaysia's cooperative movement. The cooperative movement's contribution to Malaysia's Gross Domestic Product (GDP) remained underwhelming at 3.2 percent in 2019

(Department of Statistics Malaysia, 2021; Malaysia Co-operative Societies Commission, 2020). The cooperative movement's unfavorable performance is related to their managerial performance, which is one of the elements identified in the National Co-operatives Policy (DKN) 2011–2020 as impeding the movement's progress (Malaysia Co-operative Societies Commission, 2010). The growth of cooperative members can enhance business capacity, which can raise the volume of cooperative transactions (Titin et al., 2022).

According to a review of the literature, studies on the relationship between contemporary performance measurement systems and managerial performance have received relatively little attention in comparison to studies on the relationship between contemporary performance measurement systems and organizational performance (Franco-Santos et al., 2012). Additionally, organizational commitment has been examined as a mediating variable in indirect relationships. However, organizational commitment has been investigated as a mediator in the relationship between performance measurement systems and managerial performance on two distinct dimensions: non-financial measurement in a study by Lau and Moser (2008) and financial measurement in a study by Amran and Md Auzair (2013). As a result, to address the study's gap, the intervening variable of organizational commitment is examined in relation to contemporary performance measurement systems that incorporate multidimensional and managerial performance. Thus, the purpose of this study is to examine the relationship between contemporary performance measurement systems and managerial performance in cooperatives, as well as the mediating effect of organizational commitment on the relationship.

LITERATURE REVIEW

Resource-Based Theory

The resource-based theory has become a mainstream paradigm with many studies and writings that have been published which are related to this theory (Hauschild & Knyphausen-Aufseß, 2013; Newbert, 2007). Wernerfelt (1984) proposed analyzing firms by comparing the resources owned by a firm to their products. By determining the resource profile of the firm, it will generate optimal product-market activities and the potential to provide higher returns. This idea is emphasized by Barney (1991) through the relationship between the resources owned by a firm and their sustainable competitive advantage. Both of the above ideas clearly highlight that organizations are able to compete based on their respective resources and capabilities.

Emphasizing on individual behavior and cognition is important in developing human

capital resources, which in turn creates a competitive advantage for organizations (Alvarez & Busenitz, 2001; Castanias & Helfat, 2001). In addition, good systems and procedures such as performance measurement practices can also be linked to resource utilization. Efficient procedural practices (Wernerfelt, 1984), formal reporting structures, system planning, control and adjustment (Barney, 1991), as well as organizational processes and routines and controlled information and knowledge control (Barney et al., 2001) are among the examples of resources that are related to systems and procedures in the organization.

Contemporary Performance Measurement Systems and Managerial Performance

Most of the previous studies which examined the relationship between contemporary performance measurement systems and performance were more focused on the performance of organizations and business units, and the findings were obtained from financial reporting sources or respondents' feedback (Franco-Santos et al., 2012). There is still little attention to studies on the relationship between contemporary performance measurement systems and team performance, managerial performance or inter-firm performance (Franco-Santos et al., 2012). However, they have argued that development begins to occur when there is research that begins to explore the impact of contemporary performance measurement systems on managerial performance.

There are several studies that look at the direct relationship between performance measurement systems and managerial performance. A study by Janudin and Ismail (2017) found that there is a significant relationship between strategic performance measurement systems and managerial work performance in co-operatives. Similarly, Chia, Lau, and Tan (2014) discovered that financial and non-financial performance measurements have a significant impact on both the direct relationship with managerial performance and the indirect relationship with other variables such as procedural fairness and trust.

Contemporary Performance Measurement Systems and Organizational Commitment

Tong, Suen, and Wong (2017) found that diagnostics and the usage of performance measurement systems had a favorable effect on job satisfaction and organizational commitment when used interactively. Additionally, studies have demonstrated that financial and non-financial measures have a significant effect on the direct relationship between performance measures and organizational commitment (Chia et al., 2014), as well as an indirect relationship between performance measures and organizational commitment via other variables such as

procedural fairness (Chia et al., 2014; Tan & Lau, 2012). Organizational commitment is classified into three categories: affective commitment, continuance commitment, and normative commitment (Allen & Meyer, 1990; Meyer & Allen, 1991; Meyer et al., 1993). All three components of organizational commitment were examined in this research in relation to contemporary performance measurement systems.

Organizational Commitment and Managerial Performance

The connection between organizational commitment and performance has been widely studied in the prior literature. Numerous studies have been conducted to determine the connection between organizational commitment and organizational performance, as well as individual performance, such as managerial and employee performance. Organizational commitment has been shown to have a substantial effect on management performance in research (Amran & Md Auzair, 2013; Ogieedu & Odia, 2013; Oluwalope & Sunday, 2017). Meanwhile, when it comes to individual performance in organizations, prior research indicates that organizational commitment has a favorable effect on job performance (Chong & Law, 2016; Fu & Deshpande, 2014; Kim, 2014; Thamrin, 2012).

Organizational Commitment as a Mediator

The role of organizational commitment as a mediator has been tested in previous studies by researchers. Several studies used the three components of commitment as a mediator, namely affective commitment, continuance commitment, and normative commitment, to test for indirect relationships (Fu & Deshpande, 2014; Yousef, 2016). Studies have shown that job satisfaction has a significant indirect effect on job performance in which organizational commitment acts as a mediating variable (Fu & Deshpande, 2014). Yousef (2016) has found that organizational commitment plays a mediating role in the indirect relationship between job satisfaction and attitude dimensions toward organizational change.

FRAMEWORK AND HYPOTHESES DEVELOPMENT

The development of the research framework was carefully crafted after conducting extensive reviews of the literature on this topic. In fact, the instruments used in this study were basically adopted and adapted that is suitable to the context of this study. We derived four (4) hypotheses to examine the proposed research framework as depicted in Figure 1.

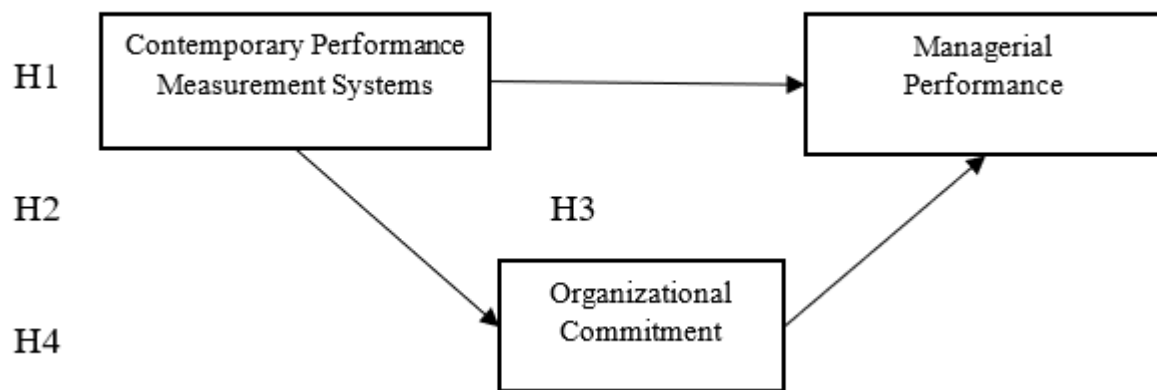
H₁: Contemporary Performance Measurement Systems has a positive influence on Managerial Performance.

H₂: Contemporary Performance Measurement Systems has a positive influence on Organizational Commitment.

H₃: Organizational Commitment has a positive influence on Managerial Performance.

H₄: Contemporary Performance Measurement Systems has a positive influence on Managerial Performance mediated by Organizational Commitment.

Figure 1: Research Framework



Source: Prepared by the authors (2023)

Research Methodology

A probability sampling technique was adopted to verify that the collected data were valid and to ensure the sample characteristics corresponded to the nature of the study. For this study, the questionnaire was used as an instrument to gather relevant information from the respondents. The scaling technique required respondents to indicate a degree of disagreement or agreement with each series of statements, on a 7-point Likert scale. The target population for this study was pooled from cooperatives listed under the Malaysia Co-operative Societies Commission in 2018.

Sample size estimation was determined using G*power 3.0 analysis (Faul et al., 2007). By using G-Power analysis software, with the effect size of f-square 0.15, α error pro 0.05, power Gf 0.95 with two tested predictors. Hundred and seven (107) respondents were needed as the minimum sample for this study. Data were collected using the field survey and mailing method. A total of 574 questionnaires were sent out, and within five months, only 408 had replied, which represents a 71 percent response rate. Out of 408 questionnaires returned, 13

were rejected, leaving 395 questionnaires were usable for the final analysis (68.8 percent response rate). According to Baines and Langfield-Smith (2003), a response rate above 25 per cent in accounting research is considered sufficient for statistical analysis and inferences.

The constructs (see Figure 1) are examined using multiple items (Hayduk & Littvay 2012), and the data was then analyzed using SmartPLS 3.0 (Ringle et al., 2015) to test the hypotheses. PLS-SEM is used for data analysis in studies by researchers from a variety of business and social science disciplines, including accounting and finance, entrepreneurship, marketing, information systems, human resource management, sociology, nursing, tourism, hospitality, family business, education, supply chain, organizational psychology, higher education, psychology (Memon et al., 2021).

DATA ANALYSIS AND RESULTS

This study tested the hypothesis with a survey among the managerial level of Top 100 Cooperatives in Malaysia which consist of Chief Executive Officer (CEO) to supervisory officers. Table 1 presented the summarized demographic profile of respondents. In general, respondents of this study had a good educational background with more than 78% of them hold a diploma and above. About 37% of respondents have hold top management level, which holds managers and above position. Almost half (49.9%) of respondents are experienced staff, with more than five years working experience in that cooperative.

Table 1: Respondent Profile

Profile		Frequency (N = 395)	Percent (%)
Gender	Male	199	50.4
	Female	196	49.6
Age	21 - 30	75	19
	31 - 40	136	34.4
	41 - 50	83	21
	> 50	101	25.6
Education	Master	27	6.8
	Degree	144	36.5
	Diploma/STPM	138	34.9
	SPM/SPMV/MCE	81	20.5
	PMR/SRP/LCE	4	1
	Other	1	0.3
Position	CEO	7	1.8
	General Manager	21	5.3
	Senior Manager	20	5.1
	Manager	97	24.6

	Assistant Manager	28	7.1
	Senior Executive	27	6.8
	Executive	115	29.1
	Supervisor	50	12.7
	Other	30	7.6
Position Held	Less than 5 years	198	50.1
	More than 5 years	197	49.9

Source: Prepared by the authors (2023)

Reflective Measurement Model

Table 2 and Figure 2 (a graphical representation of Table 2) demonstrate the findings of Cronbach's Alpha (CA), construct reliability (CR), and the convergent validity testing. The result verifies that the construct (or variable under investigation) to have high internal consistency (Roldán & Sánchez-Franco, 2012) and sufficient average variance extracted (AVE) to corroborate the convergent validity (Hair et al., 2017). Indicators measuring the Managerial Performance (MP) construct achieves satisfactory loadings value higher than 0.708 (Hair et al., 2017).

The Cronbach's Alpha (CA) value for the MP = 0.872 and the composite reliability (CR) value was 0.875 implying that the MP possesses high internal consistency. In a similar vein, the MP also indicates that convergent satisfaction validity with the average variance extracted (AVE) value for PMS is higher than the threshold value of 0.5, demonstrating that the indicators could explain more than 50 per cent of the construct's variance.

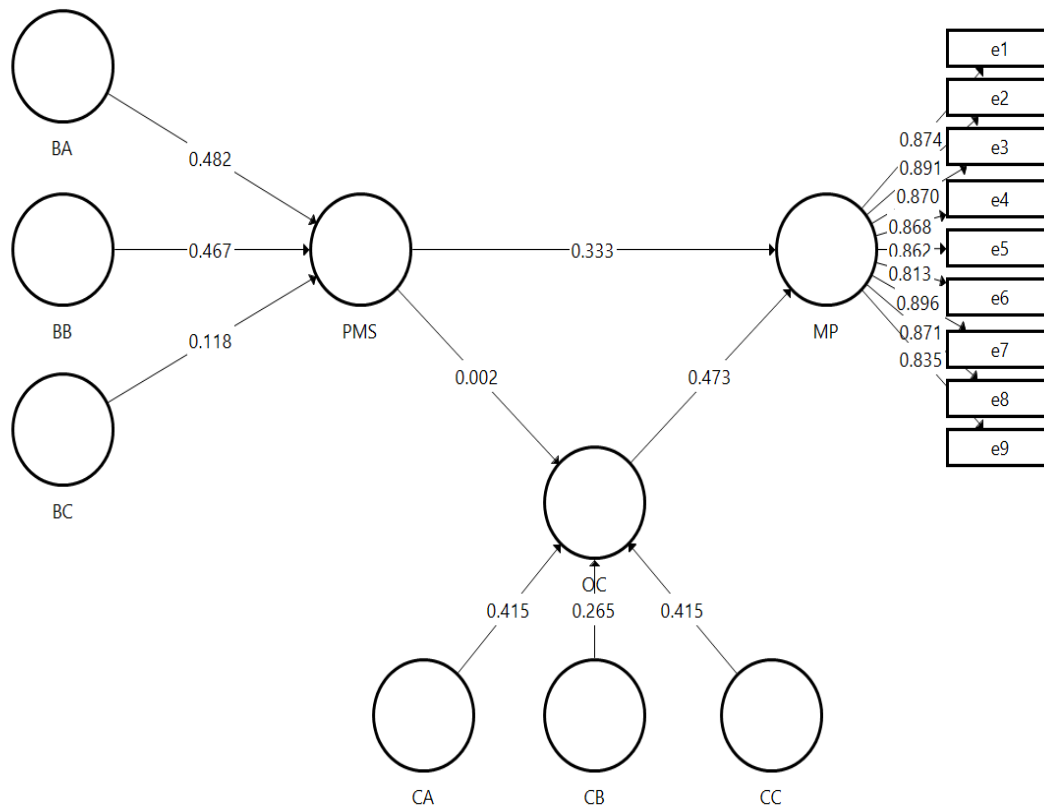
Table 2: Measurement Model Assessment

Construct	Item	Loadings	CA	CR	AVE
Managerial Performance	e1	0.874	0.872	0.875	0.653
	e2	0.891			
	e3	0.870			
	e4	0.868			
	e5	0.862			
	e6	0.813			
	e7	0.896			
	e8	0.871			
	e9	0.835			

*No item was deleted

Source: Prepared by the authors (2023)

Figure 2: Reflective Model Assessment



Source: Prepared by the authors (2023)

Discriminant Validity

Table 3 displays the HTMT criterion to evaluate discriminant validity (Ringle, Wende & Will, 2018). In assessing discriminant validity, this study applies Henseler's (2015) heterotrait-monotrait ratio of correlations criterion. The result specifies that discriminant validity is well-established at HTMT 0.85 (Diamantopoulos & Sigauw, 2006), which implies that the discriminant validity issue is of no concern. The findings indicated that it is appropriate to proceed with the structural model assessment to test the study's hypotheses, as there is no issue of multi-collinearity between indicators loaded on different constructs in the outer model.

Table 3: HTMT Criterion

	MP	OC	PMS
MP			
OC	0.664		
PMS	0.587	0.511	

Criteria: Discriminant validity is established at HTMT0.85 (Diamantopoulos & Sigauw, 2006)

Note: (MP) Managerial Performance, (OC) Organizational Commitment, (PMS) Performance Measurement Systems

Source: Prepared by the authors (2023)

Formative Measurement Model

To evaluate the formative measurement models, the formative construct must highly correlate with a reflective measure of the same construct. This type of analysis is known as redundancy analysis (Chin, 1998). Specifically, Hair et al. (2017) mention that redundancy analysis can be achieved by using formative construct as an exogenous latent variable predicting the same construct operationalized by reflective indicators or a global single item, which summaries the essence of the construct that the formative indicators are intended to measure. It is important that the path coefficient linking the constructs should be at least above the threshold of 0.70 to provide support for convergent validity of the formative construct (Hair et al., 2017). Based on the assessment through redundancy analysis, the formative constructs for contemporary performance measurement system and organizational commitment path coefficients are 0.847 and 0.839 which more than 0.70 as shown in Table 4. Therefore, the formatively measured constructs have sufficient degrees of convergent validity (Klassen & Whybark, 1999).

Table 4: Measurement Model of Second-Order Constructs (Formative)

Construct	Items	Convergent Validity	Weight	VIF	t-value weights	Sig	
Contemporary Performance Measurement System	BA	0.847	0.444	4.225	33.849	0.000	**
	BB		0.394	4.388	42.619	0.000	**
	BC		0.260	1.765	16.824	0.000	**
Organizational Commitment	CA	0.839	2.624	2.624	33.211	0.000	**
	CB		2.482	2.482	30.04	0.000	**
	CC		3.450	3.450	44.068	0.000	**

Lateral Collinearity: VIF 3.3 or higher (Diamantopoulos & Sigauw 2006)

Note: > 1.96**, BA (Comprehensive), BB (Strategic), BC (Dynamic), CA (Affective), CB (Continuance), CC (Normative)

Source: Prepared by the authors (2023)

Structural Model Assessment

Table 5 demonstrates the assessment of the path coefficients, which are represented by Beta values for each path relationship. A 5000-bootstrap resampling of data was conducted to test the hypotheses (Hair et al., 2017). The results for path coefficients indicate that both constructs contemporary performance measurement systems (PMS) and organizational commitment (OC) towards managerial performance (MP) to be supported. The same goes with the path coefficient of relationship between contemporary performance measurement systems (PMS) towards organizational commitment (OC) was also found to be supported.

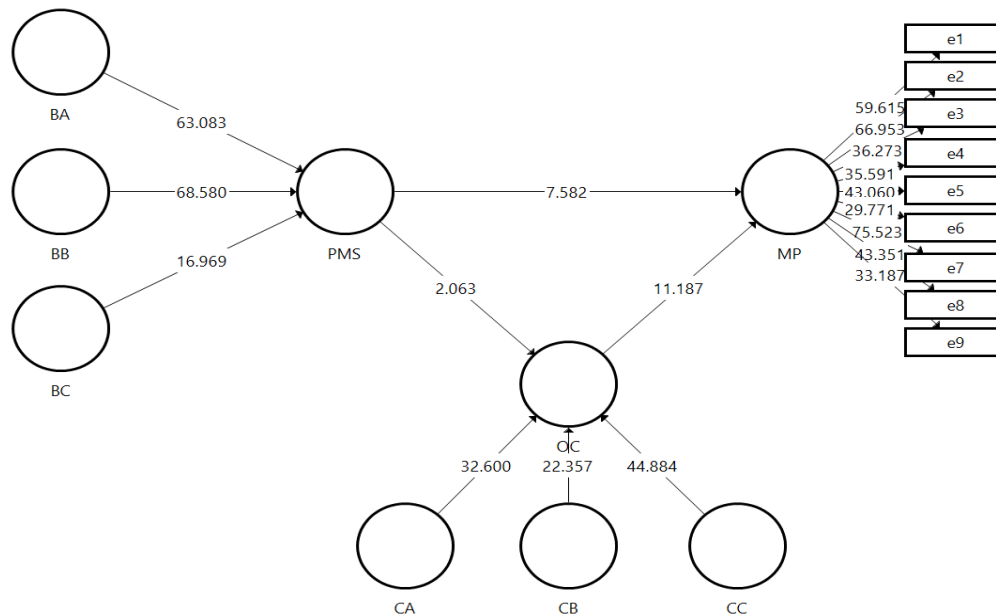
Table 5 and Figure 3 (graphical illustration of Structural Modeling) depicts the path coefficient assessment. The results indicate all three proposed relationships are significant. Specifically, the study found support for H₁ (PMS → MP, β = 0.333, p < 0.000, LLCI = 0.262, ULCI = 0.406), H₂ (PMS → OC, β = 0.002, p < 0.020, LLCI = 0.000, ULCI = 0.003), and H₃ (OC → MP, β = 0.473, p < 0.000, LLCI = 0.399, ULCI = 0.540).

Table 5: Path Coefficients Assessment

Direct Effect	Beta	S.E.	t-value	p-value	LLCI	ULCI	Decision
H1: PMS -> MP	0.333	0.044	7.582	0.000	0.262	0.406	Supported
H2: PMS -> OC	0.002	0.001	2.063	0.020	0.000	0.003	Supported
H3: OC -> MP	0.473	0.042	11.187	0.000	0.399	0.540	Supported

Note: *p<0.05, **p<0.01, Bias Corrected, LL=Lower Limit, UL=Upper Limit
 p-value of 0.01, 0.05 (Hair et al., 2017)
 (MP) Managerial Performance,
 (OC) Organizational Commitment,
 (PMS) Performance Measurement Systems
 Source: Prepared by the authors (2023)

Figure 3: Path Coefficients



Source: Prepared by the authors (2023)

Model Quality Assessment

Table 6 displays the quality assessment of the model. H₃ (OC → MP) and H₁ (PMS → MP) shown to carry strong and moderate effect sizes f² on the MP value at 0.330 and 0.164, respectively (Cohen, 1988). However, H₂ (PMS → OC) indicates a weak influence on MP with an effect size of 0.044. The coefficient of determination represented by R², which explains whether the PMS and OC could explain PMS → MP, PMS → OC, and OC → MP indicate

strong effects (Chin, 1998). The R^2 value is 0.492, 1.000, and 1.000, suggesting that the PMS and OC could explain $PMS \rightarrow MP$, $PMS \rightarrow OC$, and $OC \rightarrow MP$ substantially.

Furthermore, multi-collinearity between indicators is also assessed. All indicators for constructs satisfy the VIF values, and they are consistently below the threshold value of 5.0 (Hair et al., 2014) and 3.3 (Diamantopoulos and Siguaw, 2006). Therefore, it can be concluded that collinearity issues do not reach critical levels in any of the constructs; therefore, there is no issue with estimating the PLS path model. As presented by Q^2 using the blindfolding procedure (Hair et al., 2017), the predictive relevant values of $PMS \rightarrow MP$, $PMS \rightarrow OC$, and $OC \rightarrow MP$ were 0.648, 0.362, and 0.517 indicating that the constructs (PMS and OC) could predict $PMS \rightarrow MP$, $PMS \rightarrow OC$, and $OC \rightarrow MP$ substantially.

Table 6: Model Quality Assessment

Direct Effect	f^2	R^2	VIF	Q^2
H1: PMS -> MP	0.164	0.492	1.335	0.648
H2: PMS -> OC	0.044	1.000	1.377	0.362
H3: OC -> MP	0.330	1.000	1.335	0.517

$f^2 \geq 0.35$ consider Substantial (Cohen, 1988)

$R^2 \geq 0.26$ consider Substantial (Cohen, 1988)

Lateral Collinearity: $VIF \leq 3.3$ (Diamantopoulos & Siguaw, 2006)

$Q^2 > 0.00$ consider large (Hair, 2017)

$0.02 \leq Q^2 < 0.15$: weak predictive power

$0.15 \leq Q^2 < 0.35$: moderate predictive power

$Q^2 \geq 0.35$: strong predictive power

Source: Prepared by the authors (2023)

Mediating Effect Assessment

Table 7 shows the result of the mediating effect of organizational commitment (OC) on the relationship between contemporary performance measurement systems (PMS) and managerial performance (MP). The result of mediating effect as can be seen indicated that H4: $PMS \rightarrow OC \rightarrow MP$ ($\beta=0.001$, t -value=2.166) suggesting that the mediating effect of organizational commitment (OC) towards the relationship of contemporary performance measurement system (PMS) and managerial performance (MP) is indeed supported.

Table 7: Model Quality Assessment

Mediating Effect	Beta	S.E.	t-value	p-value	LLCI	ULCI	Decision
H4: PMS -> OC -> MP	0.001	0.000	2.166	0.030	0.000	0.002	Supported

Note: * $p < 0.05$, ** $p < 0.01$, Bias Corrected, LL=Lower Limit, UL=Upper Limit

p-value of 0.01, 0.05 (Hair et al., 2017)

Source: Prepared by the authors (2023)

Table 8: Result of PLSpredict

Construct	Items	PLS-			LM-			PLS-LM			Predict Power	
		RMSE	MAE	Q ² predict	RMSE	MAE	MAPE	Q ² predict	RMSE	MAE		Q ² predict
Managerial Performance	e2	0.770	0.592	0.400	0.788	0.598	12.588	0.371	-0.018	-0.006	0.029	High
	e1	0.830	0.639	0.425	0.860	0.652	13.977	0.382	-0.030	-0.013	0.043	
	e6	0.977	0.698	0.278	1.062	0.734	19.837	0.147	-0.085	-0.036	0.131	
	e9	0.758	0.579	0.368	0.803	0.604	11.779	0.291	-0.045	-0.025	0.077	
	e3	0.867	0.638	0.320	0.914	0.671	15.758	0.245	-0.047	-0.033	0.075	
	e4	0.798	0.599	0.374	0.847	0.637	13.365	0.296	-0.049	-0.038	0.078	
	e7	0.785	0.607	0.395	0.831	0.618	12.662	0.321	-0.046	-0.011	0.074	
	e8	0.815	0.623	0.363	0.847	0.636	13.214	0.311	-0.032	-0.013	0.052	
	e5	0.859	0.630	0.304	0.898	0.661	15.284	0.240	-0.039	-0.031	0.064	
Organisational Commitment	bb3	0.570	0.426	0.733	0.000	0.000	0.000	1.000	0.570	0.426	-0.267	Low
	bb2	0.685	0.502	0.649	0.000	0.000	0.000	1.000	0.685	0.502	-0.351	
	bb8	0.642	0.459	0.684	0.000	0.000	0.000	1.000	0.642	0.459	-0.316	
	ba6	0.549	0.407	0.748	0.000	0.000	0.000	1.000	0.549	0.407	-0.252	
	ba8	0.519	0.377	0.789	0.000	0.000	0.000	1.000	0.519	0.377	-0.211	
	bb7	0.585	0.430	0.743	0.000	0.000	0.000	1.000	0.585	0.430	-0.257	
	ba3	0.560	0.416	0.732	0.000	0.000	0.000	1.000	0.560	0.416	-0.268	
	bc2	1.538	1.294	0.014	0.000	0.000	0.000	1.000	1.538	1.294	-0.986	
	bb1	0.591	0.429	0.735	0.000	0.000	0.000	1.000	0.591	0.429	-0.265	
	ba7	0.503	0.370	0.786	0.000	0.000	0.000	1.000	0.503	0.370	-0.214	
	ba9	0.506	0.369	0.790	0.000	0.000	0.000	1.000	0.506	0.369	-0.210	
	ba2	0.637	0.459	0.689	0.000	0.000	0.000	1.000	0.637	0.459	-0.311	
	bc3	0.923	0.713	0.343	0.000	0.000	0.000	1.000	0.923	0.713	-0.657	
	bb5	0.611	0.445	0.692	0.000	0.000	0.000	1.000	0.611	0.445	-0.308	
	bc1	0.792	0.595	0.525	0.000	0.000	0.000	1.000	0.792	0.595	-0.475	
	ba1	0.624	0.457	0.672	0.000	0.000	0.000	1.000	0.624	0.457	-0.328	
	bb9	0.558	0.406	0.746	0.000	0.000	0.000	1.000	0.558	0.406	-0.254	
	ba5	0.595	0.441	0.712	0.000	0.000	0.000	1.000	0.595	0.441	-0.288	
ba4	0.554	0.410	0.751	0.000	0.000	0.000	1.000	0.554	0.410	-0.249		
bc4	0.934	0.695	0.339	0.000	0.000	0.000	1.000	0.934	0.695	-0.661		
bb4	0.618	0.454	0.732	0.000	0.000	0.000	1.000	0.618	0.454	-0.268		
bb6	0.579	0.412	0.728	0.000	0.000	0.000	1.000	0.579	0.412	-0.272		

Source: Prepared by the authors (2023)

The PLSpredict technique (see Shmueli et al., 2019) was used to examine the prediction relevance of the endogenous constructs (managerial performance and organizational commitment). As presented in Table 8, all values for managerial performance indicators had lower prediction error (i.e., RMSE and MAE) than the linear model (LM) suggesting managerial performance had high prediction power (Shmueli et al., 2019). On the other hand, all values for organizational commitment indicators had high prediction error (i.e., RMSE and MAE) than the linear model (LM) suggesting organizational commitment had a low prediction power (Shmueli et al., 2019).

DISCUSSIONS

This study investigates whether contemporary performance measurement systems (PMS) and organizational commitment (OC) are associated with cooperative managerial

performance. In addition, we also examine contemporary performance measurement systems (PMS) influence on organizational commitment (OS). The path coefficient results revealed all hypotheses to be supported. Specifically, (H₁) the PMS has a positive influence on managerial performance. This finding affirmed the study by De Souza and Beuren (2018) that a PMS with clear information on goals and objectives, which comprise elements of comprehensive, strategic and dynamic (Janudin et al., 2019) can lead to better managerial performance. In this study, cooperative management interacts positively with the elements of contemporary performance measurement systems, which generate better managerial performance.

H₃ also has a positive effect on both organizational commitment and managerial performance. The results supported previous claims that organizational commitment had a positive impact on managerial performance (Oluwalope & Sunday, 2017). Individuals in organizations who are committed and motivated will make them more efficient and help improve their capabilities and performance. Organizational commitment has influenced the behaviour and working culture of cooperative management and positively affected their performance.

Similarly, H₂ confirmed the positive impact of contemporary performance measurement systems (PMS) on organizational commitment. This study confirmed that PMS will determine individual behaviour in the organization, which will be translated into a positive organizational commitment. The performance measurement system via financial or non-financial measures creates a positive influence on organizational commitment and managerial performance (Chia et al., 2014). PMS plays an important role in formulating planning, strategies and decision-making processes. Individual commitment in cooperatives has been influenced by the PMS process. Therefore, cooperative management feels more attached to the organization through PMS.

Lastly, hypothesis H₄ foresees the mediating effect of organizational commitment towards the relationship between contemporary performance measurement system and managerial performance also found support. This result corroborates with the findings by Amran and Md Auzair (2013) that organizational commitment mediated the relationship between monetary rewards and managerial performance. In addition, participatory development processes in the performance measurement system would affect attitudes, perceived social pressure and capability to take initiative and motivation to improve performance (Groen et al., 2012). The element of organizational commitment is important for allowing cooperative management to optimize the PMS process and is used to improve

managerial performance.

CONCLUSION

Overall, the results provide strong empirical evidence to support the hypothesis regarding the positive effect of contemporary performance measurement systems (PMS) and organizational commitment on cooperative managerial performance and the mediating effect of organizational commitment. This study provides a better understanding of the relationship between contemporary performance measurement systems, organizational commitment and managerial performance within the context of the top 100 cooperatives in Malaysia. The results provide cooperative management with useful and relevant information, which integrates PMS elements into comprehensive, strategic and dynamic and can be used to enhance their managerial performance. PMS must be comprehensive with financial and non-financial measures, linked to strategic objectives and a dynamic response to environmental changes.

The model for PMS tools in a cooperative would provide a reasonable internal decision-making foundation. Cooperative management must use the relevant information to improve themselves before they choose matters in their cooperative to improve. Therefore, cooperatives should employ experienced and professional managers and staff to ensure the sustainability of the cooperative. This is a model to emulate a successful cooperative, which should have an integrated system and be managed by professionals. PMS design should motivate the individuals involved. Franco-Santos et al. (2012) explain that contemporary PMS will affect individual behaviour, organizational capabilities and performance outcomes.

The study's findings can be linked to a resource-based theory, which states that committing to human capital resources to practice PMS has a positive influence on managerial performance and, as a result, helps organizations achieve their goals. Therefore, the resource-based theory that underpinned the phenomenon of this study has emphasized the efficient and effective use of resources in cooperatives to provide a sustainable competitive advantage and explain firm behaviour.

This study contributes to the literature by providing strong empirical evidence about the role of PMS in influencing organizational commitment and managerial performance in the context of the top 100 cooperatives in Malaysia. As the current cooperative sector's performance does not reach the desired level of potential, implementing PMS would enhance individual managers' and cooperative performance.

Despite that, a few limitations should be addressed in considering the results of this

study. The respondents are mostly managers of large cooperative clusters that have been named among Malaysia's top 100 cooperatives. The study findings are based on management opinions on the aspects of PMS implementation. Future studies should consider investigating the relationship of PMS, organizational commitment and managerial performance with other cooperative clusters, functions or activities. Furthermore, board members of a cooperative could be a sample for future research by examining the policy of establishing an effective PMS in cooperatives. It is also a good time for other researchers to use a qualitative approach for further work to better understand the effect of contemporary PMS and organizational commitment on managerial performance among the management of the cooperative.

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