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A Content Validity: Organisational Performance's Assessment Instrument in the Construction Industry

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ABSTRACT

Evaluating the performance of construction organisations is crucial for the success of construction projects. However, there are no standardised instruments and a single way to measure how well construction organisations perform, making it difficult for researchers and practitioners to get a clear picture of their performance. This study aims to validate an instrument for assessing the organisational performances of construction organisations through content validity. A panel of eight (8) experts reviewed the instrument, rating the relevance of each item to the concept of organisational performance. The Content Validity Ratio (CVR) results showed that twenty-one (21) of fifty-two (52) items were considered the most critical by the content experts, and the results for the Item Level Content Validity Index (I-CVI) showed that forty-six (46) items were considered appropriate. These findings demonstrate that the instrument has adequate content validity. The outcomes of this study have important implications for the use of this instrument in organisational performance assessment for the construction industry. The instrument can be used to measure construction organisational performance comprehensively and systematically. This will help researchers and practitioners better understand the factors that contribute to performance and develop interventions to improve it.

INTRODUCTION

The construction industry faces challenges due to increased competition and unstable operating environments, affecting both developed and developing countries, as highlighted by Tan et al. (2012). However, to survive and thrive in the ever-changing and competitive construction industry, it is essential

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for organisations to constantly seek ways to improve their performance and gain a competitive edge (Rudd et al., 2008). Organisational performance has been a prominent concern in this research. *"Organisational performance"* is defined by Cho & Dansereau (2010) as the evaluation of a company's performance concerning its goals and objectives. Furthermore, Tomal & Jones (2015) describe *organisational performance* as the tangible outcomes or achievements of an organisation when compared to its intended targets or outputs.

Many factors influence an organisation's performance. These include changing organisational structures, increased knowledge and new innovative technologies, greater specialisation and interdisciplinary collaboration, consumerism, environment protection, and changes in regulations are some of the forces and trends that are some of the issues that have a part to play concerning the performance of the organisation (Satyendra, 2020). In addition, the management of construction organisations needs to know how to do things well to succeed. This knowledge and understanding will enable them to design and implement efficient processes that enhance their performance.

LITERATURE REVIEW

Gimbert et al. (2010) and Indeed (2023) define a performance measurement system (PMS) as a set of metrics that organisations use to track their performance. These metrics can be financial or non-financial, and they help organisations to make better decisions by providing them with data about how they are doing. The development of PMS in organisations has evolved and is a continuous process. Therefore, the development of performance measurement systems can help organisations quantify their competitive advantage. Yang et al. (2010) suggest that construction organisations can measure their performance at three different levels: project, stakeholder, and organisational. This measurement reflects the degree of success in achieving business objectives (Bititci et al., 1997). In light of this, evaluating the performance of a construction organisation is crucial for ensuring success at all levels. By adopting a performance management system (PMS) at these three different levels, organisations can align their long-term strategy with their performance measurement system. This can motivate employees and improve overall performance.

Initially, performance measurement in construction mainly focused on the project level, as noted by Yang et al. (2010). The first level of performance measurement in construction is the project level. Three key performance indicators are typically used to measure project performance: time, cost, and quality (Kagioglou et al., 2001). However, in the past decade, the focus on performance measurement in the construction industry has expanded from the project levels to the organisational and stakeholder levels. The stakeholder level focuses on the relationships between different contracting parties, such as owners, contractors, and consultants. Wang & Huang (2006) demonstrated that the stakeholders' performance is linked to project success.

The third level of performance measurement in the construction context is at the organisational performance level. The importance of identifying an organisation's performance is evident in all global market sectors. Given the simultaneous execution of multiple projects and the management of numerous resources in the construction industry, measuring performance at the organisational level is essential (Lin & Shen, 2007). Various measurement frameworks have been developed over the years to measure performance at the organisational level. These frameworks include key performance indicators (KPIs), the balanced scorecard (BSC) model, and the European Foundation for Quality Management (EFQM) excellence model (Lin & Shen, 2007). Therefore, the choice of which framework to use will rely on the specific need of the organisation. Some factors to consider include the organisation's size, industry and strategic goals. In light of this, measurement frameworks can offer and provide a number of benefits for

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organisations such as improved decision-making, increased accountability, improve communication between different levels of the organisation and enhanced motivation.

Thus, organisational performance in construction reflects the overall performance that ensures an organisation's survival in a competitive business environment (Tan et al., 2012). This differs from project or stakeholder-level measures, which only capture performance in a single dimension. So, the extended contingency theory approach suggests that effective organisational performance relies on the fit between an organisation's strategy, structure, quality, and culture as well as the external environment in which the organisation operates. This theory approaches recommends and suggests that determinants such as project efficiency, business success, preparation for the future (Padovi & Carvalho, 2016), transformational leadership (Maqbool et al., 2017), knowledge sharing (Jiao et al., 2019), human resource management, top management commitment (Negron, 2020), and project portfolio management quality (Jiao et al., 2019) can all impact the assessment of organisational performance in construction organisations. These determinants can help the organisations to develop more effective strategies and structures for success. Generally, the summary of the literature review employed on performance measurement in construction in this research paper can be seen in Table 1 below.

Table 1. Summary of the literature review on performance measurement in construction

Aspect	Scope & Importance	Level of Measurement	Key Findings	References
Performance Measurement System (PMS)	Track organisational performance (financial & non-financial)	Evolved & continuous process	Quantifies competitive advantage	Gimbert et al. (2010), Indeed (2023)
Construction Industry Focus	Multi-level approach for success	Project stakeholder, organisational	Aligns strategy with performance	Yang et al. (2010), Bitici et al. (1997)
Project Level	Traditional focus	Time, Cost, Quality		Kagioglou et al. (2001)
Stakeholder Level	Emerging focus	Relationships & collaboration	Linked to project success	Wang & Huang (2006)
Organisational Level	Critical for overall success	Numerous frameworks & KPIs available	Choice depends on size, industry and goals	Lin & Shen (2007)
Benefits of Measurement Frameworks	Improved decision-making, accountability, communication and motivation	Ensures survival in competitive environment		Lin & Shen (2007), Tan et al. (2012)
Contingency Theory Approach	Fit between strategy, structure quality, culture, and external environment	Determinants like project efficiency, business success, future preparation, leadership, knowledge sharing, HR Management, commitment and project portfolio management quality impact performance		Padovi & Carvalho (2016), Moqbool et al. (2017), Jiao et al. (2019), Negron (2020).

Source: Authors, 2024

The main objective of the current study is to determine the factors that influence organisational performance at the organisational level within the construction industry. The study aims to validate and assess the content validity of assessing these organisational performance determinants using the Content Validity Ratio (CVR) and Content Validity Index (CVI) across five (5) constructs. Therefore, this

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assessment serves as an initial step before the main data collection, aiming to form a conclusive understanding of organisational performance determinants from the construction organisations' perspective.

RESEARCH METHODOLOGY

A valid instrument measures what it is supposed to measure (DeVellis, 2003). It helps researchers interpret variables and the relationship between variables more theoretically (Straub et.al, 2004). Validity is a vital factor in selecting or applying an instrument. Traditionally, three types of validity may be established – content, criterion and construct validity. Since content validity is a prerequisite for other validities, it should be given more importance during the instrument construction.

As mentioned by Cook Da et al. (2006) and Haynes SN et al. (1995), content validity refers to how well the items in an assessment tool actually measure what they are supposed to measure for a specific assessment goal. Hence, content validity is a critical step in developing a new measurement scale and represents a beginning mechanism for linking abstract concepts with observable and measurable indicators (Wynd, 2003). However, the elements of an assessment instrument include everything that can impact the data collected during the measurement process, like the questions in the questionnaire, how people answer them, and the instructions given.

This study used a quantitative research method to examine the factors affecting organisational performance in Malaysian construction organisations. The researcher distributed a specific questionnaire to panels of content experts to assess the validity of these factors. The questionnaire was designed based on the extended contingency theory, which suggests that organisational performance depends on how well an organisation's leadership strategy, knowledge management, top management commitment, structure of human resource management, quality, and culture align with the external environment.

The results of the questionnaire survey were assessed using two metrics: Content Validity Ratio (CVR) and Content Validity Index (CVI). The CVR measured how well each item on the questionnaire reflected the intended construct, while the CVI provided a more comprehensive assessment by considering both the number of items and the overall rating of the questionnaire by the experts. In the following sections, we will provide an overview and analysis of the main findings of this research, focusing on the results obtained from the CVR and CVI analyses.

Figure 1 shows the process of research methodology for content validation development and formation that has been summarised in a flowchart to enhance the better understanding of the research carried out.

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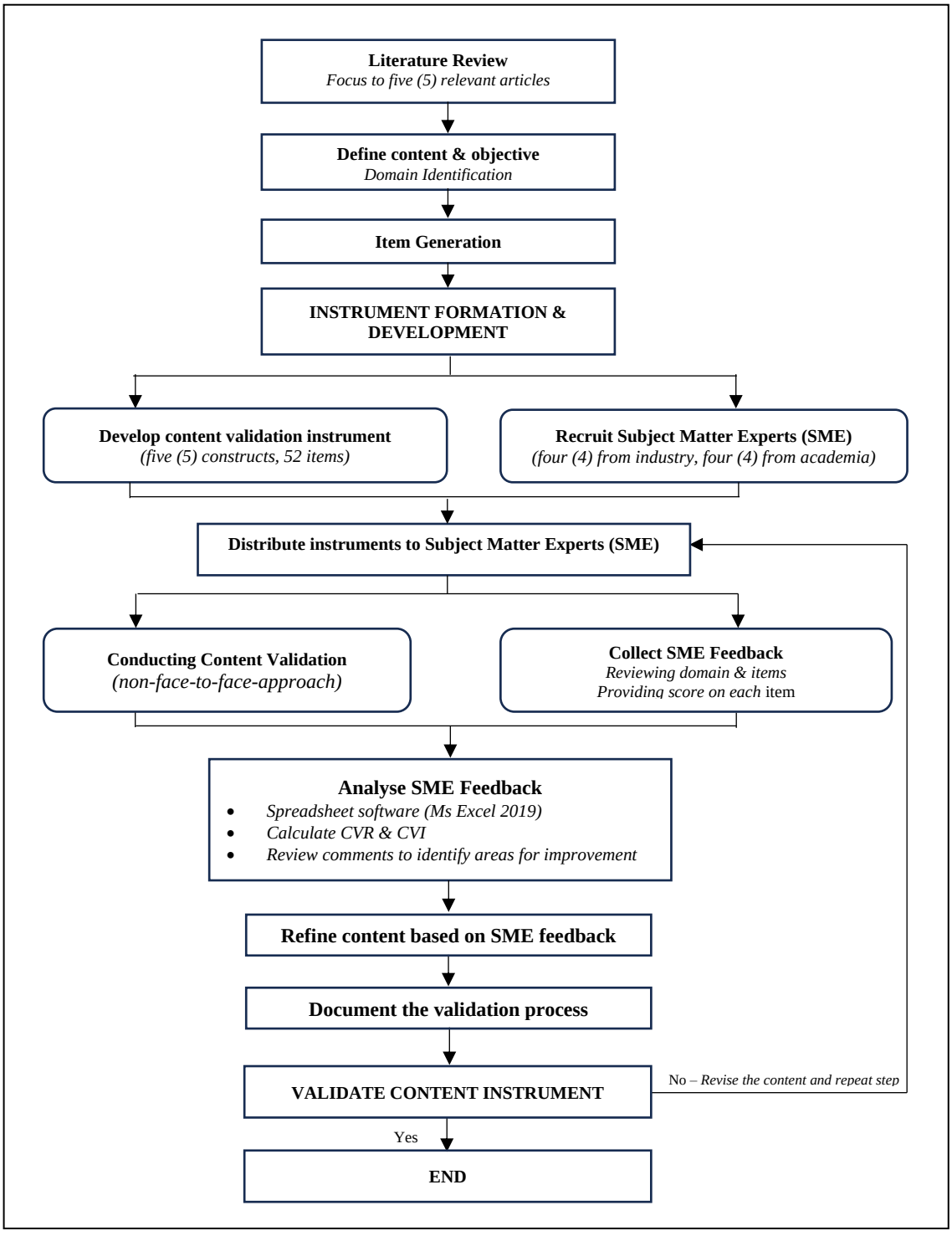

Fig. 1. Process of research methodology for content validation development and formation

Source: Authors, 2024

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Instrument Development

Literature review

The first method is through the literature review of five (5) existing organisational performance and project success construct assessment instruments to identify critical components in determinants of organisational performance in construction organisations. The purpose of the literature review is to develop organisational performance determinant instruments in the form of questionnaires (i.e., CVR and CVI – 3-point scale).

Preparing Content Validation form instrument and Questionnaire survey

The initial stage of content validation involves creating a form to ensure that the expert review panel understands the task clearly. This validation form follows and employs the standards set by The American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (2014) to ensure content validity.

The questionnaire *"Determinants of Organisational Performance: Perspective from the construction organisation in Malaysia"* is a 52-item survey that assesses five (5) constructs related to organisational performance. Table 2 shows the categories and indicators used by the judges to validate the instrument tool. Each item was assessed by a panel of experts using a three-level scale (not necessary/not clear, acceptable, and essential to measure construct or very clear) to determine its importance and clarity.

In light of this, different scale properties (5-point interval scale and 6-point interval scale) are techniques and methodologies proposed in a set of questionnaire surveys as a way to prevent common method bias in the measurement scales (MacKenzie & Podsakoff, 2012). For instance, 5-point scales are proposed for this set of questionnaire surveys for this research conducted. Even though, using the same interval scales perhaps may help to increase the construct validity and reliability of the instrument by reducing the social desirability bias of answering the same scales. Besides, this survey instrument is organised by placing items for measuring each construct on different pages to provide proximal separation, which is another way to prevent common method bias.

Table 2. Categories and indicators used by judges to validate the tool

Categories	**Indicators**
Essential	The item is not necessary to measure the conduct
(The scale of importance)	The item is acceptable
	The item is essential to measure the construct
Clarity	The item is not clear
(The scale of Clarity)	The item is acceptable
The item can be understood easily	The item is very clear

Source: Authors, 2024

Classification of expert respondents

Choosing who reviews and critiques an assessment tool, like a questionnaire, typically depends on their expertise in the topic being studied. Nevertheless, a minimum of five (5) experts is recommended to review an instrument to ensure that the items are essential, relevant and comprehensive (Wynd et al., 2003; Yaghmale, 2003; Lynn, 1986).

Furthermore, the maximum number of experts has not been determined, but it is unlikely that more than ten experts would be needed. It was supported and considered by recommendations by authors such

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as Davis et al. (1992), Polit et al. (2006; 2007) and Lynn (1986) that the number of experts for content validation should be at least six (6) and does not exceed ten (10). In light of this, a total of eight (8) respondents have been chosen and agreed as subject matter experts for this study.

Table 3 below summarises the suggested number of experts and its impact on the acceptable cut-off score of the Content Validity Index (CVI).

Table 3. The number of experts' recommendation and their implication on the acceptable cut-off score of CVI

Number of experts	Acceptable CVI values	Source of recommendation
Two experts	At least 0.80	Davis (1992)
Three to five experts	Should be 1	Polit & Beck (2006), Polit et al., (2007)
At least six experts	At least 0.83	Polit & Beck (2006), Polit et al., (2007)
Six to eight experts	At least 0.83	Lynn (1986)
At least nine experts	At least 0.78	Lynn (1986)

Source: Davis, 1992; Polit & Beck, 2006; Polit et al., 2007; Lynn, 1986

Table 4 shows the information on the experts including the experts' designations, professional and academic backgrounds, location and experience in the construction industry. Based on the experts' backgrounds and experience, it is reasonable to conclude that they have the knowledge and expertise to review the instrument and provide valuable feedback. The experts' feedback is used to improve the content of the instrument and ensure that it is a valid measure of organisational performance in construction organisations.

Table 4. Sample and respondents of the content validity

No	Experts / Respondents	Industry / Academia	Location	Area of Expertise	Experience in Industry
1	Project Director & Project Manager (Sr. Ts. Dr)	Industry	Malaysia	Construction & Civil Engineering	23
2	Senior Manager (Ir. Dr)	Industry	Malaysia	Construction & Civil Engineering	2
3	Project Manager	Industry	Malaysia	Construction & Property Estate	12
4	Senior Engineer, Project	Industry	Malaysia	Construction & Civil Engineering	13
5	Associate Professor (Ir. Ts Dr)	Academia	Malaysia	Construction Management	8
6	Associate Professor (Dr)	Academia	Malaysia	Construction Management	15
7	Senior Lecturer (Dr)	Academia	Malaysia	Project Management	10
8	Senior Lecturer (Dr)	Academia	Malaysia	Business Management	4

Source: Authors, 2024

Conducting Content Validation

The content validation for this study was done remotely starting February until June 2023, without face-to-face interaction. In this non-face-to-face approach, experts panel was received an online content validation form with clear instructions to guide the process. Moreover, this method can be highly effective if there is a systematic follow-up to enhance response rates and speed up the process (Yusoff, 2019).

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Reviewing Domain and Items

During the content validation process, the definition of the domain and its corresponding items were clearly presented to the expert panels through the validation form. Experts panel were given the opportunity to thoroughly review both the domain and its items before assigning scores to each item (Yusoff, 2019). They were encouraged to provide written or verbal feedback to enhance the relevance of the items to the intended domain. All comments from the expert panels were carefully considered in order to refine and revise both the domain and all 52 items.

Providing Score on Each Item

After reviewing the domain and items, experts are asked to individually score each item based on the provided content validation form and relevant scale. Once they have finished providing feedback and scoring all 52 items, experts are required to submit their responses back to the authors.

Specific tool or Application used for analysis

The data analysis is the sequencing process with data collection. In this stage, the data obtained via data collection from the content validation form has been completed by the subject matter experts. The analysis of the data was done to come up with the result of the research carried out. The most common approach or tool is using spreadsheet software like Microsoft Excel or Google Sheets.

In light of this, spreadsheet software such as Microsoft Excel version 2019 was applied to analyse statically to this research whereas the authors have created a table to record expert ratings for each item according to the content validation instrument. Then, use formulas to calculate CVR for each item by referencing the number of experts rating it in a specific category (i.e., "Essential") and the total number of experts. Nevertheless, calculate S-CVI/Ave by averaging the CVRs of all items.

Thus, the content validity ratio and content validity index were used and applied for analysis as well as the results or findings presented in the form of tables. Below is the approach of data analysis used to interpret the data analysed.

Content Validity Ratio (CVR)

According to Cooper & Schindler (2011), content validity is a degree of measuring instruments to which the content of the items adequately represents the universe of all relevant items under study. The content validity could be employed utilising the judgmental method and panel evaluation with CVR. The CVR indicates the level of agreement among experts regarding whether an item is essential (Lawshe, 1975). In addition, a 3-point scale was recommended to rate each item: (1) not necessary to measure the construct, (2) acceptable (but not essential); and (3) essential to measure the construct (Zamanzadeh et al., 2015; Ayre & Scally, 2014; Lawshe, 1975). The revised CVR critical table by Ayre and Scally (2014) will be compared against the CVR value to determine whether the item should be deemed critically significant.

The CVR is calculated on the formula that Lawshe (1975) developed:

$$\boldsymbol{Content\ Validity\ Ratio\ (CVR)} = \frac{(\mathbf{ne} - (\boldsymbol{N} / \mathbf{2}))}{(\boldsymbol{N} / \mathbf{2})}$$

where;

ne: number of expert panel members indicating an item *'essential'*
N: number of expert panel members

The outcome of this formula is that:

- When all say "essential", the CVR is 1.00 (100% agreement)

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- When the number saying "essential" is more than half (>50%), but less than all (<100%), the CVR is between zero and 0.99, and
- When fewer than half (<50%) say "essential", the CVR is negative.

Content Validity Index (CVI)

In contrast, another approach is the CVI instruments proposed by Lynn (1986) and Polit and Beck (2007) which can be used to rate each instrument item in terms of its relevancy or clarity to the construct on a 3-point scale: (1) not clear, (2) acceptable or somewhere acceptable and (3) very clear. The Content Validity Index (CVI) is a measure of how well a measurement tool represents the construct it is designed to measure (Lawshe, 1975). A panel of experts rates each item on the tool for relevance and clarity.

The CVI is calculated by dividing the number of experts who rate an item as relevant or clear by the total number of experts. The CVI can be calculated at the item level (I-CVI) or the scale level (S-CVI). The S-CVI can be calculated using different methods, such as S-CVI/Ave or S-CVI/UA. These methods take into account the level of agreement among experts (Lawshe,1975). S-CVIs are a measure of content validity that is calculated as the proportion of items on an instrument that are rated as *"relevant/acceptable*" or *"very relevant/very clear*" by a panel of content experts. This contrasts with I-CVIs, which are calculated as the average rating of each item on an instrument (Beck & Gable, 2001).

FINDINGS AND DISCUSSION

The main findings obtained from the content validation form of the questionnaire survey were presented through an analysis of the Content Validity Ratio (CVR) and Content Validity Index (CVI).

Analysis of the Content Validity

Table 5 presents each construct's components and the number of items. The instrument used to measure the determinants of organisational performance consists of a total of 52 items including the open-ended questions that are relatable to the research carried out.

These items are divided into five (5) constructs: transformational leadership (4 items), knowledge sharing (13 items), internal supports (10 items), for example, *human resource management (5 items)*, *top management commitment (5 items)*, project portfolio management quality (12 items), and organisational performance (13 items). These constructs have been taken and adapted from the assessment instrument mentioned earlier (Negron, 2020).

Table 5. Components of Organisational Performance Instruments

No.	Constructs	Items	Authors	No. of items
1	Transformational Leadership	Integrity	Maqbool et al. (2017)	1
		Trust & shared sense		1
		Tackle problems		1
		Inspire & motivation		1
2	Knowledge Sharing	Knowledge sharing within the project (KSWP)	Jiao et al. (2019)	6
		Knowledge sharing among Projects (KSAP)		3
		Knowledge sharing within the Organisation (KSWO)		4

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3	Internal Support	Human Resource Management	Negron (2020)	5
		Top Management Commitment		5
4	Project Management Portfolio Quality	Information Quality	Jiao et al. (2019)	6
		Resource Allocation Quality		3
		Cooperation quality		3
5	Organisational Performance	Project Efficiency	Padovi & Carvalho (2016)	3
		Business Success		3
		Preparation for Future		5
		Other Related Issue		2
TOTAL				**52**

Source: Authors, 2024

Hence, the items developed from the literature search and existing instruments can be used and adapted as input for further data collection through questionnaires of organisational performance instruments administered by subject matter experts. Table 6 below presents the details of the construct's components with the adapted item as well as the source of the authors for the development of questionnaire instruments.

Table 6. Details of Components of Organisational Performance Instruments with adapted items

No.	Construct	Adapted Item	Source/Author
1	**Transformational leadership**	As a leader, I deal with my employees with integrity and appeal to them emotionally.	Maqbool et.al. (2017)
		I can build trust and shared sense of vision in my team members	
		I help employees learn to tackle and solve problems on their own.	
		As a leader, I inspire and motivate my employees to work optimistically toward challenging goals	
2	**Knowledge Sharing (KS)**		
	KS within the project	Project members shared the minutes of meetings or discussion records effectively	Jiao et al. (2019)
		Project members always provided technical documents, including manuals, books, training materials, to each other.	
		Project members shared project plans and the project status effectively.	
		Project members always provided know-where or know-whom information to each other in an effective way.	
		Project members tried to share expertise from education or training in an effective way.	
		Project members always shared experience or know-how from work responsively and effectively.	
	KS among project	The project often team provides project management guidelines and methods for other projects within the portfolio.	
		They often project team provides professional technical support for other projects within the portfolio.	
		The project team can freely access the information and knowledge provided by other projects.	

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	KS within organisation	The company organises the knowledge and experience of projects into working manuals and specifications.	Jiao et al. (2019)
		The company uses the database and other technologies to preserve the knowledge and experience of projects.	
		Project members can easily access the database for knowledge help.	
		Project members often communicate with operational staff through technical means such as e-mail.	
3	**Internal Support**		
	Human Resource (HR) Management	All employee suggestions are evaluated.	Negron (2020)
		Resources are available for employees relating quality training in our plant.	
		There is almost always some employee quality training going on in our plant.	
		Superiors/ managers are often involved in quality training.	
		Most employees in our plant do not view each new quality seminar as “just another fad.”	
	Top Management Commitment	We proactively pursue continuous improvement.	
		Performance evaluation by the top-level management depends heavily on the quality.	
		Top-level managers allocate adequate resources toward efforts to improve quality.	
		We have clear quality goals identified by top-level managers.	
		At company-wide meetings, top-level managers often discuss the importance of quality.	
4	**Project Portfolio Management Quality**		
	Information Quality	The transparency of our project portfolio is excellent.	Jiao et al. (2019)
		We can access all relevant information on a project's status easily and quickly.	
		The presentation of information on the project portfolio is standardised at the top management level.	
		Project and line managers are continuously provided with relevant information on the entire project portfolio.	
		Project status and resource information can be interpreted easily and quickly.	
	Resource allocation quality	Project managers and line managers constantly haggle about resources.	
		It requires time-consuming coordination loops until the portfolio resource allocation is finished.	
		Line managers always adhere to their resource commitments.	
	Cooperation Quality	Our project teams support each other.	
		In cases of problems, project managers try to solve them directly among each other.	
		Overall, there is excellent cooperation among our projects.	
5	**Organisational Performance**		
	Project Efficiency	Projects in the current portfolio meet the deadline.	Padovi & Carvalho (2016)
		Projects in the current portfolio meet the budget.	
		Projects in the current portfolio achieve the specification requirements and desires of clients.	

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Business Success	There was an increase in annual revenues.	
	We observe a consistent increase in profits and results.	
	We observe the employee's participation in profits and results increase.	
Preparation for Future	In the current portfolio, new technology was developed or acquired, and patents were registered.	Padovi & Carvalho (2016)
	In the current portfolio, new markets developed.	
	In the current portfolio, a new line of products was developed.	
	In the current portfolio, new competencies developed	
	In current portfolio production capacities or diversification observed	

Source: Authors, 2024

Table 6 indicates that this study will add to the understanding of Organisational Performance within the framework of the contingency theory approach. This theory examines how individuals perceive their organisation's performance across three key areas: project efficiency, business success, and preparation for the future.

Within this approach, organisational performance is viewed through the lens of effectiveness and is influenced by core practices that emphasise quality aspects, particularly in Project Portfolio Management Quality. Additionally, these core practices are supported by infrastructure practices such as knowledge sharing, HR management, top management commitment, and Transformational leadership. The exploration of these three domains within contingency theory offers valuable insights for scholars and researchers in project management, helping them identify the essential elements that contribute to organisational performance.

Content Validity Ratio (CVR)

Table 7 indicates that the content experts identified 21 out of 52 items as critical. These items are related to knowledge sharing (3 items); internal support (5 items); project management portfolio quality (6 items) and organisational performance (7 items). According to Ayre & Scally (2014), an item with a score of CVR=1.00 for eight experts (N=8) is considered critical.

Table 7. CVR critical items in Organisational Performance instrument

Construct No	Items	No. of sub-items
1	Transformational leadership	-
2	Knowledge sharing	3
3	Internal Support	5
4	Project management portfolio quality	6
5	Organisational performance	7
TOTAL		21

Source: Authors, 2024

In summary, all respondents have agreed that these 21 items are essential to include in the organisational performance instrument. However, the remaining 31 items will be retained for further testing of their content validity index (CVI).

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Content Validity Ratio (CVR)

Table 8 outlines the criteria for evaluating the Content Validity Index (I-CVI). Based on the I-CVI scores, 46 items with scores ranging from 0.875 to 1.000 are deemed suitable and appropriate for inclusion in the organisational performance determinants instrument. Nine (9) items (RP5, TL8, TL10, KS15, KS16, IS27, IS28, PQ37, and PQ42) with scores between 0.70 to 0.79 require further revision. However, the remaining four (4) items (RP6, RP7, IS29, and IS40) with scores below 0.70 should be eliminated from the instrument.

Table 8. Evaluation criteria for I-CVI

I-CVI classification	No. of items	Score
>0.79	46	Appropriate
0.70 – 0.79	9	Needs revision
<0.70	4	Eliminate

Source: Davis (1992), Cicchetti & Sparrow (1981) and Polit, Beck, & Owen (2007)

All items were reviewed and assessed for elimination using the Content Validity Index (I-CVI). Table 9 represents the changes made to the items RP05 *(exclusion due to respondent profile)*, TL08, TL10, KS15, KS16, IS27, IS28, PQ37, and PQ42 to improve their content validity for organisational performance instruments (before and after revision).

The changes were made based on the Scaled Content Validity Index (S-CVI/Ave), which is a measure of content validity that considers the average agreement of a panel of experts (Polit & Beck, 2007).

Table 9. Content validity of Organisational Performance instrument (before and after revision)

Item No.	Before revision	After revision
TL08 (Item: Transformational Leadership)	As a leader, I deal with my employees with integrity and appeal to them emotionally	As a leader, we deal with our employees with integrity and by considering their emotions.
TL10 (Item: Transformational Leadership)	I help employees learn to tackle and solve problems on their own	We help employees learn to tackle problems on their own.
KS15 (Item: Knowledge sharing within the project)	Project members always provided know-where or know-whom information to each other in an effective way.	Project members always provided *know-where* information to each other in an effective way.
KS16 (Item: Knowledge sharing within the project)	Project members tried to share expertise from education or training in an effective way.	Project members tried to share expertise from training in an effective way.
IS27 (Item: Human Resource Management)	There is always training and course related to quality for employees going on in our company.	There is always training related to quality for employees to going on in our company.
IS28 (Item: Human Resource Management)	Superiors/managers are involved in quality training.	Managers are involved in quality training.

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PQ37 (Item: Project Portfolio Management Quality – *Information Quality*)	The presentation of information on the project portfolio is standardised at the top management level	The way that information about the project portfolio is presented is standardised at the top management level.
PQ42 (Item: Project Portfolio Management Quality – *Resource Allocation Quality*)	It requires time-consuming coordination loops until the portfolio resource allocation is finished.	The process of allocating resources to the project portfolio can be time-consuming, as it requires multiple rounds of coordination between different stakeholders.

Source: Authors, 2024

The content validity of the organisational performance instrument was assessed using the S-CVI/Ave method. This method measures the extent to which experts agree that the items in an instrument are relevant to the construct that it is intended to measure. A score of 0.900 or higher is adequate content validity (Polit & Beck, 2006; Waltz et al., 2005).

The results of the content validity analysis are shown in Table 10. The initial S-CVI/Ave score for the instrument was 0.888, which was below the threshold for adequate content validity. However, after nine (9) items were revised and four (4) items were eliminated, the S-CVI/Ave score increased to 0.907, which is adequate.

The results suggest that the organisational performance instrument, with 55 items, has adequate content validity. This means that the items in the instrument are relevant to the construct of organisational performance and that the instrument is likely to measure organisational performance accurately.

Table 10. Content validity of Organisational Performance instrument (before and after modification)

Before modification (59 items)			**After modification (55 items)**		
I-CVI classification	No. of total items	Total score of I-CVI	I-CVI classification	No. of total items	Total score of I-CVI
>0.79	46	43.125	>0.79	46	43.125
0.70 – 0.79	9	6.75	0.70 – 0.79	9	6.75
<0.70	4	2.500	<0.70	-	-
Total		52.375	Total		49.875
S-CVI/Ave		0.888	S-CVI/Ave		0.907

*I-CVI= item-level-CVI; S-CVI/Ave= scale-level-index/Averages

Source: Authors, 2024

CONCLUSION

Calculating the content validity for the construct to the research carried out helped bridge the gap between academia and industrial perspectives on organisational performance in construction industry assessment instrument. By carefully defining the content domain, we ensured that the instrument's development was rooted in a shared understanding, and minimising discrepancies between different viewpoints.

The Content Validity Ratio (CVR) scores indicated that 21 out of 52 items were the most critical by the content experts. These items were related to knowledge sharing, internal support, project management portfolio quality, and organisational performance. The remaining 31 items were retained for further assessment using the Item Level Content Validity Index (I-CVI). The I-CVI results showed that 46 items

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in the organisational performance instrument were appropriate. Nine (9) items were recommended for revision and four (4) items were suggested for elimination, resulting in a total of 55 items in the instrument after modifications.

The S-CVA/Ave score confirmed that the instrument has adequate content validity, meaning the items are relevant to the construct of organisational performance. The instrument is also reliable, with the selected items being the most suitable for the construct. The method used to assess the content validity of the instrument was a two-stage process. The first stage involved the development of the instrument, and the second stage involved a panel evaluation of the items. This process is a more accurate approach to criticising research instruments.

This research is part of an ongoing PhD study at the Faculty of Industrial Management, Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA). The study aims to validate and assess the content validity of assessing these organisational performance determinants using the Content Validity Ratio (CVR) and Content Validity Index (CVI) across five (5) constructs comprehensively and systematically. This will allow researchers and practitioners to better understand the factors that contribute to construction organisational performance and to develop interventions to improve this construct. The study also aims to improve and enhance the delivery of Malaysian construction organisational performance by establishing and extending the contingency theory approach.

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CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

AUTHORS' CONTRIBUTIONS

All authors contributed equally in the production of this paper.

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