Evaluating Content Validity in Developing an Unregistered Childcare Monitoring Model to Mitigate Perceived Risk

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ABSTRACT

This article discusses the validity of instruments for the purpose of evaluating survey questions in a study. All items were developed based on adaptations from the literature. According to the study's findings, there are five key components that should be considered while creating an unregistered childcare monitoring model in order to lower perceived risk. These features include customer reviews, interactivity, laws, rules, regulations, technological innovation, and perceived risk. In order to help parents, make less risky childcare decisions, this study intends to assess the content validity of the questionnaire used to investigate an unregistered childcare monitoring model by looking at the effects of customer reviews, interactivity, law, rules and regulations, and technological innovation on perceived risk. Each item's content validity was developed with the help of six experts. In addition, a quantitative measurement method using the Content Validity Index (CVI) was used to assess whether the items should be retained or eliminated. The study's findings demonstrated strong content validity, with the overall value of the I-CVI content validity index ranging from 0.83 to 1.00. The S-CVI/UA and S-CVI/Ave values were 0.49 and 0.89, respectively. High content validity was shown by the Average technique, whilst moderate content validity was shown by the Universal Agreement method. Overall, these findings indicate that all items developed meet the criteria for proper measurement for a screening instrument, and all items in this survey are suitable for evaluating the development of an unregistered childcare monitoring model to reduce perceived risk.

Keyterms: Content validity, instrument, Content Validity Index (CVI), Unregistered childcare monitoring model, Perceived risk

INTRODUCTION

High-quality childcare is fundamental to early childhood development, influencing children's learning outcomes, future earning potential, and overall family well-being. According to the Parenting Care Framework developed by WHO, UNICEF, and the World Bank (WHO, 2018), early childhood care plays a crucial role in fostering cognitive and social development. This aligns with Sustainable Development Goal 4 (SDG 4), which emphasizes the need for a safe and inclusive learning environment. Since children represent the "human capital of the future," ensuring their safety and well-being is vital for both social and economic progress (Manas, 2020).

In Malaysia, the increasing participation of women in the workforce has heightened the demand for reliable childcare services. When women are the primary breadwinners, access to reliable childcare becomes essential. Childcare is not only a necessity for working parents but also a crucial support system that contributes to children's emotional, social, and physical development (Engle et al., 1997). Beyond education, quality childcare facilities must prioritize hygiene, nutrition, psychosocial support, and health services to ensure children's holistic well-being (Bauer et al., 2024).

Moreover, childcare must always provide high-quality education and care with a specific emphasis on health and safety because children may be exposed to various dangers, such as physical and emotional abuse

(Prabhakaran et al., 2020, Mutalib et al., 2021). Ramalingam & Alavi (2020) reported 581 cases of child abuse by caregivers from 2015 to 2020. A total of 217 cases of child abuse in unregistered childcare centers were recorded from January to December 2021 (Malay Mail, 2023). According to Asri et al. (2023), most cases of child or infant abuse usually involve caregivers at unregistered childcare centers or those that do not have sufficient supervision.

Furthermore, children living in childcare centers in Malaysia are more frequently exposed to health and safety threats (Jamaludin et al., 2018). Health and safety can be indicators of quality. They are also often used as a measure to assess quality (Mutalib et al., 2021). Therefore, childcare must provide a safe environment, including protecting children from hazards and having an emergency plan (Blasberg et al., 2019). The management of childcare centers should also take into account the health and safety of childcare providers because their health and safety also affect the children (Hanafi & Ismail, 2014).

This study aims to create an unregistered childcare monitoring model using new technology, regulatory compliance, customer review, interactivity and perceived risk. However, the model must undergo rigorous content validation by experts to be effective and usable. Therefore, analysis of important factors such as customer reviews, interactivity, legal framework, technological innovation and perceived risk will be used to evaluate the content of the proposed model.

In several ways, this research is important and contributes to the literature. First, it introduces a model for monitoring unregistered childcare in Malaysia. This model shifts the responsibility for childcare safety from the Department of Social Welfare (DSW) solely to parents so that they can make informed decisions. Second, it expands the Zellman and Perlman (2008) logic model by adding new independent variables such as interactivity, laws, rules regulations and technological innovation. It also uses prescriptive decision theory to examine how parents make decisions in situations of risk and uncertainty. Thirdly, this study has beneficial effects as it helps protect children, assists parents in making decisions about their children's care, and improves the literature on early childhood education and risk management. Finally, this study aims to improve the quality of childcare services, enhance public trust in DSW governance, reduce government monitoring costs, and, in line with the Malaysian Children Act 2001, create a safer and healthier environment for children.

The remainder of this paper is structured as follows: The next section outlines the research methodology, detailing the development of the research instrument and the approach used to evaluate content validity. The following section presents the results and provides a discussion of the key findings. The final section concludes the paper by summarizing the insights gained and their implications for developing an unregistered childcare monitoring model.

METHODOLOGY

Theoretical Framework

Normative, descriptive, and prescriptive approaches are used in decision theory (Edwards et al., 2007). However, this research expands on the prescriptive methods used by (Keeney, 1992). The prescriptive theory focuses on helping people make wise choices through a process structured in seven steps. The study introduced technological innovations such as applications or websites that provide childcare alternatives, interactivity, customer reviews, and legal regulations to reduce perceived risks. Previous studies used theories such as Rational Choice Theory (Pietropoli & Triventi, 2023), Expectation Confirmation Theory (Hussin et al., 2023), and Planned Behavior Theory (Wang et al., 2021), but they did not take into account the important role played by the available information sources. This study extends the application of theory to child care decision-making beyond management science (Chai et al., 2021) by using prescriptive decision theory, which emphasizes informed decision-making (Keeney, 1992) and employs decision analysis tools (Riabacke, 2012).

Questionnaire Development

A research instrument or questionnaire is intended to collect information, measure, and study the concept and idea of research conducted (Mohd. Majid Konting, 2005; Obeni, 2021). For example, the types of study

instruments are surveys, tests, questionnaires, achievement/aptitude tests, interviews, etc (Obeni, 2021). Therefore, this study uses a questionnaire that was developed by taking into account the guidelines and recommendations of past researchers. Since this study uses a questionnaire as a measurement tool to obtain information from the respondents, the questionnaire in this study uses bilingual language, namely Bahasa Malaysia and English. This situation aims to provide an opportunity for respondents to choose an easy-to-understand language to answer the questionnaire prepared (Marican, 2005). In addition, the questionnaire provided by the researcher must be easy for respondents to understand. For example, the questions provided are not complex, not vague in terms of meaning, have clear instructions, are not too difficult, and do not burden respondents to answer (Zikmund et al., 2013; Sekaran and Bougie, 2016; Saunders et al., 2019).

The research instrument constructed was based on past research and has been modified in terms of sentence structure. A total of 45 items divided into five main constructs. The questionnaire that consists of 19 items represents aspects of customer reviews. These questions measure how customer reviews influence parents' decisions in choosing an unregistered childcare center. Additionally, 8 question items related to the interactivity aspect, involving interactions between parents, childcare providers, and the Social Welfare Department. The laws, rules, and regulations construct consist of 7 question items that describe aspects including the registration status of childcare centers, frequency of inspections, and information related to compliance with regulations. Meanwhile, 5 question items represent aspects of technological innovation. The items in this section measure how technological innovations (such as websites and apps) can help parents in making decisions about childcare centers. The last part of the questionnaire involves 6 items of questions that measure the perceived risk aspects felt by parents when using unregistered childcare centers. Every item was evaluated on a seven-point Likert scale. (Refer to Table 1). Subsequently, the validity of the questionnaire was obtained by distributing it to six (6) academics.

Table 1 Research Instruments

Domain	Constructs	Scale	Source(s)
Customer review	Review usefulness	7-Point Likert Scale: 1. Strongly disagree 2. Disagree 3. Somewhat disagree 4. Neutral/ Unsure 5. Somewhat agree 6. Agree 7. Strongly agree	Chatterjee et al. (2022) & Filieri et al. (2020)
	Argument quality		Xiao & Lee (2019)
	Source credibility		Xiao & Lee (2019)
	Perceived quantity of reviews		Xiao & Lee (2019)
Interactivity	Stakeholders' interactivity	7-Point Likert Scale: 1. Strongly disagree 2. Disagree 3. Somewhat disagree 4. Neutral/ Unsure 5. Somewhat agree 6. Agree 7. Strongly agree	Sohaib & Kang (2015) & Cheung et al. (2020)

Law, rules and regulations	Child Care Centre Act 1984	7-Point Likert Scale: 1. Strongly disagree 2. Disagree 3. Somewhat disagree 4. Neutral/ Unsure 5. Somewhat agree 6. Agree 7. Strongly agree	Malaysian High Court
Technology Innovation	Visual appearance	7-Point Likert Scale: 1. Strongly disagree 2. Disagree 3. Somewhat disagree 4. Neutral/ Unsure 5. Somewhat agree 6. Agree 7. Strongly agree	Sohaib & Kang (2015)
Perceived risk	Financial risk		Yang et al. (2016)
	Performance risk		Yang et al. (2016)

Expert Validity

This study uses quantitative methods that include purposive sampling and survey questionnaires. Judgment sampling is a method where expert evaluators use their field expertise to assess research instruments (Juppri et al., 2020). Experts are selected based on specific criteria. This includes holding a doctorate degree and having at least 15 years of work experience (Suhami et al., 2023; Mohd Hafiz et al., 2022). To ensure the assessment is accurate, recommendations regarding the number of experts have been considered. This includes the recommendation by Shrotryia and Dhanda (2019) for at least three experts and Yusoff (2019) for at least six experts. Additionally, Luis (1982) recommends four or more experts. Hence, six experts in child development carried out the content assessment process in accordance with these guidelines.

Content Validity

Validity, as discussed by Abdullah et al. (2022) and Mohd Zulfadli et al. (2022), refers to how accurately an instrument or measure assesses what it intends to measure. Content validity, as explained by Yusoff (2019), focuses on how well the components of an assessment tool align with the constructs being evaluated for specific purposes. Moreover, it involves the rigorous process, as highlighted by Norliza et al. (2021), of clearly defining conceptual elements for a product to ensure they meet the intended objectives. As a result, CVI will be used in this study to measure content validity.

According to Amatan et al. (2021), Yusoff (2019), and Lynn (1986), when constructing the content validity index (CVI), researchers must choose experts to evaluate items created using a point scale: (1) the item is not relevant to the measured domain, (2) the item is somewhat relevant to the measured domain, (3) the item is quite relevant to the measured domain, and (4) the item is highly relevant to the measured domain. There are two types of CVI: the scale-specific CVI (S-CVI) and the item-specific CVI (I-CVI). S-CVI is computed using two methods: the percentage of items on the scale that receive a relevance scale of 3 or 4 from all experts (S-CVI/UA) and the average of the I-CVI scores for all items on the scale (S-CVI/Ave) (Lynn, 1986).

The number of experts hired determines the agreed-upon value of the CVI that was presented. Accordingly, for high content validity, a CVI value of at least 0.78 for five to six people and more than 0.8 for four to five experts is advised (Amatan et al., 2021; Davis, 1992). Mohd Matore et al. (2017) also proposed that a CVI value of more than 0.8 for content validity involving more than three experts is recommended. According to Yusoff (2019), content validity including at least nine experts should have CVI values of at least 0.80 for two experts, 1.0 for three to five experts (Polit & Beck, 2006; Polit et al., 2007), 0.83 for six to eight experts, and 0.78 for nine or more experts (Lynn, 1986). An appropriate S-CVI value, according to Guo et al. (2020), is one that falls between 0.78 and 0.83. Here are some examples of calculations based on the given data (see Table 3) to show how the CVI indices are calculated (see Table 2).

Table 2 Calculation of CVI, I-CVI, S-CVI/Ave and S-CVI/UA

The CVI indices	Formula	Sources
I-CVI (item-level content validity index)	**I-CVI** = (agreed item)/ (number of expert)	Yusoff (2019), Lynn (1986), Davis (1992), Polit & Beck (2006) and Polit et al. (2007).
S-CVI/Ave (scale-level content validity index based on the average method)	**S-CVI/Ave** = (sum of I-CVI scores)/ (number of item) S-CVI/Ave = (sum of proportion relevance rating)/ (number of expert)	
S-CVI/UA (scale-level content validity index based on the universal agreement method)	**S-CVI/UA** = (sum of UA scores)/ (number of item)	

RESULT AND DISCUSSION

The table below shows the result of Content Validity Index (CVI) decision made by 6 expert evaluators for the instrument development of unregistered childcare monitoring model to reduce perceived risk (refer Table 4). Based on the findings of the study, a CVI value of 0.89 was established by the 6 expert evaluators (Yusoff, 2019; Lynn, 1986). Through these experts, a total of 45 items were proposed, with 8 items being eliminated due to having values below 0.89. A total of 37 items were marked as relevant, and the individual Item Content Validity Indexes (I-CVIs) ranged from 0.83 to 1.00. According to the results below, 15 items scored 0.83 and 22 items had an I-CVI of 1.00. According to the CVI's results, most of the issues were deemed relevant. Eight items, on the other hand, had an I-CVI of 0.70; these were removed because the scores were less than 0.83.

The S-CVI/UA and S-CVI/Ave are 0.49 and 0.89, respectively. The average is determined by dividing the total of all I-CVI by 45, whereas the Universal Agreement is determined by aggregating all I-CVIs equal to 1.00 (22 items) divided by 45. In general, the Average technique has good content validity, whereas the Universal Agreement method offers moderate content validity.

Table 4 CVI (Content Validity Index) values of Items

No.Item	Item	*ne	**I-CVI	Interpretation
	Customer Review			
1	Customer review can help me choose the right services for myself.	6	1.00	Retained
2	Customer review is one of the deciding factors the customers look for while purchasing a service.	6	1.00	Retained

3	I always see the average review score before buying a service.	6	1.00	Retained
4	Customer reviews of childcare service can help me rapidly identify the best products available in the neighborhood.	6	1.00	Retained
5	Customer reviews can guide my decision in searching for childcare.	6	1.00	Retained
6	Customer reviews can help me understand which childcare is appreciated by other parents the most.	5	0.83	Retained
7	Customer reviews can help me reduce the number of alternative childcares to consider.	6	1.00	Retained
8	Customer reviews can help me shortlist the childcare service that is worth purchasing.	6	1.00	Retained
9	Complete information can help me understand about the childcare service.	5	0.83	Retained
10	Relevant information can guide my decision in searching for childcare.	6	1.00	Retained
11	Persuasive argument can help me decide the childcare service that is worth purchasing.	6	1.00	Retained
12	Convincing argument can help me decide the childcare service that is worth purchasing.	6	1.00	Retained
13	People who left the review should be knowledgeable in evaluating the quality of the childcare service.	4	0.70	Deleted
14	People who left the reviews should be the experts in evaluating the quality of the childcare service.	4	0.70	Deleted
15	People who left the reviews should be trustworthy.	4	0.70	Deleted
16	People who left the reviews should be reliable.	4	0.70	Deleted
17	The number of reviews is one of the deciding factors that I look for while purchasing a service.	5	0.83	Retained
18	The popularity of the childcare service is one of the deciding factors that I look for while purchasing a service.	5	0.83	Retained
19	Large number of reviews can help me decide the childcare service that is worth purchasing.	5	0.83	Retained
	Interactivity			
20	The opportunity to interact with other parents who used the childcare service can guide my decision in searching for childcare.	6	1.00	Retained

21	The opportunity to interact with childcare providers can guide my decision in searching for childcare.	6	1.00	Retained
22	The interaction between Department of Social Welfare (DSW) and childcare providers can guide my decision in searching for childcare.	6	1.00	Retained
23	I believe interactivity can help me in making childcare decision.	4	0.70	Deleted
24	I believe conveying opinions is important in making childcare decision.	4	0.70	Deleted
25	I believe that having conversation with others is important in making childcare decision.	4	0.70	Deleted
26	I believe that two-way interactions can help me in making childcare decision.	5	0.83	Retained
27	Sharing information with others is important in making childcare decision.	5	0.83	Retained
	Laws, Rules and Regulations			
28	I know the difference between registered and unregistered childcare centers.	6	1.00	Retained
29	I always check the childcare registration status before using the services.	6	1.00	Retained
30	Information about the current childcare registration status can help me make childcare decision.	6	1.00	Retained
31	Information about the termination of childcare registration status can help make me make childcare decision.	5	0.83	Retained
32	Information about the number of scheduled inspections conducted can help me make childcare decision.	5	0.83	Retained
33	Information about the number of unscheduled inspections conducted can help me make childcare decision.	5	0.83	Retained
34	Information about the number of penalties received by the childcare providers can help me make childcare decision.	4	0.70	Deleted
	Technology Innovation			
35	The color used in the technology innovation (e.g., web, apps) should be appealing.	6	1.00	Retained
36	The images used in the home page should be eye-catching.	6	1.00	Retained
37	The color used in the technology innovation	5	0.83	Retained

	(e.g., web, apps) should be attractive.			
38	The brightness of pages in the technology innovation (e.g., web, apps) should be adequate.	5	0.83	Retained
39	Zooming and 3D images should be helpful in purchasing what I want through this technology innovation.	5	0.83	Retained
	Perceived Risk			
40	If I bought this childcare service, I would be concerned that the financial investment I make would not be wise.	5	0.83	Retained
41	Purchasing this childcare service could involve important financial losses.	6	1.00	Retained
42	If I bought this childcare service, I would be concerned that I would not get my money's worth.	5	0.83	Retained
43	If I were to purchase this childcare service, I would be concerned that the service will not provide the level of benefits that I would be expecting.	6	1.00	Retained
44	As I consider the purchases of this childcare service soon, I worry about whether it will really "perform" as well as it is supposed to.	6	1.00	Retained
45	The thought of purchasing this childcare service causes me to be concerned for how really reliable the service will be.	6	1.00	Retained
***S-CVI/Ave **0.89**				
****S-CVI/UA **0.49**				

Ne the number of experts who have rated the item as very important (relevant), involves six expert panels (N=6)

**I-CVI Item-Level Content Validity Index, items with a I-CVI value of 0.83 and above have been retained as instruments. Whereas I-CVI values less than 0.83 have been deleted.

***S-CVI/Ave Scale-level content validity index based on the average method

**** S-CVI/UA Scale-level content validity index based on the universal agreement method

This study demonstrates that the instrument has strong content validity when the S-CVI/Ave score is high, specifically 0.89 (Polit & Beck, 2006). This condition shows how robust each component is in measuring the intended construct. Generally, the overall content validity index (S-CVI/UA) is quite low. This is due to the difficulty in reaching consensus among many experts, especially regarding multifaceted constructs (Zamanzadeh et al.,2015). However, this is balanced by in-depth feedback and strong ratings for each individual item. This has played an important role in refining the instrument and ensuring its usability (Lynn, 1986).

In addition, this research instrument can provide a comprehensive view of the factors that make parents consider unregistered childcare centers. This can be achieved with the help of literature reviews, expert reviews, and parental experiences. This is consistent with the suggestions made by Rubio et al. (2003), who emphasize the importance of carrying out content validity studies by taking participant and expert perspectives into account. Similarly, Zamanzadeh et al. (2015) emphasize that quantitative validation and the repeated expert evaluation process are crucial to ensure that the newly developed instrument is effective and reliable.

Through the establishment of CVI values based on expert validation, the overall distribution of successfully retained items amounts to 37 items, comprising customer review construct (15 items) with 4 items eliminated, interactivity (8 items) with 3 items eliminated, laws, rules and regulations (7 items) with 1 item eliminated. Meanwhile, technology innovation and perceived risk construct did not undergo any item changes. Table 5 illustrates the distribution of items after CVI testing through expert validation.

Table 5 Item Distribution After Expert Validation and CVI Test

Construct	No. Item	No. Item Deleted
Customer Review	1,2,3,4,5,6,7,8,9,10,11,12,13, 14,15,16,17,18,19	13,14,15,16
Interactivity	20,21,22,23,24,25,26,27	23,24,25
Acts and Regulations	28,29,30,31,32,33,34	34
Technology Innovation	35,36,37,38,39	None
Perceived Risk	40,41,42,43,44,45	None
Total number of retained items	**37**	

CONCLUSION

In summary, to ensure the validity of the instrument, the researcher needs to understand and confirm that the developed instrument is suitable for use as a measurement tool. In order to help parents, make less risky childcare decisions, this study intends to assess the content validity of the questionnaire used to investigate an unregistered childcare monitoring model by looking at the effects of customer reviews, interactivity, law, rules and regulations, and technological innovation on perceived risk. Additionally, based on the validation by appointed experts, eight questions were removed from the study instrument as a result of the content validity assessment's findings. Through this expert assessment, a total of 37 items were retained in the instrument for the development of an unregistered childcare monitoring model to reduce perceived risk.

As discussed in the previous section, this study identifies two distinct methods for evaluating content validity from experts. To achieve a more comprehensive assessment, it is recommended to combine the Content Validity Ratio (CVR) with the Content Validity Index (CVI). Although the overall CVI values (I-CVI, S-CVI) indicate strong acceptance—reflected in high I-CVI and S-CVI/Ave values, as well as an average high S-CVI/UA value—this combination provides a more robust evaluation of each item. This suggests that conducting different assessments can improve the course's and the content's authenticity, ensuring that the instrument or product created offers its intended audience significant benefits. Furthermore, this study makes great contributions to existing literature by offering fresh perspectives, insights, and practical recommendations, particularly within the domain of studies involving content validity considerations.

In addition, this study also confirms that a structured instrument for developing a model to monitor unregistered childcare is essential to enable parents to make decisions about their children's care. This condition is carried out by taking into account important factors such as customer reviews, interactivity, laws, rules, regulations, technological innovations, and perceived risks. Content that has a high level of validity indicates that it is a reliable source for evaluating factors that influence parents' decisions. Additionally, it has the ability to help

policymakers refine laws, helps childcare providers to improve their services, and support the development of centralized monitoring systems. By combining technology-based oversight and market-driven mechanisms, this model can improve transparency, accountability, and safety in the childcare sector.

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