

A Confirmatory Factor Analysis in a Study of Consumer Complaint Behaviour, Satisfaction with Complaint Handling and Relationship Quality

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ABSTRACT

A study was conducted to examine the relationships of consumer complaint behaviour, satisfaction with complaint handling and relationship quality in the Malaysian mobile phone services industry. A total of 285 complainers of mobile phone users were selected as the respondents. This paper presents the results of confirmatory factor analysis (CFA), average variance extracted (AVE) and construct reliability (CR) of the study. The CFA measurement model which consist of public complaint soft action (PCSA), public complaint extreme action (PCEA), private complaint soft action (PVSA), private complaint extreme action (PVEA), satisfaction with complaint handling (SATCOM) and relationship quality show excellent goodness-of-fit with $\chi^2 = 638.781$, $df = 291$, $\chi^2/df = 2.195$, TLI = .926, NFI = .894, CFI = .938, PNFI = .741 and RMSEA = .069 respectively. The model has shown convergent and discriminant validity with AVE and CR fulfilled the requirements. The results indicate that the model can be used for further analysis.

KEYWORDS: Consumer Complaint Behaviour, Satisfaction with Complaint Handling, Relationship Quality.

INTRODUCTION

Literally, complaint helps improve the hindrance that is unknown to the service provider. Hence, organizations are providing various types of channels for their customers to complain. On top of the complaint channels provided, mobile phone users in Malaysia are open to file their complaints to the third parties such as Communication and Multimedia Consumer Forum of Malaysia (CFM), National Consumer Complaints Centre (NCCC), Consumer Associations in Malaysia, the government agencies such as "Ministry of Domestic Trade Co-operatives and Consumerism," politician or the media.

There are several types of consumer complaint behaviours (CCB) which service providers need to be aware. CCB is an area of study which focuses on the identification and analysis of all the facets involved in the consumer response to a product or a service failure and perceived dissatisfaction [1]. Started since 1960's, CCB has been recognized in various perspectives by many researchers as discussed in the literature review of this paper. Therefore, study on CCB should be continuously carried out for the benefit of the consumers as well as the service providers particularly in the mobile phone services industry as it involves 42 million Malaysian subscribers [2]

The purpose of the research is to examine the relationships of consumer complaint behaviours, satisfaction with complaint handling and relationship quality. However, prior to structural model and hypotheses testing it is crucial that the constructs involved in the study meet the requirements for reliability and validity. Therefore, this paper intends to present the results of CFA, reliability and validity of the constructs involved in the study. It is crucial that the constructs are reliable and valid before proceeding to further analysis.

LITERATURE REVIEW

Consumer Complaint Behaviour

Based on [3], CCB has been conceptualised and defined in various perspectives. Throughout the decades, CCB has been classified as two-level of hierarchical actions due to dissatisfaction [4] and divided it into four actions namely criticised directly to somebody, do not do anything, boycott the company or product or go via

mediators [5]. In the 80's, CCB was defined and seen as the action taken by an individual as "communicating something negative regarding a product or service to either the company or to third-party entity" [6], involving three classes of behaviours identified as switching, complaining to the seller or service provider and voicing the experience to others [7] and categorise into voice, private and third party [8]. In the 90's, [9] incorporated grudge-holding, retaliation and avoidance as complaining behaviours. Later, [10] streamlined the conceptualising of complaining behaviour as four-dimensional phenomenon. Continuously, in the 2000's, [11] defined CCB as a process that comprises a subgroup of all possible responses. These responses perceive dissatisfaction around purchase episode, during consumption or during possession of the goods or services.

Previous researchers have agreed that the outcomes of dissatisfaction comprise public action, private action and no action [4, 11, 12], voice, private and third party [8], switching, complaining to the seller or service provider and voicing the experience to others [7] and grudge-holding, retaliation and avoidance [9]. Public actions was defined as seeking redress and refund from the seller or service provider, informing the media, taking lawful actions and complaining directly to the organisation or consumer bureau [13]. Many authors characterised private actions as exchanging brands and companies, avoiding a firm's products, discontinuing patronizing and generating negative word-of-mouth communications to friends and relatives [14, 15]. Noticeably, the literature denotes CCB as a set of multiple reactions due to perceived dissatisfaction with regard to the services or products. Adopting taxonomy by [11] our previous study suggested that consumer complaint behaviour consisted of public complaint soft action (PCSA), public complaint extreme action (PCEA), private complaint soft action (PVSA) and private complaint extreme action (PVEA) [16].

Satisfaction with Complaint Handling

"Complaint satisfaction" is the satisfaction of a complainer with a company's response to his or her complaint [17]. Nevertheless, several synonyms for this term are found in the literature such as "secondary satisfaction" [18, 19], "complaint response satisfaction" [20], "service recovery satisfaction" [21], "satisfaction with complaint resolution" [22] "satisfaction with service recovery" [23], "overall complaint satisfaction" [17], "satisfaction with the remedy" [24] or "recovery disconfirmation" [25]. In all cases, the meaning is the same where they refer to customer evaluation on the company's responses to complaint. Despite the differences in language, the general framework behind the definitions is the confirmation or disconfirmation of the complaint response [26]. This means the perceptions of the actual performance of the complaint handling procedures and the expectations towards that performance are compared. In the study, satisfaction with complaint handling (SATCOM) was adopted from [27] to indicate complaint satisfaction.

Relationship Quality

Relevant literature has provided a number of definitions for relationship quality. Previous researchers conceptualised "relationship quality" as a "higher-order" constructs. Ironically, there is no agreement on the factors that make up "relationship quality". Satisfaction, trust and commitment have been frequently emphasized as the important indicators of relationship quality [28, 29]. On the other hand, in an industrial context, specific dimensions are added from buyer-seller relationships. For example in an exporting firm and importer, four dimensions of relationship quality namely amount of "information sharing", "communication quality", "long-term orientation" as well as "satisfaction in the relationship" were added [30]. Evidently, there is no consistency in defining the factor of relationship quality.

Relationship quality in this study was adopted from [31] due to the dimensions are appropriate in assessing relationship quality in a services industry. The dimensions consist of "trust in partner's honesty" (TiPH), "trust in partner's benevolence" (TiPB), "affective commitment" (AFCM), "satisfaction" (SAT) and "affective conflict" (AFCON). The study of relationship is important for the benefit of consumers and service providers. On the service provider's side, [32] proposed that organisations should focus on relationship building where learning and performance improvement are given attention so that the industry can truly add value to ensure increased business results. On the consumers' side, high level of satisfaction can be achieved through collaboration of the parties involved [33].

METHODOLOGY AND ANALYSIS

Scale and Measurement

The questionnaire comprises of 4 sections. Section I is for demographic profile of the respondent which begins with a question that requires a monosyllabic answer "Yes" or "No" in order to categorise the respondents into complainers or non-complainers. Since the focus of the study is the complainer, respondent who answered "No" were not included in the study. Section II consists of three statements meant to measure public complaint soft action (PCSA), 4 statements for public complaint extreme action (PCEA), 6 statements for private complaint soft action (PVSA), 3 statements for private complaint extreme action (PVEA) and all items were

adopted from previous studies [12, 16]. Section III consists of 5 statements measuring SATCOM adopted from [27]. Finally, section IV consists of 15 statements measuring relationship quality [31].

All items (except the demographic variables) were assessed on a five-point “Likert scale”, which ranged from 1=“strongly disagree” to 5=“strongly agree”. As the study focused on the behavioural actions of the respondents, the opening of the statement to measure CCB was provided with a phrase “For the problem that I have encountered with my service provider, I always...” indicating that all answers must be based on the genuine experience. A professional translator was assigned to translate the questionnaire from English language to Malay language and rechecked to ensure the accuracy of meaning before it can be distributed.

Procedures

The population for the study were the users of mobile phone services mainly from Maxis, DiGi, Celcom, U-Mobile and XOX that are currently residing in the states of “Selangor”, “Wilayah Persekutuan Kuala Lumpur and Putrajaya”. They were chosen based on the fact that the total number of subscribers from the two states represents 28.6% (1,945,143) of the total mobile phone services customers in Malaysia [34]. Besides, the respondents would be able to represent those from other states in terms of culture and values because the population in these locations come from all regions in Malaysia. Thus, the selection ensures the representativeness of the sample. Using mall-intercept approach and following [35], 12 shopping complexes in “Selangor”, “Wilayah Persekutuan Kuala Lumpur and Putrajaya” were chosen as the centres for data collection activity.

Confirmatory Factor Analysis

Using AMOS version 21, CFA was employed to validate the factor structure of a set of manifest variables. CFA permits testing of the hypothesis pertaining to a relationship between observed variables and their underlying construct. This study performed the unidimensionality assessment of each construct as suggested by many authors before testing the “reliability” and “validity” of each construct [36, 37]. Unidimensionality is an assumption of reliability and is proven when the indicator of a construct has an acceptable fit on a “single-factor” (one-dimensional) [37]. The goodness-of-fit was used to verify the model fitness as well as to ensure the model represent the data that indicates the causal theory [38]. According to [37], in consideration to counter the multivariate effect, at least one index from each of the index categories from absolute fit, incremental fit and parsimonious fit namely “Root Mean Squared Error Approximation (RMSEA)”, normed Chi-Square (χ^2/df), “Tucker-Lewis Index (TLI)”, “Normed Fit Index (NFI)”, “Parsimony Normed Fit Index (PNFI)” and “Comparative Fit Index (CFI)” were considered in this study. Further, the respective cut-off points of the indices have to be satisfied: $RMSEA \leq 0.08$ [39], $\chi^2/df \leq 5.0$ [40] and $TLI, NFI, CFI \geq 0.90$ [41] in order to confirm the model fit.

Validity and Reliability

In this study the “construct validity” (standardized factor loadings and internal consistencies) and “convergent validity” were used to test the robustness of the model. The validity was validated using construct, convergent and discriminant validity. The reliability of the underlying constructs was validated using alpha value of Cronbach’s [42], construct_reliability (CR), and average_variance_extracted (AVE). In applying CFA, CR and AVE were calculated from model estimates using the formula given by [43]. According to [42], CR should be equivalent to or larger than 0.60, and AVE should be equivalent to or larger than 0.50. Grounded on these assessments, measures applied in the study were within the adequate levels to support the reliability of the constructs. In terms of validity, CFA has also been applied to validate construct, convergent and discriminant validity. According to [44] construct validity occurs when the measure is a good representation of the variable that the researcher intends to measure and it is a compulsory pre requisite for theory testing. In this study, the results which were obtained from “goodness-of-fit indices” confirmed the “construct validity” [45]. As for convergent validity, all factor loadings for items measuring the same construct must be statistically significant [36, 46]. The results of AVE support extra verification for “convergent validity”. Discriminant validity was confirmed when items correlate higher among them than they correlate with other items from other constructs that are theoretically supposed not to correlate [47]. Once the measurement model shows the acceptable goodness-of-fit indices, further analysis such as structural modelling to test the hypotheses can take place.

FINDINGS AND DISCUSSION

Demographic Background of Respondents

This study involved 285 mobile phone services users identified as complainers residing in the state of Selangor, Federal Territory of Kuala Lumpur and Putrajaya in Malaysia. Demographic information from the sample shows that 141 male respondents (49.5%) and 144 female respondents (50.5%). Most of the respondents were in the age among 21 to 30 years old which were represented by 49.6%. In terms of marital status, married

respondents were slightly higher (53.0%). Although majority of the respondents were subscribing to one service provider, a substantial percentage of the respondents (35.4%) subscribed to two mobile phone services.

Results for Unidimensionality

PCSA was measured using three items CCB1, CCB2 and CCB3. The CFA provides a sufficient fit with all factor loadings above 0.50. The results show chi-square = 1.635, CFI = .997, TLI = .992, RMSEA = .048 and RMR = .025. PCSA does not need further re-specification as the required indices meet the requirement. PCEA was measured using four items “CCB4”, “CCB5”, “CCB6” and “CCB7”. The CFA provides a sufficient fit with all factor loadings above .50. The result shows chi-square = 5.881 CFI = .991, TLI = .973, RMSEA = .085 and RMR = .027. Although the value of RMSEA (.085) slightly exceeded the threshold value (<.08), re-specification was not conducted because another index (GFI) for absolute fit indices showed good value (.989). PVSA was measured using 6 items “CCB8”, “CCB9”, “CCB10”, “CCB11”, “CCB12” and “CCB13”. The CFA provides a poor fit with chi-square = 597.607, CFI = .773, TLI = .562, RMSEA = .492 and RMR = .144. Examination of modification indicate that one item (CCB9) needs to be removed and the errors for items “CCB8”, “CCB10” and “CCB11” need to be correlated in order to get a good fit for the model. The final model shows a better fit to the data with chi-square = 3.653, CFI = .999, TLI = .995, RMSEA = .055 and RMR = 0.004. PVEA was measured using three items “CCB14”, “CCB15” and “CCB16”. The result shows chi-square = 8.815 CFI = .965, TLI = .947, RMSEA = .116 and RMR = .133. Although the value of RMSEA (.116) did not meet the requirement (> .08), the GFI value has shown good value (.977) as an alternative index to measure Absolute Fit Indices. Therefore, this construct was accepted for overall measurement model.

SATCOM was measured by five items labelled as “SATCOM1”, “SATCOM2”, “SATCOM”, “SATCOM4” and “SATCOM5_rc”. The analysis indicated one item (SATCOM5_rc) did not meet the factor loading above the threshold of .50 and the overall model failed to meet goodness-of-fit indices benchmark as displayed by RMSEA figure, which exceeded .80. The chi-square is significant ($\chi^2=24.369$, $df=5$, $p=.000$). The GFI is .969, AGFI=.906, CFI = .978, and RMSEA=.117. Item SATCOM5_rc was removed and CFA was performed again. The results of the re-specification were also not a better fit to the data which showed RMSEA=.162 and $\chi^2/df = 8.486$. Therefore, model re-specification was done to gain a better fit. Based on the modification indices (MI), measurement error covariance between SATCOM3 and SATCOM4 showed the highest modification index of 12.140. Accordingly, the measurement model for SATCOM was re-estimated by connecting the measurement error of SATCOM3 and SATCOM4. The modified model displayed a better fit to the data where RMSEA had decreased to .07 and other fit indices showed good fit, GFI=.996, CFI=.998, $\chi^2/df = 2.382$ ($\chi^2=2.382$, $df=1$, $p=.123$). Besides, all of the standardized factor loadings of all indicators in the SATCOM latent variable were in the range of .75 to .94 to show the support of convergent validity for all items.

Relationship Quality in this study employed the second order model and was found to have imperfect fit with TLI=.945, CFI=.956, PNFI=.755, RMSEA=.082, normed chi-square=2.706 ($\chi^2=230.011$, $df=85$, $p=.00$). The factor loadings for trust in partner’s honesty (TiPH) (RQ1, RQ2 RQ3), trust in partner’s benevolence (TiPB) (RQ4, RQ5, RQ6) affective commitment (AFCM) (RQ7, RQ8, RQ9) satisfaction (SAT) (RQ10, RQ11, RQ12) and affective conflict (AFCON) (RQ13, RQ14, RQ15) were .91, .62, .86, .60 and .26 respectively. AFCON was found to have a very low factor loading (.26) although the observed variables loaded on each factor were with standardized factor loadings of .84 to .91 ($p<.05$). Therefore, to improve the model fit it was decided that the factor which had a very low factor loading omitted from the model and the re-specification performed. Omitting AFCON from relationship quality construct does not violate the true concept of relationship quality. Theoretically, relationship quality has inconsistent underlying factors as explained in the literature review. After performing the first re-specification process, the results were found to have imperfect fit with GFI=.907, CFI=.951, PNFI=.707, RMSEA=.096, normed chi-square=3.636 ($\chi^2=181.817$, $df=50$, $p=.00$). The results indicated sufficient fit to the model and the data. Although the RMSEA (.096) exceeded the threshold value (<.80), further re-specification was unnecessary as the value of GFI (.907) met the required value (>.90). Table 1 shows the result of the re-specification.

Table 1: Items used and deleted

Original Item	Item Label	Item Deleted
<i>“For the problem that I have encountered with my service provider, I always....”</i>		
Public Complaint Soft Action		
discuss the problem with manager or other employee of the service provider”.	CCB1	
request the service provider to take care of the problem (e.g. to fix, replace item or to do better in the future)”.	CCB2	
inform the service provider for improvement in future”.	CCB3	
Public Complaint Extreme Action		
write a letter to a local newspaper or mass medi”a.	CCB4	
report the problem to a consumer agency”.	CCB5	
complain to a government agency or politician”.	CCB6	
take legal action against the service provider”.	CCB7	
SATCOM		
“I am satisfied with the way the service provider handled my complain”t.	SATCOM1	
“I have a positive experience when complaining to this service provider”.	SATCOM2	
“I am very satisfied with the way the service provider handled complaints”.	SATCOM3	
“In my opinion, the service provider has provided me with a satisfactory answer to my problem”.	SATCOM4	
“Overall, I am not happy with the way my problem was handled (R)”.	SATCOM5_rc	Deleted
Relationship Quality		
<i>“Trust in Partner’s Honesty”</i>		
“My service provider is honest with problems”.	RQ1	Deleted
“My service provider has high integrity”.	RQ2	
“My service provider is trustworthy”.	RQ3	
<i>“Trust in Partner’s Benevolence”</i>		
“My service provider is concerned about my welfare”.	RQ4	Deleted
“If I confide my problems to my service provider, I know they will respond with understanding”.	RQ5	
“I can count on my service provider considering how their actions affect me”.	RQ6	
<i>“Affective Commitment”</i>		
“I feel emotionally attached to my service provider”.	RQ7	
“I continue to deal with my service provider because I like being associated with them”.	RQ8	
“I continue to deal with my service provider because I genuinely enjoy my relationship with them”.	RQ9	
<i>“Satisfaction”</i>		
“I am delighted with the performance of my service provider”.	RQ10	
“I am happy with my service provider’s performance”.	RQ11	
“I am content with my service provider’s performance”.	RQ12	
<i>“Affective Conflict”</i>		
“I am angry with my service provider”.	RQ13	Deleted
“I am disappointed with my service provider”.	RQ14	Deleted
“I feel annoyed with my service provider”.	RQ15	Deleted

Overall CFA Measurement Model

The overall measurement model involved all constructs in the study-PCSA, PCEA, PVSA, PVEA, SATCOM and relationship quality. The measurement model is essential to have before proceeding to the structural model because it consists of all constructs examined in this study. The goodness-of-fit indexes were examined to verify the fitness of the overall model. Figure 1 portrays the final overall measurement model with all parameter estimates based on the results of confirmatory factor analysis. During the re-specification process three items, CCB14, RQ1 and RQ4 were deleted from the model. The results designated that the “overall measurement model” was a good-fitting model although the value of GFI (.838) was slightly below the threshold value (>.90). Other indices showed good values where the CFI=.936, TLI=.927, normed chi-square=2.178 ($\chi^2=668.626$, $df=307$, $p=.00$), RMSEA=.069 and RMR .076. Furthermore, all β -weights were significant at $p<.001$ with standardized factor loadings ranging from .601 to .988 (t-values of 7.915 to 50.372).

The results of the measurement model achieved the acceptable model fit criterion. In terms of validity and reliability Table 2 shows the standardized factor loadings for all the items are exceeding the recommended value of .5 [37]. Composite reliability values, which illustrate the degree to which the construct indicators reflect the latent construct, are in the range of .67 to .96 for complainers and .78 to .97 for non-complainers. The results exceed the recommended value of .7 [37] and .6 [43]. The AVE values which reflects the overall amount of variance in the indicators as explained by the latent construct are in the range of .58 to .91, which exceeded the recommended value of .5 [43, 37].

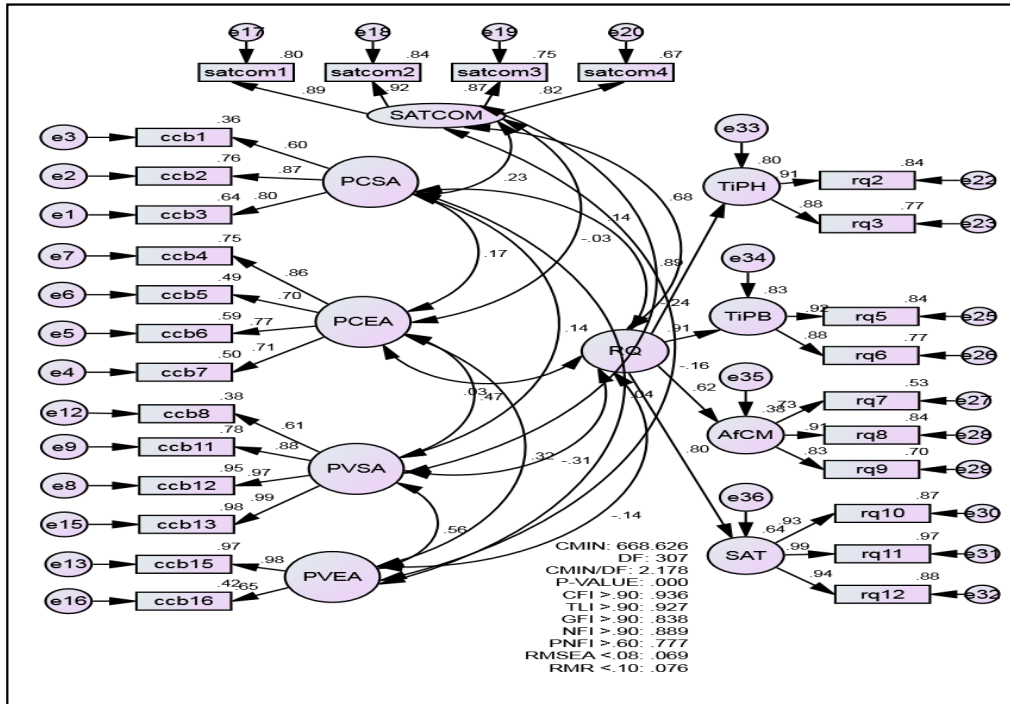


Figure 1: Final overall measurement model

Table 2: Cronbach’s Alpha, Construct Reliability (CR) and Average Variance Extracted (AVE)

Construct	Items	Standardized Loadings	Cronbach’s Alpha (α)	CR	AVE
“Complainer”					
“Public Complaint Soft Action”	CCB1	.60	.72	.71	.59
	CCB2	.87			
	CCB3	.80			
	CCB4	.86			
“Public Complaint Extreme Action”	CCB5	.70	.73	.76	.58
	CCB6	.77			
	CCB7	.71			
	CCB16”	.65			
“SATCOM”	SATCOM1	.89	.92	.91	.77
	SATCOM2	.92			
	SATCOM3	.87			
	SATCOM4	.82			
“Trust in Partner’s Honesty”	RQ2	.97	.89	.86	.82
“Trust in Partner’s Benevolence”	RQ3	.84	.87	.87	.80
	RQ5	.92			
	RQ6	.87			
“Affective Commitment”	RQ7	.72	.86	.82	.68
	RQ8	.91			
	RQ9	.84			
“Satisfaction”	RQ10	.93	.97	.97	.93
	RQ11	.99			
	RQ12	.94			

Further, the AVE and CR are computed using the formula suggested by [43] to confirm the reliability of the construct. Following [47], it is necessary to obtain a matrix where the correlation of each construct can be seen. The AVE values were inserted on the diagonal in order to compare it with the other correlation coefficient and the value of AVE. As shown in Table 3, it can easily be seen that the AVE values are above .5. Moreover, are above the correlation coefficients for each type of the construct showing satisfactory of discriminant validity [48].

Table 3: Discriminant validity of constructs for complainers

	1	2	5	6	7	8	9
1. PCSA	.586						
2. PCEA	.167	.582					
3. SATCOM	.234	-.033	.767				
4. TiPH	.119	.014	.650	.823			
5. TiPB	.170	.050	.586	.792	.802		
6. AfCM	-.004	.088	.515	.553	.337	.684	
7. SAT	.115	-.006	.683	.688	.598	.552	.910

Note: The diagonals indicate the square root of the AVE; the off-diagonals indicate the correlations

CONCLUSION

The current study purifies and validates the scale for CCB, SATCOM and relationship quality and provides a psychometrically rigorous measurement for forthcoming use. After a 2-stage process of purification and cross-validation, the final model show 3 items were removed from the original CCB, 1 item from SATCOM and 5 items from relationship quality. The results show that the 27-items scale is more parsimonious and more stable for this model. The CFA has validated the four subscales for relationship quality are acceptably unidimensional, which is important in measurement development and refinement procedures. The unidimensional measures also provide clear connotation to the composite scores. Thus, using the refined measurement should make marketing practitioners more assured in the complaint style profile generated from those measurements. Therefore, a better measurement of CCB can contribute to the marketing discipline. The results of the CFA also provide support to the model and the PCSA, PCEA, PVSA, PVEA, SATCOM and relationship quality scale. Thus, the discriminant validity of the 4 complaint behaviour styles is established. Evidently, areas of the measurement that need to be enhanced were identified in this purification procedures. Finally, the outcomes of this research can be used for further analysis.

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