CONSTRUCT VALIDATION: THEORY AND EXECUTION

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(Abstract)

The paper examines the important concept of construct validity – an essential pre-requisite for justified operationalization of abstract concepts. In order to better understand the intricacies of executing the construct validation process using multitrait-multimethod (MTMM) matrix, the summated scale of materialism developed by Richins and Dawson is leveraged as a case. It was found that the scale has acceptable levels of reliability, convergent validity and discriminant validity – thereby conferring construct validity to the instrument.

Key Words: Construct validity, Multitrait-multimethod (MTMM) matrix, Materialism, Reliability.

Construct validity

Validity may be defined as the extent to which a measure or set of measures correctly represents the concept of study, or in other words, the degree to which it is free from any systematic error (Hair et. al., 5th ed., p 3). Validity is an important criterion in measurement of constructs.

A construct may be defined as a concept that the researcher can define in conceptual terms but cannot be directly measured or measured without error (Hair et. al., 5th ed., p. 579). Philosophically, constructs have been viewed as non-observable, non-real entities (Cronbach, 1971). On the other hand, scientifically, construct is the term used to organize knowledge and direct research towards explaining some aspect of nature (Peter, 1981). However, construct cannot be a metaphysical term. Kaplan (1964) explains that a construct can have a systematic and observational meaning. The systematic meaning ensures that the interpretation of construct depends upon the theoretical underpinnings of the construct whereas observational meaning conveys that a construct must be capable of being directly or indirectly operationalised. For example, the construct "materialism" has a systematic meaning in the sense that it can be interpreted either as a "personality trait" or as a "value". "Materialism" has an observational meaning as well since it reflects in the behavior of the consumers and therefore, can be indirectly measured by eliciting responses from consumers through indicators or statements on a valid scale. Since a construct cannot be directly measured but has to be approximately evaluated through indicators, every attempt has to be made to enhance the construct validity of the operationalisation or measuring scale.

The process of construct validation, and justifiably so, starts with a specific explication of the domain of the construct by categorically delineating what is included in and what is excluded from the definition of construct (Churchill, 1979). Once the construct has been defined, the researcher needs to operationalise it. The operationalisation involves the "rules for assigning numbers to objects to represent quantities of attributes" (Nunnally, 1967, p2). In other words, operationalisation requires translating a construct into a functioning and operating reality by manifesting it into a series of statements which should reflect the construct under consideration. However, the dilemma is that post-operationalisation, the instrument comprising of a series of statements, not only reflects the construct but also the measurement error. This measurement error can have confusing repercussions on empirical research and may lead the researcher to misleading conclusions (Campbell and Fiske, 1959; Fiske, 1982). Since, measurement errors (i.e. random and systematic error) influence research findings, it is pertinent to determine the construct validity of the measure.

Construct validity has been acknowledged as a major issue in organisational research Peter (1981) defines construct validity as the "vertical correspondence between a construct which is at an unobservable, conceptual level and a purported measure of it which is at an operational level". The definition may be interpreted to understand that the measure of the construct developed should be able to assess exclusively and exhaustively the characteristics of the construct under study. Statistically, what it means is that the observed variance in a measure represents in totality the variance in the characteristics of the construct only. Ideally, this should lead to "epistemic correlation" i.e. a hypothetical correlation of +1 between a construct and its measure for an instrument with full construct validity. However, practically, a systematic measurement error in the form of method variance also influences results while operationalising a construct. Method variance refers to "the variance attributable to the measurement method rather than to the construct of interest, and examples include archival biases, key-informant prejudices or limitations, halo effect, social desirability, and acquiescence" (Bagozzi, Yi and Philips, 1991). Therefore, a more realistic definition of construct validity could be that it is "the degree to which a measure assesses the construct it is purported to access" (Peter, 1981). Construct validity is the approximate truth of the conclusion that the operationalisation achieved, comprising of a series of statements, reflects its construct. The better mirror image a measure is of its construct, the greater is the degree of construct validity it has been able to attain. Marketing being a Social Science has to investigate and offer theoretical explanations, backed by empirical evidence, for the behaviour of consumers. This requires development of measuring instruments which can unequivocally assess the abstract nature of constructs relevant to marketing e.g. personality,

attitude, consumer satisfaction, materialism etc. However, the scenario is more dull than dynamic. Peter (1981) investigated construct validation practices through a review of articles in Journal of Marketing Research (JMR) for the period 1973-1979. He found out that out of more than 450 articles and notes published in JMR during the above mentioned period, only 12 had construct validation as a major objective. This led Peter (1981) to conclude that "though encouraging signs of interest in construct validation are found in the review, the results suggest that there are few if any measures in marketing that could fully meet rigorous construct validation criteria in a series of studies." The situation demands that more validation studies be carried out to eradicate invalid measures and consolidate the valid ones through assessment of the construct they intend to measure. Cronbach (1971) suggests that construct validation is an ever extending process of investigation and development.

Construct validation, as a process, cannot be carried out in isolation. The profound impact of theory on a given construct demands that construct validity should be preceded by content validity. Peter (1981) contends that unless a measure has high degree of content validity, determined primarily through logical analysis, it cannot be expected to have a high degree of construct validity. Content validity requires an assessment of the operationalisation against the relevant content domain for the construct. For example, an assessment of the content validity of the construct "materialism" requires laying down all the criteria that should be met for an instrument that claims to measure the construct "materialism". As mentioned by Churchill (1979), "the literature should indicate how the variable has been defined previously and how many dimensions or components it has."

Further, the analysis of construct validity is a multifaceted endeavour which has to overcome a number of pitfalls (Bagozzi, Yi and Phillips, 1991). The inference in a construct validation process is based upon the empirical data generated which indicates that the variance in the score is explicable only by the construct and it is not explained by any phenomenon other than the construct under study. Therefore, the data generated becomes the lynchpin in the validation process. However, the type of data collected depends upon the type of scale used to measure the construct (Churchill, 1979). This is where the statements constituting a measuring scale come under the scanner for their precision and lucidity.

Peter (1981) has identified reliability, convergent validity and discriminant validity as significant components of construct validation process. Reliability is an assessment of the degree of consistency between multiple measurements of a variable (Hair et. al., 5th ed., p 117). Convergent validity is the degree to which multiple attempts to measure the same construct are in agreement (Bagozzi, Yi and Phillips, 1991). Discriminant validity is the degree to which measures of different constructs are distinct (Bagozzi, Yi and Phillips, 1991). Thus, any

acceptance of construct validity of a measure should be preceded by a series of reliability and validity studies.

Constructs conceptualization

In order to explain the construct validation process, this study uses the constructs of materialism, happiness, life-satisfaction and religiosity. One of the most widely used instrument of materialism is the one developed by Richins and Dawson (1992). Richins & Dawson (1992) suggested that "materialism represents a mindset or constellation of attitudes regarding the relative importance of acquisition and possession of objects in one's life." They operationalised materialism through measurement of three centrally held beliefs relevant to the materialistic value: acquisition centrality, the role of acquisition in happiness and the role of possessions in defining success. A factor analysis revealed the underlying dimensions as success, centrality and happiness. Here success represents, "use of possessions as an indicator of success in life," centrality concerns, "the importance of acquisition and possession generally," and happiness reflects "the perception that possessions are needed for happiness." The items loading heavily on the factors were than summated to create an overall measure of materialism. The coefficient alpha and test-retest reliability for each of the summated scales exceeded the threshold of 0.70 for acceptance. The construct's validity was established by demonstrating that individuals, who scored high on materialism scale placed greater value on acquisitions, are self-centered, seek material possessions and tend to be dissatisfied with their circumstances. Thus, validity was assessed through investigation of attitudes and behaviours.

For the purpose of the present study, the constructs of happiness, life-satisfaction and religiosity were operationalized using Gurin, Veroff and Feld (1960), Converse and Robinson (1965), and Wilkes, Burnett and Howell (1986) scales.

Table 1 - Correlation data matrix

Sl. No.	Scale	Column 1 Belk (1984)	Column 2 Richins and Dawson (1992)
Cell A			
1.	Materialism – Belk (1984) scale	1.000	0.230**
2.	Materialism - Richins and Dawson (1992) scale	0.230**	1.000
Cell B			
3.	Happiness	0.091	0.042
4.	Life satisfaction	0.208**	0.142*
5.	Religiosity	0.010	- 0.053

*Significant at $\alpha=0.05$.

** Significant at $\alpha=0.01$.

Objective of the study

The study endeavoured to explain the process of construct validation by using the scale of materialism developed by Richins & Dawson (1992) as a case.

Sample design

The study was carried out in the city of Bhubaneswar and Cuttack, Odisha, India. The survey instrument was a questionnaire comprising of questions on demographic profiles of the respondents and all the scales measuring constructs of interest to the present study. The sample size is 252. The sample comprised of 140 males and 112 females. The mean age of the respondents is approximately 25 years with a standard deviation of approximately 6 years. The modal age of the respondents was found to be 21 years.

Data analysis and discussion

At the outset, the reliability of the Wilkes, Burnett and Howell scale was determined so as to infer the internal consistency of the scale. The Cronbach's alpha coefficient of the scale was found to be 0.615.

1. **Construct validity of Richins & Dawson (1992) scale:** Peter (1981) contends that reliability, convergent validity and discriminant validity are significant components of construct validation process. Therefore, an assesment pertaining to these three components was considered essential prior to arriving at any logical inference.

(i) Reliability: The Cronbach's alpha coefficient value for Richins & Dawson (1992) scale indicating the internal consistency reliability was found to be 0.641 which indicates there is better consistency among the items within the overall scale. This value of Cronbach's alpha coefficient may be accepted as reliable for basic research (Nunnally, 1979). The internal consistency reliability was also determined for the individual factors separately. The six individual items comprising the factor of success had a Cronbach's alpha coefficient of 0.514. The seven items representing the factor of centrality had a Cronbach's alpha coefficient of 0.390 while the five items representing happiness factor had Cronbach's alpha coefficient of 0.496. Therefore, Richins and Dawson scale of materialism (1992) exhibits internal consistency reliability.

(ii) Convergent and Discriminant validity: The convergent and discriminant validity of the scale was assessed by using a method suggested by Ruekert and Churchill (1984). This approach is a modified version of the multitrait-multimethod (MTMM) matrix proposed by Campbell and Fiske (1959). The Belk (1984) scale of materialism was also used to generate data on materialistic values to facilitate the process of determination of convergent and discriminant validity. The data generated out of the survey was condensed into a Correlation Matrix given in Table 1. The correlation figure between the Belk scale and Richins & Dawson scale is the most critical value. It may be termed as validity coefficient since this is the correlation between different measurement instruments measuring the same trait of materialism.To assess

convergent validity, the value of validity coefficient should be high and significantly greater than zero (Campbell and Fiske, 1959). The validity coefficient value, as given in Cell A is 0.230. This value of validity coefficient is statistically significant at $p < 0.01$. The validity coefficient value may not appear to be particularly high; however, a score of 0.230 was considered appropriately high as per the Campbell and Fiske (1959) criteria for convergent validity of scale (Sullivan and Feldman, 1979). Hence the convergent validity criteria was satisfactorily met by the Richins and Dawson (1992) scale.

Discriminant validity can be inferred from the correlation matrix if the validity coefficient value is higher than other correlation coefficient values in Cell B. The validity coefficient value was compared to the six other correlation coefficients pertaining to the strength of relationship between Belk and, Richins & Dawson's scales and three other distinct constructs– happiness, life satisfaction and religiosity. An examination of the validity coefficient vis-à-vis each of the other correlation coefficients was carried out pair wise. The comparison revealed that the validity coefficient value is comparably larger than all the six other correlation coefficient values obtained from the present study. Thus, the Richins & Dawson (1992) scale of materialism seems to possess both convergent and discriminant validity.

The findings may be summarised to state that the Richins and Dawson (1992) scale of materialism shows evidence of construct validity.

Research results

The findings of the present study, with specific reference to urban Indian consumers, may be stated as: The Richins and Dawson (1992) scale is a reliable and valid scale for measuring materialism among urban Indian consumers.

Contributions of the study

Construct validation of measuring scales is an essential requirement for credible exploration of concepts in Management. It is pertinent on the part of researchers dealing with abstract concepts to understand and implement construct validation prior to using research instruments so as to obtain results which can withstand scientific scrutiny. Further, the study concluded that the Richins and Dawson (1992) scale has internal consistency reliability, convergent validity and discriminant validity.

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