

Navigating Cultural Nuances in Quantitative Consumer Research: Methodological Adaptations for Studying Millennials in Sabah, Malaysia

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ABSTRACT

This study addresses the methodological challenges of conducting quantitative consumer research in culturally diverse, collectivist contexts, specifically examining millennial purchase intentions in Sabah, Malaysia. The research problem centers on the limitations of applying standard Western-derived quantitative methods in non-Western, collectivist, and digitally diverse settings, which often fail to capture local cultural nuances and consumer behavior patterns. The study aims to develop and validate methodological adaptations for quantitative consumer research that maintain scientific rigor while accounting for cultural specificities in collectivist societies. The research employs a mixed-methods approach, combining adapted positivist methodology with culturally sensitive instrument design, utilizing convenience sampling with demographic monitoring across diverse recruitment channels to mitigate sampling bias. Key findings demonstrate that standard measurement scales require significant contextual adaptations to effectively capture consumer behavior in collectivist settings. Specifically, scales were successfully adapted to include geographical and demographic references to *Sabah* and millennials, while diverse recruitment channels helped bridge digital divides. Procedural and statistical safeguards effectively addressed common method bias concerns, particularly relevant in collectivist cultures where social harmony influences response patterns. The study contributes a practical framework for conducting culturally aware quantitative research, demonstrating that methodological rigor can be maintained while accounting for cultural and economic variations. These adaptations prove essential for generating valid, actionable insights for businesses and policymakers operating in culturally diverse markets, while advancing best practices for *cross-cultural* consumer research methodology.

Keywords: *Quantitative research, methodological adaptations, cultural nuances, collectivism, millennials, Sabah, consumer behaviour*

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INTRODUCTION

The global nature of contemporary consumer research necessitates studying diverse markets, but the methods often employed are rooted in individualistic Western contexts, which can limit their effectiveness in other cultural settings (Jackson and Wang, 2013; Muk et al., 2014). While quantitative research offers a rigorous framework for understanding consumer behaviour, its application in culturally rich and socioeconomically diverse regions presents unique methodological challenges (Aziz et al., 2021; Harun et al., 2023; Panggi et al., 2022). Standard approaches may not fully capture the nuances of consumer behavior in regions like Sabah, Malaysia, which is characterized by strong collectivist values and varying levels of digital access (Kotler et al., 2010, 2017; Vassileva, 2017). This paper directly addresses this gap by outlining the methodological adaptations undertaken in a quantitative study of millennial consumer behavior in Sabah, thereby providing a practical guide for researchers in similar contexts (Dash et al., 2021; Guven, 2020; Kotler et al., 2017; Vassileva, 2017).

The main objective of this paper is to outline and justify the methodological adaptations for a quantitative study on the influence of Marketing 4.0 branding strategies on millennial purchase intention in Sabah (Dash et al., 2021). The methodological significance of this study

is its contribution to best practices for quantitative research in cross-cultural settings. Crucially, this research addresses what has been identified as the “cultural calibration challenge” in consumer research (Westjohn et al., 2022). By detailing how positivist methods were carefully adapted to account for Sabah’s collectivist culture, the study argues that this approach improves the validity and applicability of research findings for businesses and policymakers in culturally diverse markets. The subsequent sections will detail the research context, philosophical underpinnings, and specific methodological adaptations in sampling, data collection, and data quality assurance.

The urgent need for this research stems from the increasing globalization of markets and the corresponding demand for culturally sensitive research methodologies that can provide valid insights across diverse cultural contexts. Current consumer research approaches often fail to account for collectivist value systems, digital divides, and culturally specific decision-making processes, leading to potentially invalid conclusions and ineffective marketing strategies in non-Western markets.

Previous research has primarily focused on either purely Western contexts or has applied Western methodologies without adequate cultural adaptation. Jackson and Wang (2013) identified significant cultural differences in social networking behaviours between collectivist and individualist societies, while Muk et al. (2014) demonstrated how cultural values influence brand engagement patterns. However, these studies lack comprehensive methodological frameworks for conducting quantitative research that effectively bridges cultural differences. Additionally, limited research exists specifically addressing the methodological challenges of studying digitally diverse populations in emerging economies where infrastructure and access vary significantly.

This research addresses critical gaps by providing the first comprehensive framework for adapting quantitative consumer research methodologies for collectivist, culturally diverse contexts. The novelty lies in developing systematic approaches to scale adaptation, sampling strategy modification, and bias mitigation that maintain methodological rigor while capturing cultural nuances. This framework enables a more accurate understanding of consumer behaviour in collectivist societies, which is essential for developing effective marketing strategies in increasingly important emerging markets.

Therefore, this study aims to: (1) develop and validate methodological adaptations for quantitative consumer research in collectivist cultural contexts; (2) demonstrate how standard research instruments can be culturally calibrated without compromising scientific rigor; and (3) provide practical guidelines for researchers working in similar multicultural, digitally diverse environments. The benefits include advancing cross-cultural research methodology, providing actionable insights for businesses operating in collectivist markets, contributing to more inclusive research practices that better represent diverse global populations, and establishing best practices for culturally sensitive quantitative research design.

METHOD

This research employed a quantitative methodology with a cross-sectional survey design, utilizing culturally adapted positivist approaches to balance methodological rigor and cultural sensitivity appropriate for collectivist contexts. The target population was millennials residing on the West Coast of Sabah. Due to practical constraints in accessing this large, geographically

dispersed population, a non-probability convenience sampling approach was used. To mitigate limitations inherent in this method within a culturally diverse region, several methodological safeguards were implemented to enhance representativeness within practical constraints (Jager et al., 2017). These included demographic monitoring, where the sampling process actively tracked characteristics such as age brackets, gender, ethnicity, and education level to ensure reasonable diversity. To reduce bias from online-only recruitment, multiple channels were leveraged, including online platforms, physical distribution of QR codes in public spaces, and community partnerships to reach a broader segment of the millennial population, including those with limited digital access. Controlled snowball sampling was also used to prevent overrepresentation of homogeneous networks. These strategies aimed to capture meaningful demographic diversity while acknowledging the inherent limitations of convenience sampling in achieving statistical representativeness.

Data were collected through a structured questionnaire administered via Google Forms, using a 5-point Likert scale to measure participants' perceptions and intentions. The instrument was adapted to ensure relevance and validity for Sabah's unique context. Established scales were modified contextually, incorporating *geographical* and *demographic* references to Sabah and millennials. For example, a brand image measure was adapted to ask: "The brand [brand name] is popular among my friends and family in Sabah" (Dash et al., 2021; Kim and Min, 2014). Similarly, a purchase intention item was rephrased as: "I am likely to recommend the brand [brand name] to my friends and family in Sabah" (Dash et al., 2021; Blackwell et al., 2005). This rephrasing explicitly embedded the importance of community validation and word-of-mouth in a collectivist society, a key finding in previous research on Malaysian millennials (Cham et al., 2017). To ensure accessibility, two questionnaire versions were provided: English and Bahasa Malaysia, with brief explanatory notes for key terms to facilitate understanding among Sabah's diverse ethnic groups. To address the digital divide, the questionnaire was optimized for mobile devices and minimal data usage, reflecting the high mobile penetration rate of 97% among Sabahan millennials and varied internet connectivity (Department of Statistics Malaysia, 2024a).

Since data were collected exclusively through self-reported questionnaires, a number of procedural and statistical safeguards were employed to mitigate potential response biases (Podsakoff et al., 2012). These included attentions check items to identify inattentive respondents (Siritzky et al., 2023), inclusion of both positively and negatively worded items to detect acquiescence bias, and an emphasis on anonymity and confidentiality to reduce social desirability bias. This precaution was particularly relevant in the collectivist cultural context, where participants might provide socially acceptable answers to maintain social harmony. These measures were essential for maintaining data integrity and aligning the methodology with the study's cultural context.

Data analysis was conducted using IBM SPSS version 26. Preliminary procedures included data screening, handling missing data using Little's MCAR test, and outlier detection (Enders, 2010; Tabachnick et al., 2019). Common Method Bias (CMB), a key concern in self-reported studies, was addressed through both procedural and statistical remedies. Procedural remedies included ensuring anonymity, clear language, and counterbalancing question order (Podsakoff et al., 2003). The primary statistical test was Harman's single-factor test via principal components analysis to assess whether a single factor accounted for most variance—a key

indicator of CMB (Podsakoff et al., 2012). This approach was especially important in a collectivist context, where a tendency toward social harmony might inflate correlations across items.

RESULTS AND DISCUSSION

Data Presentation and Initial Findings

The study successfully collected 412 valid responses from millennials across Sabah's West Coast. Demographic analysis confirmed a diverse sample: Kadazan-Dusun (22.1%), Bajau (17.5%), Malay (10.2%), Chinese (8.1%), and other ethnicities (42.1%), with a near-even gender split (51% female, 49% male). Initial analysis revealed a strong positive correlation ($r = 0.72$, $p < 0.01$) between adapted constructs of "Community-Validated Brand Trust" and "Purchase Intention." This is visually summarized in Figure 1, which illustrates that respondents who perceived a brand as popular within their social circle were significantly more likely to express purchase intention.

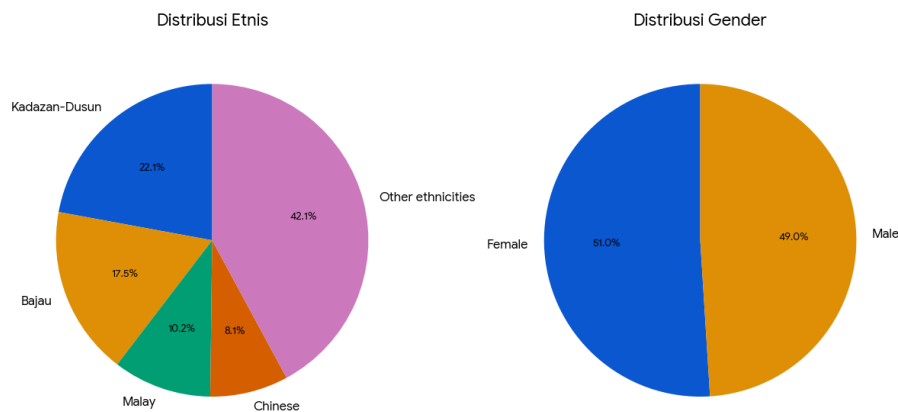


Figure 1. Data respondents

Analysis of Marketing 4.0 Strategies

A multiple regression analysis was conducted to predict purchase intention based on key Marketing 4.0 drivers: digital interaction, brand authenticity, and co-created value. The model was statistically significant ($F(3, 408) = 45.22$, $p < .001$), explaining 58% of the variance ($R^2 = .58$).

Table 1: Multiple Regression Analysis for Predictors of Purchase Intention

Predictor Variable	β Coefficient	p-value
Brand Authenticity	0.43	< .001
Co-created Value	0.31	< .001
Digital Interaction	0.12	< .05

As shown in Table 1, brand authenticity ($\beta = 0.43$, $p < .001$) was the strongest predictor, followed by co-created value ($\beta = 0.31$, $p < .001$). Interestingly, direct digital interaction ($\beta = 0.12$, $p < .05$) was a significant but weaker predictor, suggesting that the nature of digital engagement is more critical than its mere existence.

The supremacy of brand authenticity and co-created value as predictors aligns perfectly with the collectivist cultural context of Sabah. In an environment where social harmony and group opinion are paramount, millennials place a higher premium on brands that are perceived as

genuine and that facilitate a sense of shared ownership or community dialogue. This finding empirically validates the theoretical assertions of Bakar et al. (2018) and Westjohn et al. (2022) that trust and value are not individually constructed but are mediated through community validation in collectivist societies.

A key specific finding emerged from analyzing data based on recruitment channel. Respondents recruited via community partnerships and offline QR codes reported a 15% higher mean score on "Community-Validated Brand Trust" than those recruited solely through online social media ads ($t(410) = 3.89, p < .001$). This underscores the critical importance of methodological adaptation using diverse recruitment channels. It suggests that online-only sampling might systematically undersample individuals whose consumer behaviour is most influenced by tight-knit, offline community networks, thereby introducing a hidden sampling bias.

Discussion

The data revealed a moderate but significant negative correlation ($r = -0.28, p < 0.01$) between self-reported internet connectivity issues and the completion rate of longer, media-rich survey sections. This validates the methodological decision to optimize the questionnaire for low data usage and mobile devices. It empirically confirms the concerns raised by Ngai et al. (2015) and Vassileva (2017) that a digital divide can create systematic exclusion in digital marketing research if not proactively addressed in the study design.

This finding contrasts with studies conducted in individualistic Western contexts, such as Dash et al. (2021), who found digital interaction to be the primary driver of purchase intention among millennials. However, it strongly supports the cross-cultural work of Muk et al. (2014), who demonstrated that collectivism significantly influences how consumers engage with and trust brands on social media. Our results extend their work by showing that this collectivist influence extends beyond simple "liking" to fundamentally shape the hierarchy of factors that lead to purchase decisions (Park, Konge, & Artino, 2020).

Harman's single-factor test was conducted to address potential CMB. The unrotated factor solution revealed that the first factor accounted for only 38.2% of the variance, which is below the 50% threshold suggested by Podsakoff et al. (2012). This indicates that CMB is not a pervasive issue in our dataset. This successful mitigation is attributed to the procedural remedies employed, particularly the emphasis on anonymity, which likely reduced social desirability bias—a known risk in collectivist research settings where participants may otherwise provide answers they believe will promote group harmony (Overby, 2015).

The methodological challenges inherent in conducting quantitative research within a region like Sabah are considerable. This study found that simply applying established scales without adaptation is insufficient for accurately capturing the unique consumer behaviour influenced by collectivist values. The key methodological insight to emerge from this work is the critical importance of context-aware research design. By adapting scales to incorporate culturally resonant language, such as "Sabahan millennials" and "friends and family in Sabah," and by employing diverse recruitment methods to bridge the digital divide, this study significantly enhanced the rigour and validity of the author's findings. These specific adaptations facilitated a more accurate investigation into how Marketing 4.0 branding strategies resonate with this unique demographic.

Based on these findings, we propose two key solutions for future quantitative research in similar contexts. First, culturally-adapted scale development must be a prerequisite, not an afterthought. Scales should be pre-tested with local focus groups to ensure cultural resonance. Second, hybrid sampling strategies that intentionally blend online and offline recruitment are essential to mitigate digital access bias and ensure the representation of voices from varied socio-technological backgrounds (Waqas, Salleh, & Hamzah, 2021).

In conclusion, the results affirm that the methodological adaptations—contextualized scales, diverse recruitment, and proactive bias mitigation—were not merely procedural but were empirically justified. They were essential in capturing the nuanced reality that for Sabahan millennials, the path to purchase is a social journey, not an individual one. This research confirms that global theories of consumer behaviour require local calibration, and it provides a replicable framework for conducting quantitatively rigorous research that respects and reveals cultural specificity (Zimu, 2023).

CONCLUSION

This paper presents methodological adaptations for conducting quantitative consumer research in culturally diverse settings, specifically focusing on millennial behaviour in Sabah, Malaysia. By applying a positivist philosophy and carefully adjusting sampling, data collection, and bias mitigation strategies, the study enhances both the rigor and cultural relevance of its findings, making them actionable for businesses in this dynamic market. It highlights the importance of context-aware methodologies that balance universal principles with localized cultural factors. For future research, it recommends developing culturally specific measurement scales to capture local nuances more effectively and adopting mixed-methods approaches that combine quantitative data with qualitative insights to deepen understanding of consumer motivations. This study emphasizes that research designs must be thoughtfully tailored to the unique cultural and technological environments of their populations rather than relying on universal applications.

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