Abstract
This current research focuses on developing and testing a measurement model of website quality for Small and Medium-sized Enterprises (SMEs). This study applied Hinkin’s scale development process and involved 802 respondents in Indonesia through two successive data collection phases. The model development confirmed the SMEs-WebQ model as a robust measurement of SMEs’ website quality, containing 15 items across three dimensions: system quality, information quality, and service readiness. The replication study confirmed a gratifying nomological validity of the SMEs-WebQ model, whereby the three dimensions of the SMEs-WebQ model have significant positive effects (through brand awareness) on consumers’ purchase intention. This study theoretically contributes to the website quality literature and adds to the debate over the theoretical applicability of the present study’s underpinning theories (stimulus-organism-response and flow experience) in understanding online purchase intention. Practically, this study provides managerial recommendations to SMEs’ managers looking to improve their websites while ameliorating their competitiveness in the digital business era.

Keywords Website quality · E-commerce · SMEs · Brand awareness · Purchase intention · Emerging markets

‘But SMEs must be better prepared; their digital potential remaining markedly underexploited’-Kergroach [1, p. 29].

1 Introduction

Advances in digital technology have transformed all industry operations into e-business models [2], which benefit Small and Medium-sized Enterprises (SMEs) by driv-
ing down costs and increasing efficiency [1, 3, 4]. Apart from emerging technologies such as cloud computing, big data, encryption, non-humanoid robots, and artificial intelligence, websites are another cutting-edge technology that remains a top adoption technology priority for companies worldwide to build e-commerce [5]. Websites are an essential part of establishing an online organizational presence [6, 7], as they enable companies to establish credibility [8, 9] and corporate image [7, 10, 11], promote brands [12], and operate domestic and international e-commerce [13–15]. In light of the numerous benefits of website use, it is critical to maintaining a high-quality website, as a low-quality website is likely to erode consumers’ trust in the site’s authenticity, resulting in decreased purchasing intent and revenue [16].

Academics and industry professionals have paid considerable attention to formulating strategies for maintaining website quality [17]. Numerous website quality measurement models have been developed over the years, including SITEQUAL [18], WEBQUAL [19], A-ST [20], eTailQ [21], E-S-QUAL [22], eTransQual [23], NetQual [24], e-SELFQUAL [25], and HWebSQ [26]. Though the extant measurement models have made significant contributions to the body of knowledge regarding website quality and are believed to be highly effective at assisting companies in evaluating and improving the overall quality of their websites [27], the specialty model by which measuring website quality for SMEs has not been developed. The dearth of a specific website quality measurement model for SMEs necessitates an extensive study to develop a new model, as most existing measurement models were developed without considering some of the challenges SMEs face. SMEs’ challenges are undoubtedly distinct from those confronting large companies, whereby SMEs face numerous constraints, including a slow adoption of new technology [28], a lack of technological mastery [29], a lack of information about emerging technologies [1], a lack of investment in effectively embracing digital media [30], and a shortage of qualified digital talent [31]. Considering that SMEs are less capable of developing and managing sophisticated websites than large companies due to numerous constraints previously mentioned, the existing measurement models may be too redundant to meet their needs. Hence, this study exclusively aims at developing and testing a specific website quality measurement model for SMEs, which requires a simpler model, but it has still received insufficient attention to date.

Afterward, we consider two significant reasons for the current research’s core purpose of focusing on emerging markets. First, the growth of the websites’ use for e-commerce has been uneven, with developed markets experiencing rapid growth while emerging markets are still in their infancy [32, 33]. Second, SMEs in developed markets have been able to capitalize on more sophisticated digital opportunities than SMEs in emerging markets, bringing them into a position to manage digital businesses at a more advanced stage [34]. These two reasons demonstrate that SMEs in emerging markets require increased attention in terms of capacity building for managing digital businesses, one of which is the website as the essential instrument for developing e-commerce [5]. Thus, this present study generates a tool to empower SMEs in emerging markets to manage the quality of their websites so that their contributions to global economic growth will be more significant [35], as emerging markets represent a massive consumer market opportunity [36].
We view Indonesia, in particular, as the ideal country to represent emerging markets, as it has the highest proportion of SMEs in Asia [37]. However, SMEs in Indonesia continue to be excluded from the value chain, both regionally and globally, due to their inability to start and run businesses digitally [38], highlighting the fact that SMEs are slow to engage in digital business activities and require an enabling environment and support to do so [32]. On the other hand, the Indonesian government pushes SMEs to embrace digital transformation to ascertain business continuity and keep their significant contribution to Indonesia’s Gross Domestic Product (GDP) [31]. The condition signals that the digital business challenges and opportunities confronting SMEs in Indonesia are comparable to those confronting SMEs in emerging markets. Therefore, the present study in Indonesia might potentially serve as an appropriate benchmark for SMEs in other emerging markets in ameliorating their visibility in digital businesses, as website adoption is a primary objective for SMEs in emerging markets to develop e-commerce platforms amid increasing internet penetration [11, 38].

Along with developing a model for measuring the quality of SMEs’ websites, we subsequently examined the model’s nomological validity through a replication study based on the relevant theories of stimulus-organism-response (SOR) theory [39] and flow experience theory [40]. To the best of our knowledge, although both theories have been frequently employed to understand consumer behavior patterns, their applicability has tended to be fragmented, despite the fact that they share a similar mechanism for explaining behavior [41]. By referring to Steel and König’s proposition [42], amalgamating two disparate theories into a unified framework could be advantageous for describing the entire phenomenon, dealing with more realistic scenarios, and delivering more effective solutions to the phenomenon’s complexity. Therefore, we incorporate these two theories to understand better the relationship mechanism of website quality (measured by the newly developed model), brand awareness, and purchase intention. In specific, we contrasted both variables in the replication study because improving consumers’ brand awareness [43] and purchase intention [16, 44–46] are critical objectives of companies leveraging digital media.

According to the preceding discussion, this study offers two salient theoretical contributions: enriching the body of knowledge about website quality by advocating a new website quality measurement model to evaluate SMEs’ website quality and adding to the discussion over the theoretical applicability of SOR and flow experience theories in describing online purchase intention in the context of consumer-website interactions. Practically, this study offers managerial recommendations for SMEs seeking to improve the functionality of their websites while enhancing their market competitiveness in the digital business era.

2 Literature review

2.1 Definition of SMEs

Defining SMEs is problematic due to the absence of generally accepted definitions [47, 48]. Ardic et al. [49] argued that establishing a universal definition of SMEs is
not feasible for two reasons: SMEs’ heterogeneity and the nature of the economy they operate. As elaborated in Appendix 1, each country’s regulator and global regulators define SMEs based on various indicators, such as the number of employees, sales, Income, assets, or/and loan size [47, 49]. Following the current research objective of investigating consumer-SMEs interaction on the website (e-commerce) in Indonesia, this study focuses on SMEs, with a maximum of 99 employees and maximum annual sales of US$3 million, as defined by the Indonesian government [50].

2.2 Theoretical foundation

2.2.1 Stimulus-organism-response (SOR) theory

As portrayed in Fig. 1, we primarily designate the SOR theory as an overarching mechanism of the current research concept. The SOR theory describes that the various features of the environment act as stimuli, influencing individuals/organisms’ internal (psychological) state and causing them to behave in a particular way [39, 51].

Stimuli are a vital component of the SOR framework since they represent aspects of the external environment that can influence an organism’s mental and cognitive state [52]. The organism, in this sense, reflects the consumers’ emotional and cognitive states, including their perceptions, desires, and judgments [44]. Stimuli act as signals, penetrating the consumers’ consciousness and prompting them to act [53]. Subsequently, consumers will respond to environmental stimuli with an internal or external behavioral response after a succession of psychological or cognitive processes [45]. The internal response takes the form of the consumers’ attitude, while the external response takes the consumers’ specific behavior [54]. The consumers’ specific behavior may then comprise consumer engagement [55–57], impulse buying behavior [52, 58, 59], purchase intention [45, 46, 60], or repurchase intention [61].

In addition to the primary mechanism previously explained, the direct effect of stimuli on behavioral action is confirmed in the SOR framework [62], validating that environmental stimuli significantly impact how consumers behave and act. Although numerous stimuli in the digital economic landscape have been empirically identified, including website attributes [57, 63, 64]; website quality [46]; and website information quality [59], potential stimuli of the websites managed by SMEs have not comprehensively been identified. Consequently, we employ the SOR theory to support
the urgent need to identify additional potential stimuli from the digital environment, especially websites managed by SMEs, to generate valuable insights for SMEs interested in influencing their consumers’ positive behavior through improved website quality.

2.2.2 Flow experience theory

To bolster this research’s concept, we incorporate flow experience theory into the SOR framework (See Fig. 1) to elucidate how consumers’ cognitive processes mediate the influence of environmental stimuli on their behavior, and numerous scholars have widely utilized this theory (e.g. [41, 65–68]) in explaining online shopping behavior. According to Csikszentmihalyi [40], flow experience theory explains a psychological condition in which individuals cognitively experience a pleasurable experience related to the environment in which they are engaged. The psychological state can emerge when several stimuli cause it to produce a succession of responses [41], the process of which is identical to the one described in the SOR framework.

In the context of consumer-website interactions, Hoffman and Novak [41] explained that the primary stimuli contributing to website users’ delightful experiences are the company’s ability to design websites tailored to consumers’ needs. It can be achieved by improving their website quality (information quality, system quality, service quality) [69] or their website atmospheric cues (informativeness, effectiveness, entertainment) [70], and both approaches have been empirically validated as stimuli that induce a flow experience for consumers when interacting with the website. In light of the mechanism, we believe that a particular type of flow experience induced by stimuli of website quality results in consumers’ awareness of the company’s brand. Bilgihan et al. [71] confirmed that positive feelings arising from the experience of engaging with websites (e-commerce) significantly improve consumers’ knowledge of the company’s brand and increase their association with the brand. At this point, while consumers’ motivations for engaging with company websites are either to obtain product information or to undertake pre-purchase deliberations [41], the flow experience’s consequences of brand awareness spur consumers’ purchase intentions [72].

2.3 Purchase intention

Fishbein and Ajzen [73] conceptualized intention as a subjective ratio indicating an individual’s willingness to perform a specific behavior. According to the conception, Wu and Ho [74] defined purchase intention as the proportion of individuals willing to engage in particular purchase behavior. Although purchase intention is not always related to actual purchase behavior [75], purchase intention is a primary ratio that can be used to forecast the occurrence of actual purchase behavior [76, 77]. Accordingly, we employed purchase intention as a consequence in testing the nomological validity of the SMEs-WebQ model, taking into consideration that numerous scholars in the digital marketing field have widely considered purchase intention as a prevalent criterion in determining the effectiveness of digital media usage [16, 44–46]. Moreover, we measured the variable of purchase intention through the following six measure-
ment items: “I wish to buy the SMEs’ product.”, “I will buy the SMEs’ products in the future.”, “Because I know the SMEs’ product, then I want to buy it.”, “I will recommend others to buy the SMEs’ products.”, “I will buy more of those SMEs’ products.” and “I will buy the SMEs’ products in larger quantities.” [77, 78].

2.4 Brand awareness

According to Keller [79], brand awareness is comprised of two components: brand recognition and brand recall. Brand recognition refers to consumers’ ability to affirm prior exposure to the brand when the particular brand is given as a cue, while brand recall refers to consumers’ ability to retrieve the brand when the product category is given as a cue. In short, brand awareness reflects consumers’ ability to memorize a particular brand within a product category [80]. Brand awareness is pivotal in the consumers’ purchasing decision-making process [74, 79, 81], as purchasing behavior is preceded by four processes: awareness, knowledge, liking, preference, and conviction [82].

Consumers will not consider a product brand if it is not within the consumers’ memories acquired through various environmental exposures (e.g., websites or social media) [80]. Conversely, consumers will only consider a familiar brand when evaluating product choices to purchase because it can mitigate consumers’ risks (for instance, concerning product quality, producer credibility, or product value) and increase perceptions of a product’s positive evaluations [83, 84]. As a result, brands that garner significant consumers’ attention will increase purchase intention [80]. In this study, the measurement items of brand awareness consist of six items: “I am familiar with the SMEs’ product.”, “I can differentiate the SMEs’ product compared to their competitors.”, “I know products made by the SMEs.”, “I can easily remember the SMEs’ product.”, “I can mention the SMEs’ product characteristics quickly.” and “I can explain to others about the SMEs’ product.” [78, 85, 86].

2.5 Website quality

Website quality is paramount since websites are vital tools for enhancing an organization’s online presence [7] and fostering enterprise-stakeholder engagement [87]. The significance of website quality is that consumers’ perceptions of the quality of services delivered by the firm through the website are evaluated as electronic service quality by their consumers [88]. If the website quality meets consumers’ expectations, consumers will continue interacting with the firm excitingly. Unsurprisingly, certain websites are more effective at attracting and retaining consumers than others simply because their service is of a higher standard in achieving consumers’ expectations [89].

Academics have engaged in extensive debate about website quality since the 1990s [27], and it has concluded that website quality comprises a multidimensional construct [27, 90]. Nevertheless, there is no widespread consensus that a universal dimensional measurement of website quality can enhance the user experience when communicating with the firms’ websites [27]. As a result, debates about website quality dimensions continue to be undertaken today from various perspectives. As sum-
Table 1 Previous studies on website quality

| Researcher               | Measurement Scale Model | Measurement Scale Focus              | Measurement Scale Perspective |
|--------------------------|-------------------------|--------------------------------------|-------------------------------|
| Liu and Arnett [91]      | Unnamed model           | e-commerce website                   | Website developer             |
| Yoo and Donthu [18]      | SITEQUAL                | Retail shopping website              | Active and non-active customer|
| Barnes and Vidgen [19]   | WEBQUAL 4.0             | Retail book shopping website         | Active customer               |
| Chen et al. [20]         | AST                     | General website                      | Website developer and customer|
| Wolfinbarger and Gilly   | ETAILQ                  | Online shopping website              | Active customer               |
| Parassuraman et al. [22] | E-S-QUAL                | Retail shopping website              | Active customer               |
| Lee and Lin [96]         | Unnamed model           | Online shopping website              | Active customer               |
| Bauer et al. [23]        | ETransQual              | General website                      | Active customer               |
| Bressolles [24]          | NetQual                 | Commercial website                   | Active customer               |
| Loiacono et al. [94]     | WebQual                 | General commercial website           | Website developer and non-active customer |
| Connolly et al. [93]     | Unnamed model           | Government website                   | Active user                   |
| Ding et al. [25]         | e-SELFQUAL              | e-commerce website                   | Active customer               |
| Noorshella et al. [95]   | Unnamed model           | Small online apparel website         | Active customer               |
| Canziani and Welsh [97]  | Unnamed model           | SMEs’ winery website                 | Best practice of SMEs’ winery websites |
| Ahmad and Khan [92]      | WEBQUAL 4.0             | e-commerce website                   | Active customer               |
| Le et al. [26]           | HWebSQ                  | Hotel website                        | Active customer               |

In Table 1, extensive research on the dimensionality of website quality has been conducted by developing multiple models for various website categories, such as e-commerce websites [25, 91, 92]; retail shopping websites [18, 19]; and government websites [93] and from various perspectives, including those of the developer [20, 91, 94] and the user [26, 92, 95]. In this regard, most previous research focuses on assessing website quality for big enterprises with complex website features and advanced technology. Meanwhile, the dimensionality of website quality for SMEs’ websites has received little attention, implying that the construction of quality dimensions for SMEs’ websites is incomplete and necessitates additional study due to wide variation in website quality dimensions across business sectors [27].

Unlike social media platforms, where we are constrained to create features by ourselves, we have the freedom to develop website features per our business needs and the capabilities of our resources [88]. In this proportion, larger companies with abundant resources can easily build an attractive and responsive website equipped with various sophisticated features for delivering excellent services to their consumers. In contrast, SMEs face many obstacles when developing websites, including a lack of technological expertise and skills, less familiarity with content management systems (CMS), and no standard prototypes that SMEs can use as a benchmark [29]. These obstacles are exacerbated by the inherent financial constraints of SMEs [98], which hamper them from hiring competent website developers. Consequently, SMEs’ websites appear to be less complex and competitive than those of large corporations.
In this respect, there is a significant gap between SMEs’ websites and those of large corporations, to the point where current website quality assessment methods could be redundant as a reference for SMEs due to the quality discrepancies. Thus, SMEs need a tailored website quality measurement metric to assess their websites accurately. These measurement metrics can assist SMEs in enhancing the effectiveness of their websites while also improving their capacity to meet consumers’ needs. Since the sustainability of SMEs is contingent on their ability to respond to consumers’ needs, SMEs must work consistently to ameliorate their business processes [99].

2.6 Identifying domain of SMEs’ website quality

Suryani et al. [88] stated that the digital transformation of traditional business processes affects how consumers interact with companies. Through digital channels, consumers’ perceptions of the quality regarding electronic-delivered services result in consumers’ evaluations electronically. Numerous researchers have developed various terms to describe the quality of electronic services on websites, namely electronic service quality, e-commerce quality, website service quality, and website quality [26].

Aladwani and Palvia [100] defined website quality as users’ positive evaluation of a website’s functionality, characteristics, and overall benefits. Afterward, Tandon et al. [101] refined the concept by defining website quality as a consumers’ perception of the website’s overall superiority in responding to consumers’ needs. Those two concepts indicate that website quality is inextricably associated with the critical position of its user because when consumers and companies communicate through a website, consumers will regularly evaluate whether companies’ electronic service quality is lower or beyond their expectations [22]. The evaluation process results in several desired website characteristics referred to as the perceptual process [22, 88]. The perceptual process subsequently generates perceptual attributes or quality dimensions describing the quality of the website. As shown in Table 2, we have identified ten quality dimensions as the initial domain of SMEs website quality based on three primary sources: previous research findings, the characteristics of SMEs in terms of technology adoption, and feedback from multiple stakeholders via focus group discussion (FGD).

3 Method

3.1 The SMEs-WebQ development

We developed and tested a measurement model of the SMEs-WebQ using Hinkin’s scale creation method [105]. As illustrated in Fig. 2, the procedure encompassed six steps: item generation, questionnaire administration, initial item reduction, confirmatory factor analysis (CFA), convergent and discriminant validity, and replication.
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3.2 Population and sample design

The current research population was customers who have purchased SMEs’ products through SMEs’ websites. We gathered the samples from SMEs’ customers in Indonesia, specifically Java Island. Java Island was chosen as the primary sampling area.
because it has contributed more than half (58.48%) of Indonesia’s total GDP [106]. In line with the data, we assumed that Java Island dominates product or service production in Indonesia and generates numerous goods-or-services transactions. We used the G*Power analysis application software to determine the appropriate minimum sample size for this research [107, 108]. According to the G*Power analysis, the appropriate minimum sample size for this study was 172 samples to detect an effect size of 0.15 with a significance level of 0.05 and statistical power of 95%.

3.3 Sampling technique

We employed a judgment sampling technique [109] per the current research objectives, whereby this study needed research subjects capable of providing the necessary details. Since this study needed detailed information about customers’ shopping experiences with SMEs’ products offered via SMEs’ websites, the judgment sampling technique was highly suitable.

3.4 Control variable

We considered four potentially relevant control variables to eliminate alternative explanations for any observed results: gender, age, product type, and online purchasing experience. First, we observed that gender influences relationship patterns associated with web-based online purchasing behavior. According to Wolin and Korgaonkar [110], men have more favorable attitudes toward online shopping than women, while women are more likely to be concerned about website trustworthiness and attitude [111]. Regarding online product presentation, men are more influenced by interactivity and perceived risk than women, whereas women are more influenced by diagnosticity and vividness [112].

Even though mature consumers acquire better online skills and experience [113], the online marketplace has been dominated by young consumers, who believe online purchasing is easier than mature consumers [114]. As such, we included age as a second control variable because age affects web-based online purchasing behavior differently. Third, we controlled for product type, as consumers have varying preferences and attitudes toward varying product types [115]. In the context of e-commerce, products are classified as search goods or experience goods [116], with search goods referring to products whose quality can be easily estimated based on product-related information before purchasing [117], and experience goods refer to products whose quality is difficult to assess before direct experience [118]. Given the higher level of uncertainty associated with experience goods versus search goods [116], consumers are more likely to use online shopping to purchase search products than experience products [119].

Fourth, we also controlled customers’ online purchasing experience because online consumer behavior is very dynamic, affected by prior online shopping experiences, which means that customers’ perceptions of e-commerce evolve in lockstep with their previous purchase experiences [111, 120]. Because experienced customers are already accustomed to online purchasing [111], they are more confident and have a favorable attitude towards websites with an easy-to-navigate and attractive layout.
whereas less experienced customers are unaware of a website’s essential functions [121].

### 3.5 Data collection process

As shown in Table 3, we gathered data twice, in which the first data collection for developing the SMEs-WebQ model was from July to August 2019 and a replication study (testing the SMEs-WebQ model) from July to August 2020. Regarding the data collection period, there were no specific reasons for collecting data on that period other than to adhere to the available research schedule between the time of research preparation and receiving research funding. At this circumstance, we believed that researching beyond that period did not significantly change the study’s results. We hired a professional surveyor agency as our primary surveyor team to collect the data. Technically, our team visited various public places, including department stores, restaurants, universities, or parks, to look for target respondents. Subsequently, our team inquired the target respondents about their purchasing experiences of SMEs’ products offered through websites and mentioned the purchased products along with the SMEs’ website address. Then, if the respondents met our requirements and wanted to participate in the survey, our team handed them the survey form. Finally, upon completing the survey, our team gave the respondents a souvenir as a token of our appreciation.

| Table 3 Respondents’ overview |
|------------------------------|
| **Profile** | **Category** | **Model Development (July-August 2019)** | **Model Testing (July-August 2020)** |
| Frequency | Percentage | Frequency | Percentage |
| --- | --- | --- | --- |
| Gender | Male | 138 | 34.41 | 276 | 68.83 |
| | Female | 263 | 65.59 | 125 | 31.17 |
| Domicile | Surabaya | 100 | 24.94 | 200 | 49.88 |
| | Bandung | 100 | 24.94 | 0 | 0 |
| | Jakarta | 101 | 25.18 | 201 | 50.12 |
| | Yogyakarta | 100 | 24.94 | 0 | 0 |
| Age | 18 – 20 years old | 114 | 28.43 | 41 | 10.22 |
| | 21 – 30 years old | 227 | 56.61 | 162 | 40.40 |
| | 31 – 40 years old | 46 | 11.47 | 163 | 40.65 |
| | 41 – 50 years old | 10 | 2.49 | 35 | 8.73 |
| | 51 years old and above | 4 | 1.00 | 0 | 0 |
| Types of products bought from SMEs through SMEs’ website | Fashion products | 262 | 65.34 | 196 | 48.88 |
| | Beauty products | 28 | 6.98 | 40 | 9.98 |
| | Processed food products | 64 | 15.96 | 54 | 13.47 |
| | Craft products | 12 | 2.99 | 39 | 9.73 |
| | Agriculture products | 3 | 0.75 | 32 | 7.98 |
| | Others | 32 | 7.98 | 40 | 9.98 |
| Online shopping experience through SMEs’ website | < 3 months | 208 | 51.87 | 91 | 22.69 |
| | 3—< 6 months | 80 | 19.95 | 129 | 32.17 |
| | 6 months—< 1 year | 64 | 15.96 | 93 | 23.19 |
| | One year and above | 49 | 12.22 | 88 | 21.95 |
3.6 Statistical analysis technique

For developing the SMEs-WebQ model, we used SPSS software to carry out a scale reduction procedure via an EFA (Exploratory Factor Analysis). Meanwhile, we run a CFA (Confirmatory Factor Analysis) through the PLS-SEM approach using Warp-PLS software [122] to test the SMES-WebQ model. Hair et al. [123] suggested two sequential stages for conducting a CFA using the PLS-SEM approach: measurement model evaluation and structural model evaluation.

4 Results

4.1 Developing the SMEs-WebQ

4.1.1 Respondents’ overview for developing the SMEs-WebQ

As previously presented in Table 3, we invited 401 respondents across four major cities on Java Island, Indonesia, to develop the SMEs-WebQ model. We then used Harman’s single factor test through PLS-SEM to assess the dataset for common method bias [124]. The results revealed that the total variance explained by a single latent variable was 0.347 < 0.5, implying that the dataset used to develop the model was free of common method bias.

4.1.2 Scale reduction

We reduced the initial scale of the SMEs-WebQ by applying EFA following Bartlett’s sphericity [125] and KMO (Kaiser-Meyer-Olkin) [126] values to determine the critical values for conducting EFA. The values of Bartlett’s sphericity ($\chi^2 (528) = 5822.606$, $P = 0.000$) and KMO (0.935) indicated that the probability value in the correlation matrix and identity matrix properties was significantly categorized. Thus, the initial 33-scale items fulfilled the requisite minimal threshold of Bartlett’s sphericity and KMO scores and were suitable for conducting EFA. Later, we adhered to Kaiser’s formulation [127] to retain seven factors because the seven factors exceeded the minimum threshold of one with a cumulative variance of 60.038%. As highlighted in Table 4; Fig. 3, the seven factors had the respective eigenvalues as follow: 11.404; 2.116; 1.665; 1.264; 1.215; 1.109; and 1.039.

After that, we considered including a parallel analysis as another criterion to determine the final factors because it provides more accurate empirical estimates [128, 129]. Watkins [129] and Patil et al. [130] advocated that if the eigenvalues extracted from actual data (from SPSS) exceed those extracted from random data (from Parallel Analysis Engine), the number of factors should be retained. According to the direction (See Table 5), we finally retained only three factors out of seven since the percentile eigenvalue of the randomly generated eigenvalue for the fourth root (1.413168), as generated by the Parallel Analysis Engine, was more significant than the eigenvalue of the data from SPSS (1.264).
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After removing 18 scale items with high cross-loadings (from unrepeated factors), Table 6 shows the factor pattern that emerged from the results of three valid retained factors using a maximum likelihood extraction and varimax rotation with Kaiser normalization. Additionally, the three retained factors had acceptable internal consistency reliability as Cronbach Alpha values of 0.817 for Factor 1, 0.803 for Factor 2, and 0.821 for Factor 3 were more significant than the minimum threshold of 0.70. Meanwhile, we also evaluated the validity of all retained factors where the convergent validity, as shown in Table 6, was more significant than 0.50 and the discriminant validity, as per Table 7, was less than 0.85 [123]. As such, the reliability and validity of all retained factors have been well-established.

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**Table 4** Total variance explained

| Component or Factor | Initial Eigenvalues | % of Variance | Cumulative % |
|---------------------|---------------------|---------------|--------------|
| Total               | 11.404              | 34.557        | 34.557       |
| 2                   | 2.116               | 6.414         | 40.970       |
| 3                   | 1.665               | 5.047         | 46.017       |
| 4                   | 1.264               | 3.829         | 49.846       |
| 5                   | 1.215               | 3.682         | 53.528       |
| 6                   | 1.109               | 3.360         | 56.888       |
| 7                   | 1.039               | 3.149         | 60.038       |

**Fig. 3** Scree plot

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Furthermore, Watkins [129] proposed that a simple structure should be confirmed using additional criteria to identify an acceptable EFA solution, in which each factor should be loaded prominently by at least three scale items on only one factor (no complex or cross-loadings), demonstrates internal consistency reliability ≥ 0.70, and is theoretically meaningful. At this point, we finalized the SMEs-WebQ model consisting of 15 scale items across three dimensions (all three retained factors), and we

**Table 5** Eigenvalue comparison

| Component or Factor | Mean Eigenvalue | Percentile Eigenvalue | Eigenvalue (from SPSS) |
|---------------------|-----------------|-----------------------|------------------------|
| 1                   | 1.585139        | 1.629732              | 11.404                 |
| 2                   | 1.507373        | 1.543094              | 2.116                  |
| 3                   | 1.445456        | 1.478046              | 1.665                  |
| 4                   | 1.399398        | 1.413168              | 1.264                  |
| 5                   | 1.354554        | 1.372585              | 1.215                  |
| 6                   | 1.314293        | 1.326738              | 1.109                  |
| 7                   | 1.277048        | 1.288909              | 1.039                  |

**Table 6** EFA output

| Test Item | Factor |
|-----------|--------|
|           | 1      | 2     | 3     |
| SYQ2      | 0.728  |       |       |
| SYQ1      | 0.718  |       |       |
| ESQ2      | 0.582  |       |       |
| SYQ3      | 0.580  |       |       |
| ESQ3      | 0.529  |       |       |
| ESQ1      | 0.464  |       |       |
| INQ3      |        | 0.709 |       |
| INQ2      |        | 0.687 |       |
| INQ1      |        | 0.583 |       |
| INQ4      |        | 0.577 |       |
| SYA3      |        |       | 0.730 |
| SYA2      |        |       | 0.679 |
| FUL1      |        |       | 0.639 |
| FUL2      |        |       | 0.582 |
| SYA1      |        |       | 0.544 |
| Cronbach Alpha | 0.817 | 0.803 | 0.821 |
| Convergent Validity (AVE Score) | 0.723 | 0.794 | 0.764 |

Note: AVE = Average Variance Extracted

**Table 7** Discriminant validity (HTMT)

| Factor 1 | Factor 2 | Factor 3 |
|----------|----------|----------|
| Factor 1 |          |          |
| Factor 2 | 0.802    |          |
| Factor 3 | 0.750    | 0.728    |

Note: HTMT = Heterotrait-Monotrait
labeled the three dimensions as system quality, information quality, and service readiness, as shown in Table 8. We operationalized each dimension based on the embedded test items as follow: (a) system quality is the website’s capability in operating a user-friendly system, (b) information quality is the website’s capability in presenting informative content, and (c) service readiness is the website’s ability in delivering responsive online services.

### 4.2 Testing the SMEs-WebQ

We conducted a replication study to examine the nomological validity of the SMEs-WebQ model in light of the relevant theories, namely the stimulus-organism-response (SOR) theory [39] and flow experience theory [40]. As previously elaborated in Sect. 2.2, we incorporated those theories to investigate how the environmental stimuli of the SMEs-WebQ dimensions shape consumers’ awareness towards the company’s brand (brand awareness) and subsequently affect their intention to purchase. This particular step was essential in the model’s development process to confirm the psychometric adequacy of the SMEs-WebQ model (as a measurement for SMEs’ website quality) with theoretically derived other construct relationships [131].

#### 4.2.1 Hypothesis development for testing the SMEs-WebQ

As an integral part of the digital ecosystem, the website has a central role in bridging the company’s business transformation. However, having a website is worthless...
unless the company delivers high-quality website services [16]. When SMEs can build a high-quality website equipped with a user-friendly system (system quality), supported by the provision of informative content (information quality), and always ready to deliver services (service readiness), they can bring an incredible “moment of truth” to their customers that results in positive behavioral consequences. Numerous prior studies (e.g. [102, 132–136]) have empirically confirmed that website quality can directly influence consumers’ purchase intention. On the other hand, as explicated in Sect. 2.2, there is an alternative mechanism in which the impact of website quality can be transferred through brand awareness. Specifically, the three-dimensionality of SMEs’ website quality can also be a powerful stimulus for creating pleasant experiences for consumers. Simultaneously, a pleasant experience results in positive emotions in consumers, which sharpen consumers’ awareness towards the company’s brand [71]. Given that awareness has been shown to affect a purchasing-decision process [82], consumers are more likely to purchase a particular brand when they have a favorable awareness of the brand [72, 111]. As depicted in Fig. 4, therefore, we hypothesized that:

**H1a–c** SMEs’ website quality (SMEs-WebQ), comprising (a) system quality, (b) information quality, and (c) service readiness, has a positive impact on brand awareness.

**H2a–c** SMEs’ website quality (SMEs-WebQ), comprising (a) system quality, (b) information quality, and (c) service readiness, has a positive impact on purchase intention.

**H3** Brand awareness positively impacts purchase intention.

**H4a–c** Brand awareness mediates the positive effect of SMEs’ website quality (SMEs-WebQ) comprising (a) system quality, (b) information quality, (c) service readiness on purchase intention.

![Nomological validity assessment framework for the SMEs-WebQ model](image-url)
4.2.2 Respondents’ overview for testing the SMEs-WebQ

Per Hinkin’s recommendation [105], we conducted the replication study with a new set of respondents to reduce potential common method variance and boost the SMEs-WebQ model’s generalizability. As shown in Table 3, we gathered 401 distinct respondents from two major cities of Java Island, namely Surabaya and Jakarta. Unlike the development study, this replication study recruited respondents from only two cities, as the second data collection period coincided with an increase in COVID-19 virus cases in Indonesia. The dataset was then subjected to Harman’s single factor test via PLS-SEM to detect common method bias [124]. The results showed that the sum of the total variance explained by a single latent variable was 0.393 < 0.5, indicating that the dataset used to test the model did not suffer from common method bias.

4.2.3 Measurement model evaluation of the SMEs-WebQ testing

In this stage, we evaluated all constructs of the replication study in terms of its reliability and validity. As shown in Table 9, although several indicators, including SQ1 (0.679), BA1 (0.685), BA6 (0.672), PI5 (0.666), and PI6 (0.604), did not exceed the required minimum threshold of 0.70 [123], we still retained all those indicators for further analysis because the values of other reliability test criteria (composite reliability and Cronbach alpha) for each construct were still higher than the minimum threshold of 0.70 [107, 137]. As such, the examined constructs had a high degree of reliability. Meanwhile, the values of convergent validity (all AVE values were higher than 0.50) and discriminant validity (all HTMT values presented in Table 10 were less than 0.90) met the obligatory threshold [123], indicating that the examined constructs also had a high degree of validity. In conclusion, the measurement model evaluation confirmed that all the current replication study constructs were highly reliable and valid.

4.2.4 Structural model evaluation of the SMEs-WebQ testing

We applied Baron and Kenny’s three-step regression approach [138] to evaluate the effects of SMEs’ website quality dimensions (measured by the SMEs-WebQ model) on brand awareness and purchase intention. We firstly examined the direct effects of SMEs’ website quality dimensions on brand awareness and purchase intention. Per Table 11 (Model 1) shows, SMES’ website quality dimensions of system quality ($\beta=0.099, t=1.987, P<0.05$), information quality ($\beta=0.125, t=2.508, P<0.05$), and service readiness ($\beta=0.378, t=7.574, P<0.001$) had positive and significant direct effects on brand awareness, in support of H1a–c. The dimension of service readiness showed the largest coefficient ($\beta=0.378$) in brand awareness in Model 1. The results in Model 2 show that SMEs’ website quality dimensions of system quality ($\beta=0.093, t=1.865, P<0.1$), information quality ($\beta=0.223, t=4.456, P<0.001$), and service readiness ($\beta=0.369, t=7.389, P<0.001$) also had positive and significant direct effects on purchase intention, in support of H2a–c. The dimension of service readiness also showed the largest coefficient ($\beta=0.369$) in brand awareness in Model 2. Meanwhile, when we included brand awareness through Model 3, the results showed...
that brand awareness had a positive and significant direct effect on purchase intention ($\beta=0.414$, $t=8.295$, $P<0.001$), supporting H3. At this point, the incorporation of brand awareness in Model 3 led to a slight decrease in the coefficient value ($\beta$) of information quality (from 0.223 to 0.171) and service readiness (from 0.369 to 0.391).
0.212) on purchase intention but remained significant, suggesting partial mediation. In other words, the results indicated that the dimensions of information quality and service readiness had direct effects (through brand awareness) on purchase intention. Whereas, the effect of system quality on purchase intention was not significant, suggesting full mediation in which system quality indirectly influenced purchase intention through brand awareness. In conclusion, brand awareness significantly mediated the relationship between three dimensions of SMEs’ website quality and purchase intention, supporting H4a–c.

### 4.2.5 Model fit evaluation

Furthermore, we evaluated several model’s fit criteria to ascertain the robustness of the structural model algorithm’s path analysis. Kock [122] proposed essential indices as a common standard for assessing model fit, including traditional and new additional indices. All of the indices, as presented in Table 12, met the minimal acceptability threshold, suggesting the current empirical model for replication study had a good model fit. Specifically, the current research constructs had no collinearity...
issues since the AFVIF score had an ideal score of 1.889 < 3.3 while the research model’s explanatory power was then classified as enormous, as indicated by the large GoF score (0.484 > 0.36). Likewise, the score of five new indices represented the fit between the model-implied and empirical indicator correlation metrics in the new additional indices. Each of the five indices had an entirely acceptable score, indicating the model-implied and empirical indicator correlation metrics were entirely consistent. Thus, the model fit evaluation results for both traditional and new additional indices confirmed that the current empirical model for a replication study had a satisfactory model fit.

In conclusion, the replication study findings collectively supported the SMEs-WebQ’s nomological validity, in which the empirical findings provided robust support for all relationships in the proposed nomological assessment framework (Fig. 4). This framework—consisting of theoretically derived relationships among website quality (measured by the newly developed SMEs-WebQ), brand awareness, and purchase intention (both measured by adaptations of previously well-established scales)—provided additional evidence of the psychometric adequacy of the SMEs-WebQ model.
5 Discussion

This empirical study was designed to execute two primary research objectives: developing and testing a new measurement model for assessing the SMEs’ website quality (SMEs-WebQ). The model development results designate the SMEs-WebQ as a robust model consisting of 15 scale items under three dimensions: system quality, information quality, and service readiness (See Table 8). The newly developed SMEs-WebQ model corresponds with the common principle of website quality conceptualization, which is multidimensional [27]. Numerous extant website quality models, such as SITEQUAL [18]; WEBQUAL [19]; A_ST [20]; eTailQ [21]; E-S-QUAL [22]; eTransQual [23]; NetQual [24]; e-SELFFQUAL [25]; and HWebSQ [26], are also multidimensional. In detail, the SMEs-WebQ model indicates that a good quality website service should meet three essential criteria: a website should be equipped with a user-friendly system (system quality), informative content (information quality), and responsive online services (service readiness). These three dimensions are relevant to the positive consequences for consumers when interacting with companies through digital touchpoints that have been confirmed by previous researchers, where system ease of use encourages higher consumer satisfaction [139], information quality increases consumers’ behavioral intention [140, 141], and responsive services generate positive emotions while also attenuating anger in consumers [142].

Moreover, the SMEs-WebQ model is analogous to the Delone and McLean model of information system success (ISS) [143], which consists of three dimensions and it has been broadly applied to evaluate the success of information system-based business service implementation (e.g. [91, 102, 143, 144]). The dimensional similarity of the SMEs-WebQ model to the Delone and McLean model corroborates the position of the SMEs-WebQ, as a new website quality measurement model, to be considered as an essential reference for companies to evaluate the quality of their website services, especially SMEs, which were the main priority of this model’s development. We know that SMEs have various deficiencies in developing and maintaining a good quality website service [29–31]. Therefore, we expect the SMEs-WebQ model to become an applicable instrument for improving SMEs’ website quality standards because it offers a simpler model than other existing models.

Considering the confirmed measurement and structural model analysis of the replication study (See Sect. 4.2), it is no doubt that the SMEs-WebQ model’s nomological validity has been highly well-established. The structural model evaluation confirms all the study’s hypotheses, whereby the effects of three SMEs’ website quality dimensions (measured by the SMEs-WebQ model) have significant effects (through brand awareness) in influencing consumers’ purchase intention. Specifically, the findings show that brand awareness offers two different mediating effects on the relationship between three dimensions of SMEs’ website quality and purchase intention. Brand awareness fully mediates the effect of system quality on purchase intention, while information quality and service readiness dimensions on purchase intention are partially mediated (See Table 11). Referring to the full mediation result, having an excellent website system does not guarantee that consumers will have an enthusiastic purchase intention because it is not directly associated with consumers’ pre-purchase deliberations. Instead, an excellent website system that provides enjoy-
able online experiences can strengthen consumers’ associations with the company’s brands, hence increasing purchase intention. Meanwhile, because information quality and service readiness are related to how companies display informative content and deliver responsive services on the website, these two dimensions are inextricably linked to pre-purchase deliberations. Therefore, it is no wonder that these two dimensions can boost consumer brand awareness and directly impact consumers’ purchase intention.

Furthermore, the replication study results should not be surprising per the study’s underpinning theories [39, 40]. In other words, this study validates the three-dimensional website quality of the SMEs-WebQ model functions as salient stimuli that cognitively affect consumers’ brand awareness and subsequently drive their purchase intention as a behavioral response. This typical relationship has separately been validated by prior researchers, whereby website quality [69] and atmospheric website cues [70] act as impactful stimuli that bring a flow experience for the consumers during interactions with the company’s website. According to Bilgihan’s finding [71], positive emotions arising from the pleasant experience of engaging with websites concurrently result in consumers’ brand awareness. In this respect, when consumers have good brand awareness, the brand will get consumers’ full attention so that consumers’ purchase intentions for the brand are increasingly awakened [72, 111]. Thus, considering that brand awareness significantly influences consumers’ purchase intention, SMEs should prioritize improving their consumers’ brand awareness by ensuring their website is supported with a user-friendly system (system quality), presenting informative content (information quality), and delivering responsive online services (service readiness).

5.1 Theoretical contributions

The contribution of this present study to the theoretical aspects is manifold. As far as we know, there have been various prominent website quality measurement models in the existing literature, such as SITEQUAL, WEBQUAL, A_ST, eTailQ, E-S-QUAL, eTransQual, NetQual, e-SELFQUAL, and HWebSQ. However, the development of most of the existing models is focused on large company websites, with very few referring to websites operated by SMEs, even though the capabilities in leveraging digital media between large companies and SMEs are comparatively different. At this point, the existing models may be too redundant for SMEs since SMEs’ capabilities in establishing a website that is not as sophisticated as large companies’ websites. Therefore, this study contributes to the body of knowledge on website quality by advocating the newly developed SMEs-WebQ model as a robust model comprising three dimensions that are compatible for measuring the website quality of SMEs.

There is currently no universal consensus on a website service quality model that can improve the consumer experience when dealing with company websites, owing to the fact that each business sector is unique [27]. Regarding the dimensionality of the SMEs-WebQ model, two dimensions of the SMEs-WebQ, especially system quality and information quality, intersect with several previous models developed from the perspective of large companies [19, 91, 92, 100, 102]. It indicates that these two dimensions are the primary characteristics that should be considered by any com-
pany regardless of their size when managing website services. On the other hand, the third dimension of the SMEs-WebQ, service readiness, shows the highest and most consistent coefficient value in influencing brand awareness and purchase intention within the three-regression analysis, as presented in Table 11. These results signalize that service readiness is the most influential essential dimension for consumers when interacting with the websites managed by SMEs. Thus, this study also contributes to the website quality literature in different ways, whereby system quality and information quality have become generic criteria for managing company websites’ quality. Nevertheless, the service readiness dimension should be more of a concern for SMEs in managing website quality because it has been validated as the most important expectation of consumers when interacting with SMEs’ websites.

This study adds to the debate over the theoretical applicability of the SOR theory and flow experience theory in understanding online purchase intention in the context of consumer-website interactions. In particular, we presented two significant determinants for determining online purchase intention: website quality using the SMEs-WebQ model and brand awareness. The mediation results suggest that a sequential process drives consumer purchase intention through brand awareness induced by the SMEs-WebQ model as considerable environmental stimuli. Thus, the synthesis of those theories may serve as a new theoretical foundation for exploring more online consumer behaviors across various digital media platforms.

5.2 Practical implications

Amid the proliferation of various emerging technologies, such as cloud computing, big data, and artificial intelligence, the website remains a top priority for SMEs looking to grow their e-commerce business [5]. However, we must recognize that simply having a website is insufficient without maintaining the quality of the website, as poor website quality adds no value to the company. In this respect, this study offers various managerial implications for companies, particularly SMEs, seeking to improve the quality of their websites.

Companies must improve service quality, particularly at digital touchpoints such as websites, because interactions with consumers are not always direct. In this circumstance, the extent to which a website provides excellent service to consumers is frequently challenging to determine. Companies must proactively involve consumers in evaluating the performance of their websites so that the decline in service quality perceived by consumers can be responded to at an early stage. Thus, SMEs can use the SMEs-WebQ model developed in this study to ascertain how consumers perceive the quality of their website, enabling them to enhance the website’s quality continuously. Additionally, SMEs can utilize the SMEs-WebQ model as an instrument for comparing the performance of their nearest competitors’ websites. This benchmarking endeavor is critical for SMEs to continue monitoring the advancement of website management among competitors to make strategic actions for maintaining a company’s level of market competitiveness through superior website quality.

This study encourages SMEs to consider three quality dimensions in managing their websites: system quality, information quality, and service readiness. These three dimensions have been shown to affect consumers’ attitudinal and behavioral
responses. Although the quality of the website system is the main motor for smooth interaction with consumers, the quality of the system does not directly guarantee an increase in consumers’ purchase intention because the quality of the website system is more about creating a pleasant experience for consumers while interacting with the website. SMEs can improve the quality of the website system by ensuring that the website is equipped with a system that is easy for consumers to operate. Meanwhile, SMEs must also pay attention to their websites’ quality of information and service readiness. The quality of information can be improved by presenting informative website content related to product information and company profiles, while service readiness is related to efforts to provide responsive services to consumers. These two dimensions are essential to prioritize as they are directly related to consumers’ pre-purchase deliberations and have a direct impact on increasing brand awareness and consumer buying intentions.

5.3 Limitations and future research

Even though the present study provides salient contributions, two limitations need to be acknowledged, which offer scope for future research opportunities. First, the results suggested that the effectiveness of the SMEs-WebQ model in assessing website quality for SMEs is convincing. However, the model was only developed in Indonesia, whereby the results might likely be over-generalized. Given that consumers’ technological readiness, acceptance, and usage may vary, influencing their beliefs and implying a distinct consumers’ evaluation process [22], it is recommended that further research be undertaken in other countries, particularly in the emerging markets, to strengthen the model’s external validity and improve the generalization of the results. Second, the current model testing of the SMEs-WebQ is fundamentally limited to determining the model’s potential to improve consumers’ brand awareness and purchase intention, with the test findings confirming the nomological validity of the consumer perception-based model. Further applied research is therefore encouraged to focus on evaluating the model’s nomological validity by contrasting with consequences from company perspectives, including financial (profit growth) and marketing performance (sales growth and market share growth) [145] or conversion rates [146].

6 Appendix 1: Various definitions of SMEs.

| Regulator      | Small Enterprise                      | Medium Enterprise                       |
|----------------|---------------------------------------|-----------------------------------------|
|                | Max. Employees | Max. Annual Sales* | Max. Annual Income* | Max. Assets* | Max. Loan Size* | Max. Employees | Max. Annual Sales* | Max. Annual Income* | Max. Assets* | Max. Loan Size* |
| World Bank     | 50           | 3 m             | -                   | 3          | -               | 300            | 15 m             | -                   | 15 m         | -               |
| MIF—IADB       | -            | -               | -                   | -          | -               | 100            | 3 m               | -                   | -            | -               |

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| Regulator        | Small Enterprise | Medium Enterprise |
|-----------------|------------------|-------------------|
|                 | Max. Employees   | Max. Annual Sales* | Max. Annual Income* | Max. Assets* | Max. Loan Size* | Max. Employees | Max. Annual Sales* | Max. Annual Income* | Max. Assets* | Max. Loan Size* |
| AfDB            | -                | -                 | -                  | -            | -              | 50              | -                 | -                  | -            | -              |
| ADB             | There is no official definition, and ADB refers to the definitions of individual national governments. | - | - | - | - | - | - | - | - | - |
| UNDP            | -                | -                 | -                  | -            | -              | 200             | -                 | -                  | -            | -              |
| European Union  | 50               | 12 m              | 12                 | 250          | 58 m           | 58 m            | -                 | -                  | -            | -              |
| Indonesia       | 19               | 160k              | 34k                | 99           | 3 m            | 700k            | -                 | -                  | -            | -              |
| Vietnam         | -                | -                 | -                  | -            | -              | 200             | -                 | 13,2 m             | -            | 4,4 m          |
| Thailand        | 50 (S)           | 1,5 m (S)         | 1,5 m              | 200          | -              | 9 m             | -                 | 6 m                 | -            | -              |
|                 | 50 (M)           | 3 m (M)           | (S) (M)            | 200          | (S) (M)        | 15 m            | (S) (M)           | 6 m                  | (W)         | 3 m            |
|                 | 25 (W)           | 1,5 m             | 1,5 m              | 200          | (M) (W)        | 3 m             | (M) (W)           | 1,8 m                | (R)         | 3 m            |
|                 | 15 (R)           | 900k              | (W)                | 30           | (R)            | 3 m             | (R) (W)           | 1,8 m                | (R)         | -              |
| Pakistan        | 50               | -                 | 1,5 m              | 240k         | -              | -               | 7,6 m             | 1,9 m               | -            | -              |
| Bangladesh      | 25 (S)           | -                 | 200k              | 250          | -              | -               | 1,8 m             | -                   | -            | -              |
|                 | 99 (M)           | -                 | (S) (M)            | 100          | (S) (M)        | -               | 3,5 m             | (M)                 | -            | -              |
| Peru            | -                | -                 | -                  | 200          | -              | -               | -                 | -                   | -            | -              |
| Norway          | -                | -                 | -                  | 100          | -              | -               | -                 | -                   | -            | -              |
| Switzerland     | -                | -                 | -                  | 250          | 58 m           | -               | 51 m               | -                   | -            | -              |
| Australia       | -                | -                 | -                  | 200          | -              | -               | -                 | -                   | -            | -              |

Note: Compiled from various sources [47–50, 147–155]

MIF—IADB=Multilateral Investment Fund—Inter-American Development Bank, AfDB=African Development Bank, ADB=Asian Development Bank, UNDP=United Nations Development Programme

*The calculation is in US$, m=million, k=thousand

(S)=Service industry

(M)=Manufacturing industry

(R)=Retail industry

(W)=Wholesale industry

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Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.
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