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Affordable innovation rejection attitude:

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Abstract

Affordable innovations, which serve consumers with a low willingness or ability to pay, are a means to address grand challenges while also generating economic value. However, less is known about how managers' and decision makers' individual-level preferences and attitudes for or against affordable innovation hinder their development. Hence, in addition to identifying and conceptualizing the affordable innovation rejection (AIR) attitudes of decision makers as a major obstacle, this study proposes a scale to measure them. Specifically, with a series of qualitative and quantitative studies, this research develops and validates a parsimonious psychometric scale that can measure decision makers' affordable innovation rejection attitudes. The resulting six-item scale is based on a tripartite AIR conceptualization, which proves valid in terms of convergent, discriminant, experimental, nomological, predictive, and test–retest reliability. The proposed research agenda in turn details some possible applications of this scale.

Keywords: affordable innovation, decision-making bias, frugal innovation, constrained innovation, BoP innovation, scale development

1. Introduction

Affordable innovations, defined as new products or services that target consumers in a particular market who exhibit a low willingness or ability to pay, have the potential to address grand challenges, including climate change, natural resource depletion, overstrained health systems, and insufficient education, because such solutions are affordable to the majority (Ernst et al., 2015; Laukkanen & Patala, 2014; Weyrauch et al., 2020). The challenges associated with the COVID-19 crisis echo the need for affordable innovation and spurred new solutions, beyond those typically developed by larger companies at higher prices. For example, AgVa Healthcare's (India) open source offering of the design of its portable ventilator reduces the price of a system that can oxygenate the air in a room to about $2,000, compared with $10,000 for a comparable solution by Siemens (Harris et al., 2020). But clearly, the need for affordable innovations goes beyond the COVID-19 crisis. Other innovators of affordable innovation, such as OneDollarGlasses (ODG, 2021) and its strategy for selling glasses for a material cost of $1 to people in developed countries, seek to reduce disenfranchisement and inequalities by providing affordable products that improve people's lives.

Despite growing recognition of the relevance of affordable innovation (e.g., Agarwal et al., 2017; Gandenberger et al., 2020; Reinhardt et al., 2018; Rosca et al., 2017), investments still mainly go to innovation projects that target solvent customers. Van Orden et al. (2011) demonstrate that new products mainly start by targeting the high end, then spread to the low end of markets. In brief, companies still tend to put a premium on premium. There is reason to believe that companies' emphasis on premium innovation is a result of managers' innovation decisions. Indeed, upper echelon theory (Hambrick & Mason, 1984), together with ample evidence from innovation management, suggests that firms' tendencies to prefer one innovation type over another, and thus their ensuing innovation performance, often is a consequence of

decision makers' individual attitudes and values that precede actual project work (e.g., De Visser & Faems, 2015; Salter et al., 2015; You et al., 2020; Zhang et al., 2017). For example, Cooper (2008, p. 225) states: "Interest, liking, preference, and purchase intent are thus established even before the project is a formal development project." Yet, while studies on managers' individual-level innovation-related attitudes exist (e.g., Antons et al., 2017; Eliëns et al., 2018), studies of affordable innovation and related concepts still predominantly focus on firm-level decision making and outcomes (e.g., Ernst et al., 2015; Senyard et al., 2014). Past research thus somewhat ignored the importance of individual-level attitudes for or against affordable innovation, which depicts a notable research gap.

In particular, innovation can be both fostered and impeded at the individual level (Antons et al., 2017; Magni et al., 2018). For example, the "not-invented-here" syndrome in innovation management describes an individual-level overemphasis on internal knowledge that leads to substantial decision biases (Antons & Piller, 2015; Lichtenthaler & Ernst, 2006). Eliëns et al. (2018) provide another example for the importance of managers' individual-level attitudes. They show that escalation of commitment can be explained by innovation managers' rational versus intuitive gatekeeping styles. In a similar way, decision makers might form attitudes toward affordable innovation that influence their innovation-related decisions. We contend specifically that affordable innovation rejection (AIR) is an attitude, reflecting a decision maker's evaluative stance toward affordable innovations, that comprises emotional, cognitive, and conative components (Eagly & Chaiken, 1993). We also anticipate that it coincides with biased decision making (Antons et al., 2017), such that an overemphasis of premium innovation ideas is the consequence. To attain social and economic value creation, as is promised by affordable innovation, it therefore is essential to understand decision makers' attitudes and how they might foster or inhibit the development of affordable innovation. Toward this end, a psychometrically

sound AIR scale is needed. With a dedicated AIR scale, research and practice could better identify innovators who are prone or averse to affordable innovation, explain why companies favor premium innovation, and suggest ideas for fostering affordable innovation development. Against this background, the goal of this research is to develop a parsimonious scale that is capable of measuring innovation managers' tendency to reject affordable innovation.

Our scale development process is organized in the following way. First, we conceptualize AIR as an individual-level attitude with cognitive, emotional, and behavioral components. Next, we develop and validate a psychometrically sound measure to capture decision makers' underlying individual-level tendencies to reject innovations that target customers with a lower willingness or ability to pay (i.e., innovative products with basic functionalities). In keeping with calls for shorter, practically useful scales (e.g., Blotenberg & Richter, 2020; Thomas et al., 2001; Vogel et al., 2020; Walsh et al., 2019), we construct a parsimonious, reflective scale that is clear and psychometrically robust and that has value for management scholars and practitioners. For theory, considering the dominance of qualitative, firm-level research (Ernst et al., 2015; Prahalad, 2012; Tiwari & Herstatt, 2020), a scale that assesses decision makers' negative attitudes toward affordable innovation can be applied in surveys and experiments to deepen understanding of how affordable innovation can be achieved. For practice, such a measure is useful for informing personnel selection decisions for innovation projects; potential candidates might be selected according to their tendency to reject or favor affordable innovation.

Thus, our contribution can be summarized as follows: 1) we offer a fine-grained conceptualization of AIR, which we specify as an individual-level attitude that facilitates rejections of affordable innovation. In addition, we 2) develop and validate a scale capable of assessing AIR attitudes, on which basis we provide 3) a research agenda for business researchers and innovation practitioners, outlining ways that AIR-related research might achieve meaningful

impacts on innovation success.

2. Research Background

2.1. Affordable innovation and related concepts

To measure decision makers' AIR attitudes, we start by defining affordable innovations as new products or services designed to address customers with a low willingness or ability to pay in a particular market (Ernst et al., 2015; Reinhardt et al., 2018). These products and services typically feature basic functionalities and standardized services (Zeschky et al., 2011). In contrast, premium products are characterized by high-quality components and evoke consumers' willingness to pay a price premium (Henard & Dacin, 2010; McNamara et al., 2004). Providing product and service innovations that are affordable to low-yield customer segments offers an appropriate approach to address the needs of non-affluent customers, especially in emerging markets (Lettice & Thomond, 2008; Lim & Fujimoto, 2019; Soni & Krishnan, 2014; Weyrauch & Herstatt, 2017). Affordable innovation also has been considered in various guises, such as resource-constrained, frugal, base-of-the-pyramid, or low-end innovation (Agarwal et al., 2017; Deakins & Bensemann, 2019; Hossain, 2018; Reinhardt et al., 2018). However, slight differences exist between affordability and related concepts. For example, Prahalad (2012) uses the term "bottom of the pyramid" (BoP) to refer to the poorest socio-economic group, about 4 billion people worldwide who earn less than $2,000 per year and have many unmet needs. It predominantly has been applied to emerging economies, in which the majority of people are considered poor (Hahn, 2009; Kolk et al., 2014; Von Janda et al., 2021), but affordability is equally applicable in more established economies and mass markets, where most companies still ignore consumers with low willingness or ability to pay. In turn, BoP discussions often focus on the entire market and its characteristics, not innovations designed for it. The level of analysis is not the specific innovation but rather is the market as a whole.

Terms and concepts such as resource-constrained or frugal innovation (e.g., Agarwal et al., 2018; Agarwal et al., 2020; Rosca et al., 2017; Zeschky et al., 2011), relative to affordable innovation, also refer more specifically to limited internal resources that result in products with basic functionalities (Zeschky et al., 2011). In their discussion of frugal innovation, Weyrauch and Herstatt (2017) identify three characteristics: substantial cost reductions, concentration on core functionalities, and optimized performance. To achieve affordability though, innovative products often possess basic features and functionalities, and Lim and Fujimoto (2019, p. 1016) define affordable innovation as "low-cost innovations for the unserved lower end of the mass market." But such feature parsimony is not necessarily caused by constrained resources or the need to reduce costs. Rather, affordable innovations purposefully have core functionalities only and are designed to serve the lower end of the mass market, which can reflect a deliberate strategy, without any link to resource constraints. The German retailer Aldi and Ryanair airlines both provide offerings for the lower end of a mass market, but they are known for their stable operating profits and their solid financial resources.

In this sense, existing concepts related to affordable innovation focus on available resources or the market structure, instead of the target group's ability or willingness to pay. We use the term "affordable innovation" as the conceptual basis for our scale development efforts, to place the focus on potential customers, not the producing firms' available resources, and to move beyond emerging markets (Zechky et al., 2011) and account for the possibility of introducing affordable innovation in any market. For clarity, we conceptualize affordable innovation precisely, as products and services that (1) target customers with a below-average willingness or ability to pay in a particular market, (2) are reduced to core functionalities to serve basic needs, and (3) target a large consumer group. These three elements reflect our focus on target customers but also acknowledge links with the firm, markets, and resources. That is, our conceptualization

of affordable innovation is based on the customer's point of view, but our analysis also integrates individual decision makers in firms and their focus on potential customers.

2.2. Affordable innovation rejection as an individual-level decision making attitude

To inform our research and describe the interplay between individual-level attitudes and organization-level capacities to develop affordable innovation, we draw on and adapt a framework by Lichtenthaler (2011), originally developed in relation to open innovation processes. This framework distinguishes individual-, project-, and organization-level aspects, which interact recursively. In line with research that focuses on managers' behavior and its relation to firm-level outcomes (e.g., Peterson et al. 2012), we adapt this framework to describe the interplay of individual-level attitudes, project-level choices, and organizational-level decisions.

Although organizational decisions often are made by teams rather than individuals (Zhu et al., 2020), individual decision makers exert influence and control (Van Riel et al., 2004), so their attitudes determine how group-level decisions emerge (Dane and Pratt, 2007). In other words, individual-, project-, and team-level aspects of decision making are intertwined and interact recursively (Lichtenthaler, 2011). For example, firms that pursue a premium product diversification strategy typically have developed specific product development capabilities (e.g., high quality components, good understanding of premium customers) that help them achieve competitive advantages. On an organizational level, such capabilities or "inventive capacity" refer to the firm's ability to explore and generate new knowledge internally, within the firm (Lichtenthaler & Lichtenthaler, 2009). Accordingly, we define a "premium inventive capacity" as the firm's capacity to develop new premium product–related knowledge. When confronted with innovation investment decisions on the project level, a firm with a high premium inventive capacity likely favors premium rather than affordable innovations. Over time, multiple project

decisions spill over to affect individual attitudes, developed through their experiences and prior decisions. Thus, employees form attitudes against affordable innovation, due to their involvement in premium innovation projects. This process also is likely to be recursive. Different members of the project team should have developed different attitudes toward affordable and premium innovations, based on their personal education, personal values, experiences, and behavior. However, if many of them have formed attitudes against affordable innovations, or if many newcomers with a tendency to reject affordable innovation join the team, the group will opt for premium innovation projects. Over time then, the firm develops a specific premium innovation capability, based on the sum of its employees' attitudes (Lichtenthaler & Lichtenthaler, 2009). The interplay of individual-level attitudes and organizational-level capabilities demands efforts to predict the effects for individual-level decision making, especially considering the scarcity of research that targets the individual level (Reinhardt et al., 2018; Salter et al., 2015).

Because AIR is an individual-level attitude, we posit that it influences behavior by guiding information search and processing in attitude-consistent ways, whether implicitly or explicitly (Antons et al., 2017). It also may be manifest in at least two negative predispositions: (1) against products and services that serve mass markets (cf. research into affordable innovation in relation to the BoP; Prahalad, 2012) and (2) against products with core functionalities only (as suggested by literature on constraint innovation; Agarwal et al., 2017; Ploeg et al., 2021). As noted, we know little about its possible drivers on individual (e.g., personal preference for premium products), project (e.g., fun involved with innovating premium products), or organizational (e.g., company image) levels. At the organizational level for example, Ernst et al. (2015) identify bricolage and local embeddedness as drivers of affordable innovation, and Senyard et al. (2014) also highlight the importance of bricolage for resource-constrained companies. But we know of no studies at the individual level that investigate antecedents to innovation managers' bias against

affordable innovation.[1] By developing a scale to measure individual-level AIR attitudes, we seek to provide a better foundation for understanding individual-level resistance to affordable innovation, and then the resulting project- and firm-level decisions.

2.3. Tripartite model of individual-level AIR attitude

In most instances, knowledge in organizations gets transferred, absorbed, and used on an individual level (Antons & Piller, 2015; Reagans & McEvily, 2003). Similarly, attitudes against or for innovation manifest on individual levels (Maio et al., 2018; Pierce & Delbecq, 1977; Salter et al., 2015) and influence, over time, a company's capability to execute a given strategy. Individual-level attitudes affect strategic outcomes, and strategies are self-reinforcing in the sense that individuals with specific attitudes select themselves into certain strategic contexts (Hambrick & Mason, 1984). Because AIR evokes individual decision biases, we propose a scale that explicitly captures the individual-level attitudinal bias against affordable innovations. In line with comparable research efforts (e.g., Antons et al., 2017; Bagozzi et al., 1979; Rosenberg & Hovland, 1960), we propose a tripartite attitude model of AIR that distinguishes affective, cognitive, and behavioral (or conative) components (Eagly & Chaiken, 1993; Prislin, 1996). The affective component includes feelings, moods, and emotions; cognitive aspects involve opinions, thoughts, and ideas about the construct of interest (Breckler, 1984); and the behavioral component depends on *past* behavior and associated experiences. As a key foundation for our parsimonious scale, we propose that negative attitudes toward affordable innovation combine affective (e.g., "I do not enjoy working on product ideas for low-end markets"), cognitive (e.g., "Developing affordable innovation is not worth the effort"), and behavioral (e.g., "In the past, we have preferred working on premium innovation efforts") components. In addition, our scale

[1] Even in relation to the well-researched concepts of resource constraints and frugal innovation, no studies focus on individual-level factors that drive innovation managers' or decision makers' acceptance or rejection decisions (Cai et al., 2019; Hossain, 2018; Ploeg et al., 2021).

captures both a predisposition against products for mass markets and a predisposition against simple products with parsimonious product features.

3. Methodology

3.1. Scale development process

In developing the scale, we adhered to accepted scale development dictates and procedures (e.g., Churchill, 1979; DeVellis, 2016; Gerbing & Anderson, 1988), which have been successfully applied to managerial scale development projects (e.g., Covin et al., 2020; Flatten et al., 2011; Muehlburger et al., 2022; Slavec et al., 2017). In Studies 1–3, we pursue a deeper understanding of AIR and develop the AIR scale; then in Studies 4–6, we validate the scale. Table 1 summarizes all the scale development and validation steps.

-- Insert Table 1 about here –

3.2. Study 1: Construct definition and scale design

In a series of semi-structured interviews with 22 experts, we sought informants active in or responsible for affordable (n = 8) or premium (n = 14) innovations, by leveraging our professional associations and personal networks. They explained the basic idea of their business and answered questions designed to capture their experiences with low-cost or premium markets. The interviews were recorded and transcribed for analysis, lasted between 25 and 88 minutes, and produced 240 pages of text. Two researchers coded the interviews over two cycles: in vivo and pattern coding (Saldaña, 2021). They identified 306 codes, and we included any concepts with at least 30 codes (approximately 10% of comments). Six major themes emerged, four at the individual level and two at the organizational level (see Table 2): creativity and fun, challenge associated with product development, identification with the product/business, recognition for the project and oneself, company image, and trust in products. These six concepts in turn informed the item generation process.

-- Insert Table 2 about here –

3.3. Item generation

We developed a set of 28 items: 9 pertaining to the affective component, 10 for the cognitive component, and 9 for the behavioral component. In designing these items, we considered several aspects, important for scale development (Antons et al., 2017). First, we formulated items that can capture the focal construct, AIR attitude, but also included reverse-coded items (e.g., "I think there is a need to address customers with a low willingness to pay"). Second, some items capture AIR attitude as such (e.g., "Addressing customers with a low willingness to pay seems not to be a good strategy"), but others capture the opposite, that is, a tendency to prefer premium innovations, though these measures are not actually reverse-coded items (e.g., "I think offering premium products will be better for a company than offering affordable products"). Third, for each aspect of the tripartite attitude conceptualization, we used relevant keywords. For example, for the affective component, the keywords include "enjoy," "boring," and "captivate." The items for the cognitive dimension are unemotional statements, and those for the behavioral aspects target prior behaviors and experiences. We also integrated facets of AIR that emerged from our qualitative interviews (e.g., identification, recognition). The initial set of 28 items then underwent rigorous prescreening (Netemeyer et al., 2003). Appendix 1 contains the full list of items.

3.4. Study 2: Q-Sorting and expert validation

3.4.1. Study 2a: Q-sorting. In a first quantitative step, 60 crowdworkers (recruited via Amazon Mechanical Turk [MTurk]) performed a Q-sorting task on the initial item pool of 28 items (Funder et al., 2000; Walsh et al., 2016). For preliminary item judgments, Mturk workers are appropriate; prior research has established that they can complete surveys and have good imaginary capabilities (Holden et al., 2013). Their mean age was 31.5 years, and 33.3% were

women. We provided our definition of AIR, together with the tripartite conceptualization of its underlying attitudes. Each of the three AIR attitude facets (affective, cognitive, and behavioral) was represented by one category. The items appeared in completely random order, and participants had to sort them to a category or else identify them as "not at all related to AIR." Items that received at least 40% of the votes for a category were considered appropriate candidates.[2] In total, 24 of the 28 items received at least 40% of the votes in one category; 17 items received more than 60%. The highest value for the "not at all group" was for Item Cog10; 9.45% of participants rated this item as not signaling any AIR dimension. The average value for the "not indicative" group was 4.08%. These results affirm that our items reflect AIR, both overall and in terms of its three facets.

3.4.2 Study 2b: Content adequacy. To overcome concerns about the subjective nature of traditional content validity procedures, Hinkin and Tracey (1999) call for assessments of content adequacy, to increase confidence in item integrity. Thus, we grouped the original 28 items according to the attitude facet they should reflect (affective, cognitive, or behavioral), then solicited input from Mturk workers (n = 50, Mean age: 32.2 years, 28% women). To gauge content adequacy (Schriesheim et al., 1999), we asked them to indicate, for each dimension, whether an item captured the underlying idea of AIR, on a scale from 1 = "not at all" to 7 = "completely." Only items that received an average rating of 5 or above were considered suitable candidates for the next steps. Combining the results of Studies 2a and 2b produced a set of 22 items (7 affective, 8 cognitive, and 7 behavioral).

3.4.3. Study 2c: Expert validation and content validity. This set of 22 items was given to 10 experts in the field of scale development and innovation (7 academic, 3 industry), who provided

[2] The 40% cutoff criterion is conservative; DeVellis (2016) suggests 70%. However, we did not want to risk eliminating items too early, and the categorization targets AIR dimensions (affective, cognitive, behavioral), which naturally have high overlap. Also, 40% is considerably more than the 25% that should occur randomly.

item readability ratings and comments on the item wording. To assess item readability, we asked them to use a 7-point Likert scale with the endpoints "not at all comprehensible" and "completely comprehensible." Two items received an average rating below 6 and were excluded. The experts also rated content validity, by indicating for each item whether it was "essential to," "useful, but not essential," or "not necessary" for the respective AIR dimension. We then calculated a content validity ratio (CVR) as follows: $(N_e – N/2)/(N/2)$, where N_e is the number of panelists indicating "essential," and N is the total number of panelists (Ayre & Scally, 2014). According to Lawshe (1975), different critical CVR values exist, depending on the number of panelists. For 10 panelists, the minimum CVR should be .62. Eight of the 22 items exceeded this threshold. We recalculated CVR by defining N_e as the number of panelists indicating either "essential" or "useful, but not essential." In this case, 18 items exceed the critical .62 threshold. Thus the feedback from the item readability test (two items with readability scores < 6) and the CVR values led us to reduce the item pool to 18 items.

3.5. Study 3: Scale purification and preliminary validations

To purify this provisional, 18-item AIR attitude scale, we recruited employed U.K. residents with a background in engineering via the Clickworker.com marketplace. Of 149 respondents, 11 had to be excluded because they failed the attention check ("Please answer the following question with 'neither agree nor disagree'."). We excluded another 31 participants who were not employed, had no background in engineering, or rated their own experience with new product development projects lower than 3 (where 1 = "very low" and 5 = "very high"). The remaining 107 respondents had a mean age of 38.53 years (SD = 9.84), and they worked 36.02 (SD = 12.01) hours per week on average; 47 (36.4%) were women. The majority of respondents (90.7%) consider English their mother tongue. This sample size is in line with previous studies

involving innovation-related organizational decision makers (e.g., Garms & Engelen, 2019; Schoenherr & Wagner, 2016).

The online survey rotated the 18 items randomly and began with a lead-in sentence: "Please answer the following questions in relation to your new product development experiences." All items were assessed on 7-point Likert scales, ranging from 1 = "fully disagree" to 7 = "fully agree." Because we expected a three-dimensional solution, we started with a confirmatory factor analysis (CFA) in AMOS 25, in which we modeled AIR attitude as a higher-order factor, with affective, cognitive, and behavioral dimensions. The resulting model offered poor fit with the data: $\chi^2 = 259.855$, degrees of freedom (df) = 132, $\chi^2/df = 1.969$ ($p = .000$), root mean square error of approximation (RMSEA) = .096, standardized root mean residual (SRMR) = .1075, comparative fit index (CFI) = .75, and Tucker-Lewis index (TLI) = .71. Thus, we abandoned the a priori three-dimensional AIR conceptualization, which is not an uncommon approach in scale development efforts. For example, Schweitzer et al. (2015) anticipate a three-dimensional technology reflectiveness scale, but their scale purification efforts indicate only one factor that contained items they believed would load on different dimensions. Considering our goal of developing a parsimonious, robust scale with high applicability in practice, we are agnostic to the scale's dimensionality, as long as all aspects of the tripartite conceptualization are covered.

We continued with an exploratory factor analysis (EFA) to check the appropriateness of the 18 items for explaining the AIR attitude construct and find a factor solution that best fits the data. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value (.83) and Bartlett's test of sphericity ($p < .001$) indicated that the correlation matrix was "meritorious" (Kaiser, 1974; Kaiser & Rice, 1974) and the data were suitable for performing principal axis analysis. We used Varimax rotation, a conservative approach to assess principal axis components (Preacher & MacCallum, 2003), and set the minimum eigenvalue to 1 (Kim & Mueller, 1978). Five factors

emerged, accounting for 62.04% of the variation. The first factor had an eigenvalue of 5.28, the second was 2.34, and the remaining factors showed eigenvalues of 1.39, 1.11, and 1.05. A closer inspection of the factor structure revealed that one factor (eigenvalue = 1.05) consists of only one item (Cog4). The remaining factors indicated substantial cross-loadings (> .4). Thus, the scale development continued with the strongest factor, which consisted of items of each facet (Schweitzer et al., 2015). In particular, six items from different facets (i.e., affective, cognitive, behavioral) load onto the first factor (> .5). For this factor, no problematic cross-loadings (>.4) arose from the other rotated factors. A subsequent EFA with the remaining six items resulted in a one-factor solution that accounted for 57.6% of variation (KMO = .86), an eigenvalue of 3.454, and loadings greater than .7. The Cronbach's α of .85 exceeded the threshold of .7 (Nunnally, 1978). Table 3 contains the item wordings and related statistics.

---- insert Table 3 about here ----

Then we conducted a second CFA in AMOS 25 to establish the discriminant validity of the one-factor scale. In this assessment, we included a technology reflectiveness construct, which is conceptually close to AIR, because it also involves attitudes toward specific forms of innovation, namely, a "tendency to think about the societal impact of an innovation" (Schweitzer et al., 2015, p. 847). The six items relied on a 7-point Likert agreement scale. A sample item read: "When I hear about a new technical product, I spontaneously have ideas on how this product can be used to reduce social problems." A two-factor measurement model consisting of AIR attitude (6 items) and technology reflectiveness (6 items) with 12 indicators revealed good fit with the data: χ^2 = 63.508 df = 53, χ^2/df = 1.198 (p = .153), RMSEA = .039, SRMR = .0648, CFI = .98, and TLI = .98. The Cronbach's α value for technology reflectiveness was .88.

Regarding the measures for convergent validity, all six indicators loaded substantially and significantly onto AIR ($.67 < \lambda < .75$). Convergent validity, assessed with Cronbach's α, was .85.

The average variance extracted (AVE) of the AIR measure was .50, in line with recommended thresholds (Bagozzi & Yi, 2012; Gawke et al., 2019). Thus, we retained this set of items, because all the items are face valid and important for the conceptualization of AIR, and the reliability of the AIR scale is not substantially improved by deleting items (Yoshikawa et al., 2020).

Next, we tested for discriminant validity, or "the extent to which latent variable A discriminates from other latent variables (e.g., B, C, D)" (Farrell, 2010, p. 324), by again including technology reflectiveness. The results affirm discriminant validity, in that the square root of the AVE for AIR (.71) is greater than its correlation with technology reflectiveness (γ = -.27, $p < .05$) (Fornell & Larcker, 1981). Because AIR is related negatively to technology reflectiveness, we gain preliminary evidence of nomological validity. Respondents with a strong tendency to reject affordable innovation exhibit less technological reflectiveness. As a second test of discriminant validity, we calculated the heterotrait-monotrait ratio of correlations (HTMT). The HTMT value of .26, well below the threshold of .85 (Henseler et al., 2015), offers further support for discriminant validity.

3.6. Study 4: Nomological validity assessment

3.6.1. Study 4a: Nomological validity and further validations. To establish nomological validity, we surveyed 134 innovation managers recruited through Prolific; the site ensured that only participants with leadership responsibility could access the survey. We further checked for their experience with innovation projects (i.e., all respondents indicated they had worked on at least one innovation project in the previous three years). Prior to the analysis, we excluded 29 participants who failed the attention check ("Question: Please answer the following question with 'neither agree nor disagree'.") or indicated that they lacked the necessary experience with new product development projects, which they rated on a scale from 1 = "very low" to 5 = "very high." The remaining 105 participants were innovation managers; none rated themselves as

having very low or low experience (scores of 1 or 2) ($M_{experience}$ = 3.62, SD = .84). Their mean age was 40.28 years (SD = 9.8), 42 were women, and 1 indicated a nonbinary gender category.

To assess discriminant, convergent, and nomological validity, we asked respondents to indicate their level of AIR and respond to potential covariates, namely, a simple measure of attitude toward affordable innovation (conceptually, the opposite of our focal construct). We purposefully selected a naïve measure for attitude toward affordable innovation because prior research often relies on simple measures to reflect the essence of different measurement approaches (Benlian et al., 2015; Sarstedt et al., 2013). Thus, this approach can confirm convergent validity (Walsh & Beatty, 2007).

For nomological validity, we turn to perceived external image (PEI), empathic decision making, and price–quality associations as potential correlates. First, PEI refers to employees' assessments of how outsiders regard their employer (Carmeli, 2005; Helm, 2013). A favorable image associated with producing innovative products and services could be a reason decision makers turn to premium rather than affordable innovation. Thus, we expect PEI to correlate positively with AIR. Second, manager empathy is important for achieving customer satisfaction (Wieseke et al., 2012); it is the mental process of taking consumers' perspective when making product-related decisions (Hattula et al., 2015) and can be an important correlate of AIR, because developing affordable innovation requires identifying customers' needs. Third, price–quality associations might bias decision makers' evaluations of low-priced products. Together, these three covariates function as potential correlates when assessing nomological validity.

The measure of attitudes toward affordable innovation features a semantic differential, with four pairs of adjectives (Appendix 2). All the other items were measured on 7-point Likert scales, anchored at 1 = "fully disagree" and 7 = "fully agree." The measure of AIR attitude includes the six items derived from Study 3. To measure PEI, we took four items from Carmeli's (2005)

measure of perceived external social prestige, preceded by the item stem: “My organization has a reputation of having a high level of....” To measure empathic decision making, we used four items from Hattula et al. (2015). Finally, four items test for price–quality associations, inspired by Garretson et al. (2002) and Sinha and Batra (1999), such that higher values reflect a preference for high priced, high quality products. Such price–quality associations should correlate positively with AIR.

Because the items for the constructs all were assessed the same way (i.e., Likert scales), common method variance (CMV) could bias the results (MacKenzie & Podsakoff, 2012). To assess the strength of this bias, we conducted two tests. First, we ran an EFA without rotation for all 22 items reflecting the four constructs of interest. The single factor with the highest value accounts for only 24.9%, well below the recommended threshold. Second, we applied an unmeasured common latent factor method, such that we compared a model in which all indicators load onto their construct and an unmeasured latent factor against a model in which items only load onto their construct. Large deviances in factor loadings (i.e., > .20) signal CMV, but because the largest change in factor loadings was .11, CMV does not appear to be a concern.

We ran a CFA with all constructs and tested for discriminant validity. The model fit was acceptable: $\chi^2/df = 1.461$ ($p < .001$), RMSEA = .067, SRMR = .0758, CFI = .92, and TLI = .90. All constructs display acceptable values for construct reliability (CR > .78). Except PEI, for which the AVE is only .48, all other constructs (including the AIR measure) achieve AVE values of at least .50. The Fornell–Larker (1981) criterion, which requires the square roots of AVE to be larger than any correlation with any other construct, is fulfilled. In addition, the HTMT values are well below .85, such that the score of .43 between PEI and empathic decision making is the highest value. We thus find support for the discriminant validity of AIR again. As a test of convergent validity, we analyze the correlation of AIR with the general four-item measure of

attitudes toward affordable innovation. The significant, negative correlation ($\gamma = -.31$, $p < .01$) confirms convergent validity. Table 4 displays the CR and AVE values, as well as correlations.

---- insert Table 4 about here ----

To test for nomological validity, we examined correlations between AIR attitude and theoretically related constructs (Böttger et al., 2017). The results show that AIR attitude correlates significantly with empathic decision making ($\gamma = -.24$, $p < .05$) and price–quality associations ($\gamma = .29$, $p < .05$), as expected, but the relation of AIR and PEI is non-significant ($\gamma = -.10$, $p > .1$). Given that three of four potential correlates are significantly related to AIR, we consider the overall nomological validity of the AIR construct as given. We discuss some reasons that PEI is not significantly related to it in Section 4.1.

3.6.2. Study 4b: Predictive validity. To assess predictive validity, we relied on the respondents from Study 4a. That is, at the end of the survey, we presented two projects, involving an affordable innovation and a more premium innovation (Appendix 3). Participants had to rate both projects on a five-star scale. We calculated the difference in star ratings by subtracting values for project A (affordable innovation) from values for project B (premium innovation). The resulting difference score can be positive or negative, and it indicates the person's decision bias toward premium innovation. Finally, we regressed this difference score on AIR, together with age and gender. The effect of AIR on the difference score was positive and significant, in support of predictive validity ($\beta = .34$, $p < .001$, Table 5): Respondents with a stronger tendency to reject affordable innovation (AIR attitude scale) evaluated premium innovation projects better than affordable innovation projects.

---- insert Table 5 about here ----

3.7. Study 5: Experimental validity

With Study 5, we aim to establish experimental validity (Böttger et al., 2017), by randomly providing participants with one of two versions of a scenario that describes a manager's attitudes. In Scenario A, the manager exhibits low AIR, because this manager is accustomed to working on projects that target customers with a low willingness to pay. The manager in Scenario B instead has a high AIR (see Appendix 4). The experimental design was pretested with a sample of 58 Mturk workers, which confirmed it functioned as intended. For the main test, we relied on Prolific to recruit subjects, who should be familiar with surveys that involve scenarios (Hunt & Scheetz, 2019). The participants did not have to be innovation managers, in which case the results could be confounded, but the scenarios put them in the role of manager. In total, 155 people participated (M_{age} = 40.9 years, 58% women), and they all passed the attention checks.

We first checked whether our manipulation was successful. After reading the scenario, participants used a five-point interval (1 = attitude against affordable innovations, 5 = attitude toward affordable innovations) to indicate how they would rate the manager's attitude. As expected, the scenario describing a manager with a positive attitude scored significantly lower than the scenario featuring attitudes against affordable innovations (M_{LowAIR} = 1.67, SD = 1.36, $M_{HighAIR}$ = 4.13, SD = 1.25; F (1, 153) = 137.04, $p < .001$), so the manipulation was successful.

To measure AIR, we used the proposed six-item scale, assessed with a CFA. All items loaded significantly on the factor (> .73), and the Cronbach's α value was good (α = .91). For each item, we compared mean values for both scenarios. The results, in Table 6, show that for all six items and the full AIR scale, we find significant differences between the scenarios. These results offer support for experimental validity.

---- insert Table 6 about here ----

3.8. Study 6: Test–retest reliability

Test–retest reliability refers to the stability of a scale over time (Walsh et al., 2016). To assess it, we recruited 30 German professionals who work full time and have earned at least a bachelor's degree but also are enrolled in a weekend degree program to obtain a master's of technology management. These participants work on technological innovation projects in their jobs. Twelve (40%) are women, the mean age is 26.1 years, and they work an average of 34.2 hours per week. Respondents answered the AIR items, along with demographic questions (t_1). Three weeks later, we sent them the survey again, and 26 of the 30 participants answered (t_2). Although the sample is small, the follow-up response rate of 87% exceeds those in most previous research (e.g., Baldus et al., 2015; Walsh et al., 2016).

We used two approaches to demonstrate test–retest reliability. First, we calculated the construct reliability, which is almost equal across t_1 and t_2 (Cronbach's α t_1 = .85; Cronbach's α t_2 = .84). Second, we conducted paired sample t-tests to assess any changes in means. The results confirm the stability of the AIR scale, because the mean values of the items did not change significantly from t_1 to t_2 (Table 7). Together, the results offer evidence of test–retest reliability.

---- insert Table 7 about here ----

4. Discussion

Both innovation practitioners and scholars recognize the need for more affordable innovation (Prahalad, 2012), yet they have lacked a strong understanding of innovation decision makers' attitudes and their effects, in terms of favoring or suppressing affordable innovations. Some conceptual insights into affordable innovation (e.g., Reinhardt et al., 2018; Weyrauch & Herstatt, 2017) and a few organizational-level studies (e.g., Cai et al., 2019; Ernst et al., 2015; Ploeg et al., 2021) exist, but we lack empirical investigations on individual levels. With this research, we heed calls for investigations into individual-level barriers to the development of

such innovations (Reinhardt et al., 2018). We conceptualize and validate a parsimonious scale that reflects innovation decision makers' tendency to reject innovation efforts targeting customers with lower willingness or ability to pay. In turn, our research addresses two major gaps in literature pertaining to affordable innovation and related concepts. First, most extant research takes the firm perspective and ignores factors linked to individual decision makers. We acknowledge and affirm the importance of studying individual-level attitudes for new product development decisions (Antons et al., 2017). Second, among a preponderance of conceptual (Prahalad, 2012), qualitative (e.g., Reinhardt et al., 2018; Weyrauch & Herstatt, 2017), and literature review (e.g., Agarwal et al., 2017) studies, we find few quantitative efforts (e.g., Ernst et al., 2015). For these literature streams, our rigorous scale development provides a strong foundation for more quantitative research into affordable innovation.

4.1. Limitations

Some limitations of this research are worth noting. We developed the AIR attitude scale using data from Western European and U.S. innovation decision makers. The participants in all studies live in Western economies (Germany, U.K., U.S.), which helps us explicitly assess affordable innovation as a phenomenon that is not limited to emerging markets. Nevertheless, participants from emerging markets may have backgrounds and experiences that lead to different assessments of innovation opportunities. To ensure our AIR scale generalizes to other cultural contexts (Walsh et al., 2019), a cross-cultural replication would be a fruitful next step.

Furthermore, we tested for nomological validity by linking AIR attitudes with technology reflectiveness, perceived external image, price–quality associations, and empathic decision making. A more rigorous assessment might embed AIR attitudes in a nomological net of theoretical antecedents and outcomes, then empirically test relationships within this nomological net (Agarwal et al., 2015; Walsh et al., 2016). In addition, we found no correlation between AIR

and PEI, suggesting that managers' individual-level innovation-related attitudes are not related to how they believe the external world views their firm. Continued research might probe the individual- and organizational-level correlates of AIR in greater depth.

4.2. Managerial implications

Innovation efforts can target the BoP by offering affordable products and services (Agarwal et al., 2018; Prahalad, 2012). Bifurcation characterizes many markets, such that companies either sell goods at the lowest possible prices to appeal to the BoP or sell premium goods to target the higher end (Light, 2019). But in mass markets, even if they do not feature the lowest wages from a global perspective, some customer segments exhibit a low willingness or ability to pay, such that "There's trillions in disposable income in the hands of the masses at the bottom of the world income pyramid" (Mourdoukoutas, 2019). Addressing these market segments could substantially increase customer bases and drive profits, even if the typical margin for affordable products may be lower than that for premium products (Reinhardt et al., 2018). If innovation gatekeepers fail to embrace this market segment, companies cannot take advantage of these opportunities.

Furthermore, firms determined to change their approach, incorporate social responsibility, and target less affluent customers must undertake an organizational change. With the help of the AIR scale, companies can specify levels of skepticism toward affordable innovation among their workforces, which represents an important first identification step in the transformation process. In addition, firms can use the scale to benchmark their R&D efforts against those of competitors, as well as track levels of AIR over time. In these ways, the AIR scale can complement other measurement tools available for gauging R&D strategies.

4.3. Theoretical implications

Apart from the managerial implications that derive from the use of the AIR scale, there are also a couple of theoretical implications that pertain to the conceptualization and

measurement of affordable innovation. First, with our scale development efforts, we add to the literature streams of 1) individual-level attitudes in innovation decision making (e.g., Antons et al., 2017), and 2) the literature on affordable innovation, which is linked to frugal or resource-constrained innovation (Weyrauch & Herstatt, 2017). So far, both streams exist in isolation such that our study provides a fruitful avenue for continued research of individual-level attitudes for or against affordable innovation. Second, our results extend earlier, mostly qualitative studies related to affordable innovation by providing the first empirical assessment of AIR among innovation managers. Previous studies have put emphasis on market structures, firm capabilities, and firm performance of affordable innovation (e.g., Ernst et al., 2015; Weyrauch et al., 2020) but have not provided an empirical view on individual innovation managers and their attitudes. Third, especially the results of the test for nomological validity (see Muehlburger et al., 2022; Papadas et al., 2007) give insights into correlates of AIR. Specifically, our results suggest that decision makers' empathic decision making and price–quality association are significantly related to AIR. Future research along this line could investigate cause and effects of these relations and identify additional correlates and antecedents of AIR.

4.4. Research agenda

We designed the parsimonious, six-item measure of AIR to apply to both academic and practical settings. In turn, we propose some open questions and fruitful avenues for research that the AIR scale could help address. First, we still know little about why firms avoid affordable innovations (Hietschold et al., 2020; Reinhardt et al., 2018). The reciprocal relationship between firm decisions and individual-level attitudes means that studying decision makers' attitudes is critical and including the AIR scale in employee surveys could help clarify why firms are reluctant to undertake affordable innovation. Second, we study AIR as a decision maker's

attitude, though such attitudes could be prevalent in non-R&D departments too, such as marketing or production. Many firms host internal idea competitions, to include the wider workforce (Höber et al., 2021), so including AIR questions in the idea contest might help a firm assess where AIR is most prevalent in its ranks. Third, multiple organizational considerations drive innovation decisions, such as firm history, strategy, and corporate social responsibility. Also a company's reputation for offering premium products could prevent it from addressing underserved mass markets. Researchers might apply the AIR scale to compare employees of high versus low reputation companies or companies that vary in their corporate social responsibility. Fourth, individual personalities also affect people's innovation-related decisions, whether as innovators or adopters (Goldsmith, 1984). Our AIR scale could complement insights gathered from assessments of individual decision makers' personalities. Finally, as already mentioned in the limitations section, there might be a need to compare levels of AIR across multiple economies, for example comparing established with emerging economies.

5. References

Agarwal, J., Osiyevskyy, O., & Feldman, P. M. (2015). Corporate reputation measurement: Alternative factor structures, nomological validity, and organizational outcomes. *Journal of Business Ethics*, *130*(2), 485-506.

Agarwal, N., Chakrabarti, R., Brem, A., & Bocken, N. (2018). Market driving at bottom of the pyramid (BoP): An analysis of social enterprises from the healthcare sector. *Journal of Business Research, 86,* 234-244.

Agarwal, N., Grottke, M., Mishra, S., & Brem, A. (2017). A systematic literature review of constraint-based innovations: state of the art and future perspectives. *IEEE Transactions on Engineering Management*, *64*(1), 3-15.

Agarwal, N., Brem, A., & Dwivedi, S. (2020). Frugal and reverse innovation for harnessing the business potential of emerging markets—The case of a Danish MNC. *International Journal of Innovation Management*, *24*(01), 2050009.

Antons, D., Declerck, M., Diener, K., Koch, I., & Piller, F. T. (2017). Assessing the not-invented-here syndrome: Development and validation of implicit and explicit measurements. *Journal of Organizational Behavior*, *38*(8), 1227-1245.

Antons, D., & Piller, F. T. (2015). Opening the black box of "not invented here": Attitudes, decision biases, and behavioral consequences. *Academy of Management Perspectives*, *29*(2), 193-217.

Ayre, C., & Scally, A. J. (2014). Critical values for Lawshe's content validity ratio: revisiting the original methods of calculation. *Measurement and Evaluation in Counseling and Development*, *47*(1), 79-86.

Bagozzi, R. P., Tybout, A. M., Craig, C. S., & Sternthal, B. (1979). The construct validity of the tripartite classification of attitudes. *Journal of Marketing Research*, *16*(1), 88-95.

Bagozzi, R. P., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science*, *40*(1), 8-34.

Baldus, B. J., Voorhees, C., & Calantone, R. (2015). Online brand community engagement: Scale development and validation. *Journal of Business Research*, *68*(5), 978-985.

Benlian, A., Hilkert, D., & Hess, T. (2015). How open is this platform? The meaning and measurement of platform openness from the complementers' perspective. *Journal of Information Technology*, *30*(3), 209-228.

Blotenberg, I., & Richter, A. (2020). Validation of the QJIM: A measure of qualitative job insecurity. *Work & Stress*, *34*(4), 406-417.

Böttger, T., Rudolph, T., Evanschitzky, H., & Pfrang, T. (2017). Customer inspiration: Conceptualization, scale development, and validation. *Journal of Marketing*, *81*(6), 116-131.

Breckler, S. J. (1984). Empirical validation of affect, behavior, and cognition as distinct components of attitude. *Journal of Personality & Social Psychology*, *47*(6), 1191–1205.

Cai, Q., Ying, Y., Liu, Y., & Wu, W. (2019). Innovating with limited resources: The antecedents and consequences of frugal innovation. *Sustainability*, *11*(20), 5789.

Carmeli, A. (2005). Perceived external prestige, affective commitment, and citizenship behaviors. *Organization studies*, *26*(3), 443-464.

Churchill, Jr., G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, *16*(1), 64-73.

Cooper, R. G. (2008). Perspective: The stage-gate® idea-to-launch process—update, what's new, and nexgen systems. *Journal of Product Innovation Management*, *25*(3), 213-232.

Covin, J. G., Rigtering, J. C., Hughes, M., Kraus, S., Cheng, C. F., & Bouncken, R. B. (2020). Individual and team entrepreneurial orientation: Scale development and configurations for success. *Journal of Business Research*, *112*, 1-12.

Dane, E., & Pratt, M. G. (2007). Exploring intuition and its role in managerial decision making. *Academy of Management Review*, *32*(1), 33-54.

Deakins, D., & Bensemann, J. (2019). Achieving innovation in a lean environment: how innovative small firms overcome resource constraints. *International Journal of Innovation Management*, *23*(04), 1950037.

DeVellis, R. F. (2016). *Scale development: Theory and applications.* (2nd ed.). Sage.

De Visser, M., & Faems, D. (2015). Exploration and exploitation within firms: the impact of CEOs' cognitive style on incremental and radical innovation performance. *Creativity and Innovation Management*, *24*(3), 359-372.

Eagly, A. H., & Chaiken, S. (1993). *The Psychology of Attitudes*. Wadsworth, Thompson.

Eliëns, R., Eling, K., Gelper, S., & Langerak, F. (2018). Rational versus intuitive gatekeeping: Escalation of commitment in the front end of NPD. *Journal of Product Innovation Management*, *35*(6), 890-907.

Ernst, H., Kahle, H. N., Dubiel, A., Prabhu, J., & Subramaniam, M. (2015). The antecedents and consequences of affordable value innovations for emerging markets. *Journal of Product Innovation Management*, *32*(1), 65-79.

Farrell, A. M. (2010). Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009). *Journal of Business Research*, *63*(3), 324-327.

Flatten, T. C., Engelen, A., Zahra, S. A., & Brettel, M. (2011). A measure of absorptive capacity: Scale development and validation. *European Management Journal*, *29*(2), 98-116.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Funder, D. C., Furr, R. M., & Colvin, C. R. (2000). The Riverside Behavioral Q-sort: A tool for the description of social behavior. *Journal of Personality*, *68*(3), 451-489.

Gandenberger, C., Kroll, H., & Walz, R. (2020). The role of frugal innovation in the global diffusion of green technologies. *International Journal of Technology Management*, *83*(1-3), 97-113.

Garms, F. P., & Engelen, A. (2019). Innovation and R&D in the upper echelons: The association between the CTO's power depth and breadth and the TMT's commitment to innovation. *Journal of Product Innovation Management*, *36*(1), 87-106.

Garretson, J. A., Fisher, D., & Burton, S. (2002). Antecedents of private label attitude and national brand promotion attitude: similarities and differences. *Journal of Retailing*, *78*(2), 91-99.

Gawke, J. C., Gorgievski, M. J., & Bakker, A. B. (2019). Measuring intrapreneurship at the individual level: Development and validation of the Employee Intrapreneurship Scale (EIS). *European Management Journal*, *37*(6), 806-817.

Gerbing, D.W., & Anderson, J.C. (1988). An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research*, *25*(2), 186-192.

Goldsmith, R. E. (1984). Personality characteristics associated with adaption-innovation. *Journal of Psychology*, *117*(2), 159-165.

Hahn, R. (2009). The ethical rational of business for the poor–integrating the concepts bottom of the pyramid, sustainable development, and corporate citizenship. *Journal of Business Ethics*, *84*(3), 313-324.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, *9*(2), 193-206.

Harris, M., Bhatti, Y., Buckley, J., & Sharma, D. (2020). Fast and frugal innovations in response to the COVID-19 pandemic. *Nature Medicine*, *26*(6), 814-817.

Hattula, J. D., Herzog, W., Dahl, D. W., & Reinecke, S. (2015). Managerial empathy facilitates egocentric predictions of consumer preferences. *Journal of Marketing Research*, *52*(2), 235-252.

Helm, S. (2013). A matter of reputation and pride: Associations between perceived external reputation, pride in membership, job satisfaction and turnover intentions. *British Journal of Management*, *24*(4), 542-556.

Henard, D. H., & Dacin, P. A. (2010). Reputation for product innovation: Its impact on consumers. *Journal of Product Innovation Management*, *27*(3), 321-335.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115-135.

Hietschold, N., Reinhardt, R., & Gurtner, S. (2020). Who put the "NO" in Innovation? Innovation resistance leaders' behaviors and self-identities. *Technological Forecasting and Social Change*, *158*, 120177.

Hinkin, T. R., & Tracey, J. B. (1999). An analysis of variance approach to content validation. *Organizational Research Methods*, *2*(2), 175-186.

Höber, B., Schaarschmidt, M., & von Korflesch, H. (2021). Internal idea contests: Work environment perceptions and the moderating role of power distance. *Journal of Innovation & Knowledge*, *6*(1), 1-10.

Holden, C. J., Dennie, T., & Hicks, A. D. (2013). Assessing the reliability of the M5-120 on Amazon's Mechanical Turk. *Computers in Human Behavior*, *29*(4), 1749-1754.

Hossain, M. (2018). Frugal innovation: A review and research agenda. *Journal of Cleaner Production*, *182*, 926-936.

Hunt, N. C., & Scheetz, A. M. (2019). Using Mturk to distribute a survey or experiment: Methodological considerations. *Journal of Information Systems*, *33*(1), 43-65.

Kaiser, H. F. (1974). A note on the equamax criterion. *Multivariate Behavioral Research*, *9*(4), 501-503.

Kaiser, H. F., & Rice, J. (1974). Little jiffy, mark IV. *Educational and Psychological Measurement*, *34*(1), 111-117.

Kim, J.-O. & Mueller, C. W. (1978). *Introduction to Factor Analysis: What It Is and How To Do It*. Sage.

Kolk, A., Rivera-Santos, M., & Rufín, C. (2014). Reviewing a decade of research on the "base/bottom of the pyramid" (BOP) concept. *Business & Society*, *53*(3), 338-377.

Laukkanen, M., & Patala, S. (2014). Analysing barriers to sustainable business model innovations: Innovation systems approach. *International Journal of Innovation Management*, *18*(06), 1440010.

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, *28*, 563–575.

Lettice, F. & Thomond, P. (2008). Allocating resources to disruptive innovation projects: challenging mental models and overcoming management resistance. *International Journal of Technology Management 44*(1/2), 140-159.

Lichtenthaler, U. (2011). Open innovation: Past research, current debates, and future directions. *Academy of Management Perspectives*, *25*(1), 75-93.

Lichtenthaler, U., & Ernst, H. (2006). Attitudes to externally organising knowledge management tasks: a review, reconsideration and extension of the NIH syndrome. *R&D Management*, *36*(4), 367-386.

Lichtenthaler, U., & Lichtenthaler, E. (2009). A capability-based framework for open innovation: Complementing absorptive capacity. *Journal of Management Studies*, *46*(8), 1315-1338.

Light, L. (2019). Is the mass middle of the market a marketing death trap? *Forbes,* https://www.forbes.com/sites/larrylight/2019/03/26/is-the-mass-middle-of-the-market-a-marketing-death-trap/?sh=4979e64e2cd2, accessed 8 March 2022.

Lim, C., & Fujimoto, T. (2019). Frugal innovation and design changes expanding the cost-performance frontier: A Schumpeterian approach. *Research Policy*, *48*(4), 1016-1029.

MacKenzie, S. B., & Podsakoff, P. M. (2012). Common method bias in marketing: Causes, mechanisms, and procedural remedies. *Journal of Retailing*, *88*(4), 542-555.

Magni, M., Palmi, P., & Salvemini, S. (2018). Under pressure! Team innovative climate and individual attitudes in shaping individual improvisation. *European Management Journal*, *36*(4), 474-484.

Maio, G. R., Haddock, G., & Verplanken, B. (2018). *The Psychology of Attitudes and Attitude Change*. Sage.

McNamara, K. T., Weiss, C. R., & Wittkopp, A. (2004). Market success of premium product innovation: empirical evidence from the German food sector. In *Marketing Trends For Organic Food In The 21st Century* (pp. 127-140).

Mourdoukoutas, P. (2019). Samsung beats Apple in the global smartphone market as Chinese brands close in, *Forbes* https://www.forbes.com/sites/panosmourdoukoutas/2018/09/13/Samsung-beats-apple-in-the-global-smartphone-market-as-chinese-brands-close-in/?sh=1213b8ec697d, accessed 18 August 2022.

Muehlburger, M., Krumay, B., Koch, S. & Currle, S. (2022). Individual digital transformation readiness: Conceptualization and scale development. *International Journal of Innovation Management*, 2240013.Netemeyer, R. G., Bearden, W. O. & Sharma, S. (2003). *Scaling procedures: Issues and applications*. Thousand Oaks, CA: Sage.

Nunnally, J. C. (1978). An overview of psychological measurement. In *Clinical diagnosis of mental disorders* (pp. 97-146). Springer, Boston, MA.

ODG (2021). OneDollarGlasses. https://www.eindollarbrille.de, accessed 18 August 2022

Papadas, K. K., Avlonitis, G. J., & Carrigan, M. (2017). Green marketing orientation: Conceptualization, scale development and validation. *Journal of Business Research*, *80*, 236-246.

Peterson, S. J., Galvin, B. M., & Lange, D. (2012). CEO servant leadership: Exploring executive characteristics and firm performance. *Personnel Psychology*, *65*(3), 565-596.

Pierce, J. L., & Delbecq, A. L. (1977). Organization structure, individual attitudes and innovation. *Academy of Management Review, 2*(1), 27-37.

Ploeg, M., Knoben, J., Vermeulen, P., & van Beers, C. (2021). Rare gems or mundane practice? Resource constraints as drivers of frugal innovation. *Innovation, Organization & Management, 23*(1), 93-126.

Prahalad, C. K. (2012). Bottom of the pyramid as a source of breakthrough innovations. *Journal of Product Innovation Management*, *29*(1), 6-12.

Preacher, K. J., & MacCallum, R. C. (2003). Repairing Tom Swift's electric factor analysis machine. *Understanding statistics: Statistical issues in psychology, education, and the social sciences*, *2*(1), 13-43.

Prislin, R. (1996). Attitude stability and attitude strength: One is enough to make it stable. *European Journal of Social Psychology*, *26*(3), 447-477.

Reagans, R., & McEvily, B. (2003). Network structure and knowledge transfer: The effects of cohesion and range. *Administrative Science Quarterly*, *48*(2), 240–267.

Reinhardt, R., Gurtner, S. & Griffin, A. (2018). Towards an adaptive framework of low-end innovation capability–A systematic review and multiple case study analysis. *Long Range Planning 51*(5), 770-796.

Rosca, E., Arnold, M., & Bendul, J. C. (2017). Business models for sustainable innovation–an empirical analysis of frugal products and services. *Journal of Cleaner Production*, *162*, S133-S145.

Rosenberg, M. J., & Hovland, C. I. (1960). Cognitive, affective, and behavioral components of attitudes. In C. I. Hovland, & M. J. Rosenberg (Eds.), *Attitude organization and change: An analysis of consistency among attitude components* (pp. 1–14). Yale University Press.

Saldaña, J. (2021). *The Coding Manual for Qualitative Researchers*. Sage.

Sarstedt, M., Wilczynski, P., & Melewar, T. C. (2013). Measuring reputation in global markets—A comparison of reputation measures' convergent and criterion validities. *Journal of World Business*, *48*(3), 329-339.

Salter, A., Ter Wal, A. L., Criscuolo, P., & Alexy, O. (2015). Open for ideation: Individual-level openness and idea generation in R&D. *Journal of Product Innovation Management*, *32*(4), 488-504.

Schoenherr, T., & Wagner, S. M. (2016). Supplier involvement in the fuzzy front end of new product development: An investigation of homophily, benevolence and market turbulence. *International Journal of Production Economics*, *180*, 101-113.

Schriesheim, C. A., Cogliser, C. C., Scandura, T. A., Lankau, M. J., & Powers, K. J. (1999). An empirical comparison of approaches for quantitatively assessing the content adequacy of paper-and-pencil measurement instruments. *Organizational Research Methods*, *2*(2), 140-156.

Schweitzer, F., Rau, C., Gassmann, O., & van den Hende, E. (2015). Technologically reflective individuals as enablers of social innovation. *Journal of Product Innovation Management*, *32*(6), 847-860.

Senyard, J., Baker, T., Steffens, P., & Davidsson, P. (2014). Bricolage as a path to innovativeness for resource-constrained new firms. *Journal of Product Innovation Management*, *31*(2), 211-230.

Sinha, I. & Batra, R. (1999). The effect of consumer price consciousness on private label purchase. *International Journal of Research in Marketing*, *16*(3), 237-251.

Slavec, A., Drnovšek, M., & Hisrich, R. D. (2017). Entrepreneurial openness: Concept development and measure validation. *European Management Journal*, *35*(2), 211-223.

Soni, P., & Krishnan, R. T. (2014). Frugal innovation: aligning theory, practice, and public policy. *Journal of Indian Business Research*, *6*(1), 29-47

Thomas, R. W., Soutar, G. N., & Ryan, M. M. (2001). The selling orientation-customer orientation (SOCO) scale: A proposed short form. *Journal of Personal Selling & Sales Management*, *21*(1), 63-69.

Tiwari, R., & Herstatt, C. (2020). 'Pushing the envelope'–transcending the conventional wisdom on frugal innovation. *International Journal of Technology Management*, *83*(1/2), 3.

Von Janda, S., Kuester, S., & Schuhmacher, M. C. (2021). A configurational perspective on BOP innovation capability. *International Journal of Innovation Management*, *25*(05), 2150060.

Van Orden, J., van der Rhee, B., & Schmidt, G. M. (2011). Encroachment patterns of the "best products" from the last decade. *Journal of Product Innovation Management*, *28*(5), 726-743.

Van Riel, A. C., Lemmink, J., & Ouwersloot, H. (2004). High-technology service innovation success: A decision-making perspective. *Journal of Product Innovation Management*, *21*(5), 348-359.

Vogel, D., Reuber, A., & Vogel, R. (2020). Developing a short scale to assess public leadership. *Public Administration*, *98*(4), 958-973.

Walsh, G., & Beatty, S. E. (2007). Customer-based corporate reputation of a service firm: scale development and validation. *Journal of the Academy of Marketing Science, 35*(1), 127-143.

Walsh, G., Schaarschmidt, M., & Von Kortzfleisch, H. (2016). Employees' company reputation-related social media competence: Scale development and validation. *Journal of Interactive Marketing, 36*, 46-59.

Walsh, G., Shiu, E., Hassan, L., Hille, P., & Takahashi, I. (2019). Fear of online consumer identity theft: Cross-country application and short scale development. *Information Systems Frontiers, 21*(6), 1251-1264.

Weyrauch, T., & Herstatt, C. (2017). What is frugal innovation? Three defining criteria. *Journal of Frugal Innovation, 2*(1), 1-17.

Weyrauch, T., Herstatt, C., & Tietze, F. (2020). The objective–conflict–resolution approach: a novel approach for developing radical and frugal innovation. *IEEE Transactions on Engineering Management, 68*(3), 699-712.

Wieseke, J., Geigenmüller, A., & Kraus, F. (2012). On the role of empathy in customer-employee interactions. *Journal of Service Research*, *15*(3), 316-331.

Yoshikawa, K., Wu, C. H., & Lee, H. J. (2020). Generalized exchange orientation: Conceptualization and scale development. *Journal of Applied Psychology, 105*(3), 294-311.

You, Y., Srinivasan, S., Pauwels, K., & Joshi, A. (2020). How CEO/CMO characteristics affect innovation and stock returns: findings and future directions. *Journal of the Academy of Marketing Science, 48*(6), 1229-1253.

Zeschky, M., Widenmayer, B., & Gassmann, O. (2011). Frugal innovation in emerging markets. *Research-Technology Management, 54*(4), 38-45.

Zhang, H., Ou, A. Y., Tsui, A. S., & Wang, H. (2017). CEO humility, narcissism and firm innovation: A paradox perspective on CEO traits. *The Leadership Quarterly*, *28*(5), 585-604.

Zhu, X. S., Wolfson, M. A., Dalal, D. K., & Mathieu, J. E. (2020). Team decision making: The dynamic effects of team decision style composition and performance via decision strategy. *Journal of Management*, 0149206320916232.

Table 1

Scale development procedure

Steps in the process	**Study Details**
1. Construct definition and scale design	Study 1, Qualitative study with 22 experts in affordable or premium innovation
Literature review	
A priori focus on tripartite conceptualization of attitude	
2. Item generation	Identification of potential correlates of AIR
Search for adjacent scales	
Development of initial item pool (28 items)	
3. Item judging	Study 2a, n = 65 Mturk (U.S.)
Q-sorting (four categories)	Study 2b, n = 50 Mturk (U.S.)
Content adequacy	Study 2c, n = 10 Innovation experts (Europe)
Face validity	
Reduced item pool of 22 items	
Expert evaluation for content validity	
Expert evaluation for item readability	
4. Scale purification and preliminary discriminant validity	Study 3, n = 107 professionals (UK)
Exploratory factor analysis (22 items)	
Extraction of one factor with 6 items	
Confirmatory factor analysis	
Overall fit	
Factor loadings	
Reliability	
Discriminant and convergent validity	
5. Scale validation	Study 4a and 4b, n = 105 innovation managers (UK and U.S.)
Confirmatory factor analysis	
Overall fit	
Discriminant and convergent validity	
Nomological validity	
Predictive validity	
6. Scale validation II	Study 5, n = 155 crowdworkers (U.S.)
Pretest (n = 58, Mturk)	
Experimental validity	
7. Scale validation III	Study 6, n = 26 professionals (Germany)
Test–retest validity	

Table 2

Interview excerpts

AIR facets	Level	Examples
Creativity and fun	Individual	"When there is no fun and you can't bring in your creativity, it's boring. That might not be true for charitable projects, but definitely for those with low budgets." (Karl, head of marketing, sports equipment)
Challenge	Individual	"Working in product development has to be challenging and stimulating. I don't see that with products for which only basic functionalities are planned." (Mesut, Junior Business Development Manager, pharma industry)
Identification	Individual	"I could not work for a project that develops technologies for car tires. I have to identify with the core product." (Denise, manager)
Recognition	Individual	"If you are working in a non-profit project, and you do something good, of course, you want to get recognition for that. Although that's not my main motivation." (Satish, platform for health workers)
Image	Organizational	"At the end, it's always a question of image, especially, when well-known competitors enter your market." (Jargo, agriculture consultant)
Trust	Organizational	"So, our mission, in the beginning, is really that people trust in the concept." (Franco, sustainable food start-up)

Note: Names are anonymized.

Table 3

AIR scale factor loadings and descriptive statistics (CFA factor loadings)

AIR attitude			Study 3 (N = 107)				Study 4 (N = 105)		Study 5 (N = 155)	
No.	Item	Wording	Factor loadings (EFA)	ITTC	Factor loadings (CFA)	Mean (SD)	Factor loadings (CFA)	Mean (SD)	Factor loadings (CFA)	Mean (SD)
					α =.85, *AVE=.50*		α =.86, *AVE=.50*		α =.93, *AVE=.66*	
1	Cog5	I am reluctant to consider new product ideas that target customers who prefer to pay only a minimum.	.80	.68	.75	3.28 (1.34)	.85	2.98 (1.37)	.91	3.41 (1.85)
2	Beh6	Working on ideas that target affordable products does not stimulate my creativity.	.77	.65	.71	3.16 (1.44)	.65	2.50 (1.37)	.87	3.53 (1.84)
3	Beh5	In the past, I could not identify with projects that were designed for customers with a low willingness to pay.	.76	.64	.71	3.20 (1.26)	.63	2.55 (1.35)	.82	3.46 (1.85)
4	Cog7	Offering low-priced products is not good for a company image.	.76	.64	.70	2.97 (1.32)	.78	2.46 (1.25)	.80	3.10 (1.75)
5	Aff3	Standard products with simple functionalities bore me.	.75	.63	.70	3.04 (1.19)	.59	2.60 (1.47)	.73	3.65 (1.80)
6	Cog6	I doubt that products for price-sensitive customers can achieve significant results.	.71	.59	.67	3.03 (1.34)	.71	2.46 (1.33)	.82	3.22 (1.72)

Notes: α: Cronbach's alpha; AVE: average variance extracted; ITTC: item-to-total correlations; SD: standard deviation. All items were administered in English.

Table 4

Construct intercorrelations for nomological validity (Study 4a)

	CR	AVE	1	2	3	4	5
(1) Affordable innovation rejection attitude	.85	.50	(.71)				
(2) Perceived external image	.78	.48	-.10	(.69)			
(3) Empathic decision making	.86	.61	-.24*	.39**	(.78)		
(4) Price–quality association	.85	.59	.29*	.23*	.04	(.77)	
(5) Attitude toward affordable	.90	.70	-.31**	.22	.23*	-.24*	(.84)

**p < .01, *p < .05. Notes: CR = composite reliability, AVE = average variance extracted.

Table 5

Predictive validity (Study 4b)

	DV: Difference in star rating (N = 105, R^2 = .14)		
	β	B (SD)	
Affordable innovation rejection attitude	.34	.45 (.13)	p < .001
Age	-.20	-.03 (.01)	n.s.
Gender	.02	.04 (.25)	p < .05

Table 6

Experimental validity (Study 5)

	Means		
	Scenario A (low AIR, N = 86)	Scenario B (high AIR, N = 69)	
1 Cog5	2.63 (1.28)	4.36 (2.00)	p < .001
2 Beh6	2.72 (1.44)	4.52 (1.80)	p < .001
3 Beh5	2.65 (1.40)	4.48 (1.86)	p < .001
4 Cog7	2.47 (1.24)	3.90 (1.96)	p < .001
5 Aff3	3.05 (1.48)	4.41 (1.90)	p < .001
6 Cog6	2.56 (1.22)	4.04 (1.90)	p < .001
Full AIR attitude scale	2.68 (.93)	4.28 (1.68)	p < .001

Notes: Item numbers refer to the items listed in Table 3.

Table 7

Paired *t*-test and means on dimension level (Study 6)

AIR	T1 Mean (SD)	T2 Mean (SD)	Increase	*p*
	α = .85	α = .84		
1 Cog5	3.63 (1.74)	3.42 (1.31)	-.21	.65
2 Beh6	3.42 (1.68)	3.05 (1.18)	-.37	.41
3 Beh5	3.00 (1.53)	3.74 (1.45)	.74	*.09*
4 Cog7	3.21 (1.55)	3.47 (1.78)	.26	.56
5 Aff3	3.63 (1.71)	3.26 (1.24)	-.37	.38
6 Cog6	3.47 (1.71)	2.95 (1.43)	-.52	.22

Notes: T1 = time 1, T2 = time 2.

Appendix 1
List of initial items

Code	Wording	
Aff1	I have sympathies for products that are positioned at upper ends of markets.	***
Aff2	I feel delighted when I see product ideas for price-sensitive customers. I	**
Aff3	**Standard products with simple functionalities annoy me.**	
Aff4	It captivates me to see product ideas realized that have sophisticated features.	***
Aff5	When I think of affordable new products and services, I feel bored.	***
Aff6	I enjoy developing product ideas for customer segments that have a high willingness to pay.	***
Aff7	I always enjoy working on projects leading to products targeting the non-premium end of the markeI(R)	***
Aff8	I like to work on ideas that have the potential to open premium markets.	*
Aff9	It captivates me seeing product ideas realized that have something special.	*
Cog1	I think offering premium products will be better for a company than offering affordable products.	***
Cog2	I believe margins for premium products are larger than margins for affordable products.	**
Cog3	Serving premium markets will have positive impacts on a company.	***
Cog4	Addressing customers with a low willingness to pay seems not to be a good strategy.	***
Cog5	**I am reluctant to consider new product ideas that target customers who prefer to pay only a minimum.**	
Cog6	**I doubt that products for price-sensitive customers can achieve significant results.**	
Cog7	**Offering low-priced products is not good for a company image.**	
Cog8	I am convinced that bringing new premium products to the market that focus on a select target group is more profitable for companies than introducing cheaper, standard products for the mass market.	**
Cog9	There are too few product ideas out there that serve customers with basic needs Iy. (R)	*
Cog10	Focusing on products that satisfy basic needs only is a waste of time.	*
Beh1	In the past, I mainly searched for project ideas that have the potential to service premium markets.	***
Beh2	The majority of projects I worked on targeted customers with a high willingness to pay.	***
Beh3	I have seen more successful premium products than products for customers with a low willingness to pay.	**
Beh4	I have seen too many new product introductions for price-sensitive customers that had severe quality issues.	***
Beh5	**In the past, I could not identify with projects that were designed for customers with a low willingness to pay.**	
Beh6	**Working on ideas that target affordable products does not stimulate my creativity.**	
Beh7	If I can choose, I always try to avoid being involved in new product development projects that target the base of the pyramid market.	***
Beh8	In the past, I preferred product ideas that focused on basic functionalitIonly. (R)	*
Beh9	In the past, I have been hesitant to be assigned to new product development projects that pursue a follower strategy.	*

Notes: Bold items depict the final AIR scale. *Deleted after Studies 2a and 2b; ** deleted after Study 2c, *** deleted after scale purification in Study 3.

Appendix 2

Confirmatory factor analysis of nomological net constructs.

Construct and items	**Study 3**	**Study 4a**
Technology reflectiveness (adapted from Schweitzer et al., 2015) CR = .88; AVE = .53		
I enjoy thinking about the chances and risks a new technology might provide and harbor for society.	.85	--
I am very interested in studying the impact new technical products have on society.	.84	--
When I hear about a new technical product, I spontaneously have ideas on how this product can be used to reduce social problems.	.70	--
I enjoy thinking about the impact that new technical products have on different social groups (e.g., the elderly, the young, the chronically ill).	.76	--
I enjoy thinking about ways in which future technology could change our society.	.80	--
I often think about how technical products could impact the autonomy and self-determination of individuals and social groups.	.60	--
Attitude toward affordable innovation (self-developed) CR = .91; AVE = .71		
Bad – good		.86
Negative – positive		.89
Unfavorable – favorable		.83
Not useful – useful		.78
Perceived external social prestige (adapted from Carmeli, 2005) CR = .78; AVE = .48		
Quality of management		.73
Quality of products and services		.81
Ability to attract and retain people		.53
Innovativeness		.65
Empathic decision making (Hattula et al., 2015) CR = .86; AVE = .61		
I tried to take the perspective of a typical consumer in this market.		.77
It was very easy to put myself in the shoes of a typical consumer.		.72
I tried to understand what a typical consumer's needs are by imagining how things look from his/her perspective.		.85
I tried to imagine how a consumer would feel in this market.		.78
Price-quality association (adapted from Garretson et al., 2002; Sinha & Batra, 1999) CR = .85; AVE = .59		
Generally speaking, the higher the price of a product, the higher the quality.		.66
In my opinion, inexpensive products are usually of poor quality.		.66
The price of a product is a good indicator of its quality.		.86
The old saying "you get what you pay for" is generally true.		.86

Notes: N = 107 (Study 3) and N = 105 (Study 4a). All factor loadings are significant ($p < .001$); CR = composite reliability; AVE = average variance extracted.

Appendix 3

Project scenarios for assessing predictive validity (Study 4b)

Project A. Solar car	Project B. Electric luxury car
Providing an environmentally friendly solution for the mobility needs of a growing population, this robust solar-powered car targets the large working class for developing countries. The car offers a basic but stylish interior and a 30-hp all-electric motor to enable safe and efficient travel.	This electric car is no ordinary sports car. Combining luxury amenities like leather and carbon interior, multimedia entertainment, and assisted driving with an environmentally friendly electric engine with 300-hp, the car targets wealthy enthusiasts who are highly demanding in terms of quality in developing countries such as China, Russia, and the Middle East.
How many "stars" would you give this project?	***How many "stars" would you give this project?***

Appendix 4

Experimental conditions (Study 5)

Scenario A	Scenario B
Please imagine the following. You are a manager in an R&D project. In the past you predominantly worked in projects that targeted customers with a low willingness to pay. Accordingly, you only had limited resources available to come up with sophisticated products. You are used to working under resource constraints and are satisfied with products that have only simple features. You have a generally positive attitude toward affordable innovation.	You are a manager in an R&D project. In the past you have predominantly worked in projects that targeted customers with a high willingness to pay. Accordingly, you had enough resources available to come up with a fascinating product idea. You are not used to working under resource constraints, and you are only satisfied with products that have advanced and superior features. You have an attitude against affordable innovation.
Please answer the following questions as if you were the manager.	***Please answer the following questions as if you were the manager.***