



# Measuring entrepreneurial orientation and institutional theory for informal enterprises: scale validation

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## Abstract

The importance of institutional factors and entrepreneurial orientation is widely recognized in the study of entrepreneurship development, leading to the development of different measurement scales. Using the sample of 45 informal enterprises, we examined the factor structure, reliability, convergent and discriminant validity of the selected constructs adapted to measure these constructs in the context of informal enterprises in Nigeria. We examined 45 items that measure institutional factors (political, cognitive, cultural, and corruption) and entrepreneurship orientation (innovativeness, proactiveness, and risk-taking). An assessment of Cronbach's alpha and composite reliability shows that the items measuring risk-taking, proactiveness, uncertainty avoidance, and masculinity are internally consistent. However, some of the items measuring other constructs have lower loading, highlighting their lack of internal consistency. The results also evidence convergent and discriminant validity of the measures used. We conclude that most of the items are reliable measurements of the corresponding constructs, and the constructs adapted to measure these constructs correlate positively with the alternative measure of the constructs. Thus, the measures evaluated in this study can be used to assess these constructs across informal enterprises. The paper contributes to validating the measurement scales and indices of institutional theory and theory of entrepreneurial orientation in the context of informal enterprises.

**Keywords** Institutional theory · Entrepreneurship orientation · Culture · Reliability · Convergent and discriminant validity

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## 1 Introduction

Over the past decades, a growing strand of literature on informal entrepreneurship suggests that a substantial number of entrepreneurs operate in the informal economy in both developed and developing countries (Schoepfle et al. 1992; Losby et al. 2002). By informal entrepreneurship, we are referring to the act of "starting a business or are the owner/manager of a business...participating in monetary transactions not declared to the state for tax and/or benefit purposes when they should be declared but which are legal in all other respects" (Williams et al. 2012, p.529). The importance of informal enterprises attracted the attention of the International Labour Organization (ILO) to describe them as a transitional phase and incubator for graduation to the formal economy (ILO 2002). Due to growing interest in these enterprises, scholars proposed various theories for studying informal entrepreneurship. These include the modernization theory (Gilbert 1998), the structuralist theory (Amin et al. 2002; Davis 2006), and the neo-liberal theory (De Soto 1989; Sauvy 1984).

The modernization theory sees informal entrepreneurship as a sign of backwardness and underdevelopment and formal entrepreneurship as progress and development (Gilbert 1998). Similarly, the structuralist theory views informal entrepreneurship as largely low-paid, insecure, and unregulated types of survival motivated self-employment by people excluded by the formal labor market (Amin et al. 2002; Davis 2006). As for the neo-liberal theory, informal entrepreneurs are the celebrated heroes who throw off the chains of a burdensome state (e.g., De Soto 1989; Sauvy 1984). Neo-liberal theorists attributed an increase in informal entrepreneurship to over-regulation of the formal market economy (De Soto 1989; Sauvy 1984). However, while these theories have enriched our understanding of informal entrepreneurship from different perspectives, until now, however, at the empirical level, several weaknesses in the literature make the current research inadequate. Klein (2021) attributed low replication of research finding to dearth of information update and lack of instrument validity, hence recommended reproducing the theoretical background to increase validity during the replication of the research.

First, although entrepreneurial orientation (EO) is one of the important concepts because of its role in enhancing the performance of small enterprises, yet there is hardly any research that has tested the reliability and validity of the EO construct for informal enterprises. EO is a firm-level strategic orientation that refers to an enterprise's practices of strategy making, firm behaviors, and managerial philosophies that are entrepreneurial (Covin & Slevin 1989). The core dimensions of EO based on Danny Miller's groundbreaking works include innovativeness, proactiveness, and risk-taking. Lumpkin and Dess (1996) further extended these dimensions to the multi-dimensional concept after including autonomy and competitive aggressiveness. Therefore, taking into account the profound interest in entrepreneurship not just in the advanced economies but also the developing economies, and that two-thirds of the enterprises in developing countries tend to start-up initially as unregistered (Slesman et al. 2021; Autio and Fu 2015), it seems important to test the reliability and validity of the EO concept for informal enterprises (Klein, 2021).

Secondly, although past studies suggest that institutions can influence and constrain EO (Urban 2019), yet there is hardly any study that has tested the validity and reliability of the institutional framework for informal enterprises, especially in developing countries. According to North (1991), institutions refer to the "rules of the game in a society." In both developed and developing countries, the operation and suitability of the institutions in the environment influenced the behavior of enterprises (Baumol

et al. 2007). These institutions include political, cognitive (e.g., training), and normative (cultural) institutions. When these institutions have efficient and stable operations, they tend to reduce the risks and uncertainties for small enterprises; but when they are unstable and inefficient, they tend to be hostile to small enterprises (Abubakar et al. 2019). Therefore, hostile institutions threaten small enterprises, and they are more common in developing countries (Slesman et al. 2021; Covin and Slevin 1989; Welter et al. 2012). Consequently, an interesting perspective of informal enterprises that the entrepreneurship literature has largely missed is whether and to what extent measures of institutional constructs, such as political, cultural, and cognitive institutions are valid and reliable for informal enterprises in developing economies at the firm level.

*Political institutions* are concerned with government policies and programs that influence or constrain economic actors (Tan 1996). The few studies on political institutions and informal entrepreneurship include Autio and Fu (2015) and Santos et al. (2019). However, these studies were conducted at the 'macro-level,' neglecting 'micro-level.' There is hardly any paper that tested the validity and reliability of the political institutions for informal enterprises in a developing country. *Normative/Cultural institutions* are concerned with the societies' norms, beliefs, and attitudes (Urban 2019; Covin and Miller 2014; Hofstede et al. 2005). For cultural institutions, most of the studies focusing on entrepreneurship tend to focus on formal enterprises (e.g., Runyan et al. 2012; Kreiser et al. 2010; Shane 1994) and informal enterprises at the 'macro-level' (Acs et al. 2014). As a result, a dearth of studies tested the validity and reliability of constructs related to cultural institutions for informal enterprises in a developing economy at the micro-level. *Cognitive institutions* are the institutions that develop human capital, knowledge, skills, and productive research and development (Urban 2019). For cognitive institutions, although there is a shortage of studies that test the validity and reliability of measures of such institutions for informal entrepreneurship, one notable exception is the paper by Acs et al. (2014), which examined the relationship between cognitive institutions and informal entrepreneurship in the context of innovation-driven developed countries at the 'macro-level.' In contrast, our paper differs from Acs et al. (2014) by focusing on informal enterprises in developing countries at the 'micro-level.' Therefore, based on the above research gaps, the specific aims of this paper are:

- To explore the extent to which the measures of EO (i.e., innovativeness, proactiveness, and risk-taking) are valid and reliable for informal enterprises in the context of a developing country.
- To examine the extent to which the measures of institutions (i.e., political, cognitive, and cultural institutions) are valid and reliable for informal enterprises in the context of a developing country.

## 2 Literature review

This section reviews literature related to informal enterprises, culture and Hofstede's framework of culture, political institutions, cognitive institutions, corruption, entrepreneurship orientation (EO), and validity and reliability.

## 2.1 Informal enterprises

There are considerable debates on the conceptual definition of the informal sector's micro-enterprise activities, with several academic disciplines contributing to its divergent definitions. For instance, in defining the informal sector, economists focused on unregulated activities involving cash exchange (Schoepfle et al. 1992); while sociologists focused on the informal activities serving as a source of community cohesion (Losby et al. 2002). Likewise, business and entrepreneurship focused on activities of the self-employed and funded business activities operating mostly in developing countries, or micro and small enterprises (MSEs) thriving in various types of business activities and have the potential to generate income and employment (Garba et al. 2019). International Labor Organization (ILO 2002) defines the concept based on the way of doing things characterized by ease of entry, reliance on indigenous resources, family ownership, small-scale operation, labor intensity, and skill acquisition outside the formal sector. Whereas Mogensen (1995) defined the concept as unregistered economic activities characterized by unreported income and transactions, which contribute to the officially calculated (or observed) GNP, adjusting to changes in taxes and sanctions from the tax authorities to promote general moral attitudes.

## 2.2 Measures of institutional factors

### 2.2.1 Culture

Culture is one of the strategic postures that promote entrepreneurship (Hofstede et al. 2005; Covin and Slevin 1989). Hofstede (1983) defined *culture* as a “collective programming of the mind that distinguishes the members of one group or category of people from another. Hofstede (1983) developed a value-belief theory that describes societies based on the four cultural dimensions. The theory established that cultural values and beliefs influence the degree of acceptability and legitimacy of specific behaviors of societies or individuals. The six dimensions of cultural values include uncertainty avoidance, power distance, individualism/collectivism, masculinity/femininity, indulgence/restraint and long-term orientation/short-term orientation (Hofstede et al. 2005).

*Uncertainty avoidance* is the fear of inherent ambiguities, complexities, and the vagueness of future outcomes (Hofstede 1983). The culture of uncertainty avoidance can be high or low. The low uncertainty avoidance culture easily accepts inherent future uncertainties and design procedures to cope with them comfortably through a willingness to take the risk and higher tolerance of creative behavior (Hofstede 1983). In contrast, high uncertainty avoidance recognizes inherent security, lacks tolerance to inherent future uncertainty, and avoids it by establishing rules and punishment for any deviance and suspicious behavior. On the other hand, *power distance* is the prevailing inequality in power distribution, control mechanism, and magnitude of the interpersonal relationship between the superior and the subordinates (Hofstede et al. 2005). Culturally, societies are either high or low power distance oriented. High power distance societies are characterized by the unequal distribution of power, strong control mechanism, hierarchical, bureaucratic structures, and high subordinates' obedience to superior, while low power distance societies recognize the more balanced distribution of power, less control mechanism, friendly superior-subordinates relationship, and have a high degree of social mobility (Hofstede et al. 2005; Shane 1994).

*Masculinity* is defined as the societal level of assertiveness, self-confidence, flamboyant attitude, and recognition for materialistic and prestigious lifestyles (Hofstede 1983). On the other hand, individualism is the extent to which societies recognize personal initiative, freedom, autonomy, achievement, and individual contributions (Hofstede 1983). In contrast, collectivism recognizes group interest and teamwork, integrates group cohesion in achieving particular objectives, and recognizes social identity through team membership (Hofstede et al 2005). Methodologically Hofstede (1983) recommended comparative analysis in the study of culture. In determining the unit of analysis, their study recommended using values to compare individuals, while culture to study societies. Therefore, having a firm at the unit of analysis, we will compare culture across the informal enterprise in developing countries using Hofstede's cultural framework consisting of four dimensions. We adapted the measures of these dimensions from studies such as Hofstede (1983); Mulder (1976) in his Mulder's Power Distance Reduction.

### 2.2.2 Political factor/ regulatory institution

A political institution is concerned with government policies and programs formulated by the government to support entrepreneurial activities (Zahra and Wright 2011). These policies differ across countries and regions, and they are formulated to promote local firms, support entrepreneurship development, provide employment and stimulate economic growth (Zoogah et al. 2015; Zahra and Wright 2011; Kostova 1997). The political institution can be measured using an existing number of regulatory bodies (Kostova 1997). Zoogah et al. (2015) classified political institutions into formal and informal institutions. They measured formal institutions using the democratic system, private property, and the rule of law and examined informal political institutions using proxies such as the rule of the tribe, chieftaincy, and communal property. Busenitz et al. (2000) developed ten items that examined the regulatory factor of institutional theory. The items were extracted based on government policies, regulations, and indirect government support that affect new business. Dreher and Gassebner (2013) used the World Bank dataset on doing business in assessing this construct. These consist of regulations on the number of procedures, days, cost, and minimum capital required to start a new business. Additionally, their study adapted sub-indices on regulations from the Economic Freedom Index.

### 2.2.3 Cognitive institution

The cognitive institution is concerned with human capital, knowledge, skills, experience, and productive R&D necessary for the successful manifestation of EO (Bala and Maje 2017; Busenitz & Lau 1996; Covin and Slevin 1989). Studies assess cognitive factors using the number of specialized quality journals and magazines (Kostova 1997) or variables such as scripts, schemas, knowledge structures, and interpretive systems (Walsh 1995; Busenitz and Barney 1994). Busenitz and Barney (1994) assessed cognitive factors using decision-making heuristics, and enactment of the environment, and these formed the two focal components of their cognitive model of venture creation. Walsh (1995) further established that cognitive structures measure knowledge, whereas cognitive processes describe how knowledge is obtained and utilized. Consequently, Busenitz and Barney (1994) used a schema construct to focus on how entrepreneurs acquire and process knowledge. Schema is a cognitive structure of beliefs and rules about a certain stimulus domain, which appeals to memory, provides knowledge, specifies relationships, and produces outputs by making

predictions or inferences and initiating the behavior. Busenitz and Lau (1996) examined cognitive factors using 11 items based on the public's awareness, knowledge of organizational structure, financing, and management of new businesses.

Therefore, this study will assess cognitive institution using entrepreneurship training program. Entrepreneurship training programs are fundamental for entrepreneurship development, designed to provide managerial, financial, vocational, and technical skills (Ado and Maje 2017; Busenitz and Barney 1994).

### 2.2.4 Corruption

Corruption is the abuse of power for personal benefits (Tanzi and Davoodi 1998). It is given to grease or sand the wheel, which stimulates the allocation of resources to productive and unproductive entrepreneurial activities (Dreher and Gassebner 2013). However, studies regarded corruption to grease the wheel as the second-best alternative designed to eliminate indifference or hostility of outcomes, and it is effective when there is official harassment or poor regulations (Leff 1964). Corruption can be from the owners of enterprises, the environment, or the regulatory agencies, arising due to poor governance, greed, unproductive laws, bureaucratic interference, existing inequality, poverty, lack of transference, the rule of law, and accountability (Dreher and Gassebner 2013; Tanzi and Davoodi 1998). It also includes, for example, the sale of government properties by government officials for personal benefits, corruption among law enforcement agencies, financial institutions, politicians, and other regulatory agencies. In developing countries, corruption is institutionalized and considered part of the culture (Dugguh 2014). Consequently, we assumed that corruption might significantly mediate the nexus between culture and EO across informal enterprises in developing countries.

### 2.3 Measures of entrepreneurial orientation

Entrepreneurial orientation is a firm-level construct, which is significantly related to strategic management, firm behavior, and the strategic decision-making process (Lumpkin and Dess 1996; Covin and Slevin 1989). It is also the composite weights of variables that measure firm attitude or behavior to engage in entrepreneurial activities (Covin and Slevin 1989; Miller 1983). The entrepreneurial firm is the firm that undertakes product-market innovation, risky business ventures and is proactive in coming up with innovative ideas that will help them to beat competitors to the crunch (Miller 1983). The concept has become one of the most established and researched constructs in the entrepreneurship literature, conceptualized in three core dimensions such innovation, proactiveness, and risk-taking (Covin and Slevin 1989; Miller 1983), but extended to multi-dimensional constructs after the inclusion of autonomy and competitive aggressiveness (Lumpkin and Dess 1996).

Entrepreneurial *innovation* is indispensable and the best competitive weapon for achieving sustainable competitive advantages (Baumol et al. 2007; Miller 1983). Innovation is a primary characteristic of entrepreneurship described as “creative destruction” achieved after challenging the status quo to modify or introduce a radically new process, method, products, or services to a new market (Abubakar et al. 2019; Lumpkin and Dess 1996; Miller 1983). Innovation could be radical when it involves a continuum, breakthrough, revolutionary, completely new, and pioneering concept, process, products, or service, while incremental innovation is the improvement of the existing concept, process, product, or service (Katila 2002). On the other hand, *risk-taking* is a

contextual element, characteristic, and the central component of defining entrepreneurship (Kreiser et al. 2010; Lumpkin and Dess 1996; Miller 1983). Risk-taking is the commitment of resources to uncertain projects or entrepreneurial opportunities with a high probability of returns and failure (Covin and Slevin 1989; Miller 1983). *Proactiveness* is defined as an organizational and personal disposition, forward-looking perspective of entrepreneurial behavior, and promptness in strategic decision (Lumpkin and Dess 1996). Lumpkin and Dess (1996) established that proactiveness describes the extent to which firms promptly act in anticipation of future market demand shaped by environmental trends.

## 2.4 Validity and reliability

The reliability test examined the extent to which items are internally consistent with one another, or the extent to which constructs' items correlate with one another (Hair et al., 2017). Studies examined reliability using Cronbach's Alpha analysis, rho\_A, and composite reliability, which are sensitive to the number of items on the scale; thus, the higher the number of items, the more internally consistent the proxies (Kabir et al. 2020; Bagozzi et al 1991). Studies considered 0.7 as the range of accepting reliability at the beginning, while 0.8 to 0.9 at the later stages of the study (Hair et al. 2017; Nunnally 1978). Nevertheless, Sekaran and Bouggie (2010) recognized 0.6 as an average reliability result. The coefficients above 0.92 indicate the evidence of multicollinearity (Kabir et al. 2020; Hair et al. 2017).

On the other hand, validity is the extent to which the constructs correlate with the alternative measures of the constructs (Bagozzi et al 1991; Fornell and Larcker 1981; Nunnally 1978). Studies examine two types of validity such as convergent and discriminant validity (Kabir et al. 2020; Hair et al. 2017). Convergent validity is the extent to which the measures correlate positively with the alternative measure of the constructs (Hair et al. 2017). It ascertains whether the proposed measures adapted to assess the theories positively correlate with the alternative measures of the constructs. Studies examine convergent validity using average variance extracted (AVE) and factor loading (Bagozzi et al 1991; Fornell and Larcker 1981). These studies recommended 0.5 as an adequate AVE to ascertain convergent validity. Equally, indicators' factor/outer loading of 0.708 explains 50% of constructs' variance, and sufficient to produce acceptable convergent validity. Nevertheless, these studies accepted loading of 0.4 to 0.7 when AVE is 0.5 and above.

Furthermore, discriminant validity is the extent to which the constructs are truly distinct from one another (Hair et al. 2017). Studies use Fornell-Larcker Criterion (F&L), cross-loadings, and Heterotrait-Monotrait Ratio (HTMT) to assess convergent validity (Hair et al. 2017; Fornell and Larcker 1981). Fornell-Larcker criterion argued that convergent validity exists when the AVE of the latent variables is higher than the square correlation between the latent variable and all other variables (Vinzi et al. 2010; Fornell and Larcker 1981). Whereas cross-loading method established that discriminant validity exists when loadings of indicators are higher than all other latent variables at both row and column. The HTMT addresses the insensitivity of F&L and cross-loading criterion and estimates the correlation between the constructs in determining discriminant validity. This method establishes convergent validity when the ratio is less than 0.95 at a 95% confidence (Hensler et al. 2015).



### 3 Methodology

#### 3.1 Research design and data collection

This study is designed to validate the measurement scale of institutional factors (political, cognitive, cultural institutions, and corruption), corruption and EO (innovativeness, proactiveness, and risk-taking). The study conducted factor analysis, validity and reliability analysis to validate the constructs and the items at the level of informal enterprises in developing countries. Consequently, we selected a sample of 45 informal enterprises in Nigeria using simple random sampling. We designed close-ended questions using 5-Likert scales and collected the primary data from the respondents. Data were collected during the covid-19 pandemic. Studies such as Kaufmann and Peil (2020); Gibson (2020) utilized WhatsApp in data collection to enhance response rate during the pandemic. Consequently, we utilized this type of online data collection method to maintain the resultant policies such as social distance and limited contact, and increase the response rate. We shared reusable links generated from Qualtric to respondents' WhatsApp platform and required them to complete the questionnaire themselves. We used forced response provision, a facility provided by Qualtrics to avoid missing data and sending incomplete questionnaires. Although this facility might reduce response rate, it significantly controls missing values, response bias, and sending incomplete questionnaires (Kabir et al. 2020).

#### 3.2 Variable measurements

The exogenous variables consist of dimensions of institutional theory such as normative, political, and cognitive institutions, while the endogenous variables consist of three dimensions of EO such as innovation, risk-taking, and proactiveness. Items measuring the institutional theory and entrepreneurship orientation were initially developed and used across larger firms in the developed countries (Lumpkin & Dess 1996, Covin and Slevin 1989; Miller and Toulouse 1985). However, similar studies across informal enterprises in developing countries are still elusive. Some of the theories and concepts developed by past research may not be applicable across all contexts due to differences in national culture and institutional settings. Likewise, Klein (2021) attributed low replication of research finding to dearth of information update and lack of instrument validity, hence recommended reproducing the theoretical background to increase validity during the replication of the research. Therefore, we adapted the instrument from existing studies to measure institutional factors and EO across informal enterprises in developing countries. We used culture to assess normative factors, government policies to assess political institutions, and entrepreneurship training to assess cognitive institutions. We adapted the instrument from the existing studies such as Hofstede framework of culture (Hofstede et al. 2005; Hofstede 1983; Mulder 1976); political factor/government policies (Cummings 1996); and cognitive factor/ entrepreneurship training (Busenitz and Lau 1996).

Equally, most of the studies assessed the three dimensions of EO using nine items, three for each dimension (Covin and Slevin 1989; Miles and Arnold 1991). Among the recent studies, Runyan et al. (2012) used nine items, whereas Kreiser et al. (2010) dropped the item measuring bold posture after discovering insignificant cross-loading between two items. Consequently, this study assessed the dimension of EO using the original eight items established by Covin and Slevin (1989). Nevertheless, we measured the core dimensions of



EO consisting of innovation, risk-taking, and proactiveness (Covin and Slevin 1989) using ten items, nine of these items are the original items from Covin and Slevin (1989) and Miller (1983). Maintaining the psychometric integrity of the constructs and avoiding concept stretching is the primary justification for selecting the core constructs in the context of our study (George and Marino 2011). Likewise, the relative importance of these three constructs in defining the entrepreneurship orientation in the context of informal enterprises further justified the selection of these items. It is evident that most scholars defined entrepreneurship using these dimensions (Miller and Friesen 1982; Schumpeter 1934), and these further influenced our decision to choose these dimensions in the context of this research.

### 3.3 Analysis of psychometric properties of the research instrument

The instrument's psychometric properties were analyzed using content and face validity, reliability, convergent, and discriminant validity (Kabir et al. 2020; Hair et al. 2017; Bagozzi et al. 1991). After adapting the instrument, we submitted the questionnaire to four relevant Professors for face validity. We examined the reliability test using Cronbach's Alpha analysis and composite reliability and assessed convergent validity using AVE and factor loadings. Likewise, we assessed discriminant validity using Fornell-Larcker Criterion, cross-loadings, and Heterotrait-Monotrait Ratio (HTMT). We examined the data structure of the questionnaire and its components using exploratory factor analysis (EFA). The correlation between the items clarified the level and magnitude of the relationship between the variables; factor loading assessed the relationship between the groups of items; eigenvalues highlighted the variance explained by each factor, and communalities coefficients presented the variance shared between the items. The study examined the model fitness and factor structure of the data set through confirmatory factor analysis (CFA). We highlighted the extent to which the proposed model accounts for the correlation in the data set, i.e., whether the variables accounted for the significant number of variations in the dataset using the factor structure of the questionnaire and its components. We examined the model fitness using CMEN/df, CFI, GFI, AGFI, RMSEA, and PCLOSE.

We used PLS\_SEM in the analysis of data because of its importance in the analysis of measurement models from a small sample size using the algorithm, and El Hadri et al. (2021) recommend the use of an iterative method for the computation of the implied correlation matrix for a recursive path model.

### 3.4 Model specification

Institutional factors significantly affect EO, as evident in many studies across developed countries (Santos et al. 2019; Autio and Fu 2015). However, most of these studies focus on formal enterprises (e.g., Runyan et al. 2012; Kreiser et al. 2010; Shane 1994) and informal enterprises at the 'macro-level' (Acs et al. 2014). Similar studies that examined the effect of these factors on the EO at the micro-level informal enterprises in developing countries are still elusive. Therefore, we built the study on the institutional theory, which argued that EO is the function of three institutional factors such as normative, political, and cognitive institutional factors. We developed the following equations to define the expected linear relationship between these variables:

$$EO = \beta_0 + \beta_1 \text{NOR} + \beta_2 \text{POL} + \beta_3 \text{COG} + \beta_4 \text{COR} + \text{en} \quad (1)$$

where EO is the endogenous variable consisting of three dimensions (innovation, risk-taking, and proactiveness);  $\beta_0$  is the intercept; NOR (normative institution), POL (political institutions), and COG (cognitive institution) are the three dimensions of the institutional theory that represent exogenous variables, COR (corruption) is the moderator;  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ ,  $\beta_4$  are the slope coefficients; en is the error terms. We used the Hofstede 4D model of culture (uncertainty avoidance, power distance, masculinity, and individualism) to represent normative factors, relevant government policies to represent political factors, and relevant entrepreneurship training programs to represent normative factors. Consequently, we expanded the initial equation based on the three endogenous variables as presented below:

$$\text{INN} = \beta_0 + \beta_1 \text{UA} + \beta_1 \text{PD} + \beta_1 \text{MAS} + \beta_1 \text{IND} + \beta_2 \text{GOP} + \beta_3 \text{ETP} + \beta_4 \text{COR} + \text{en} \quad (2)$$

$$\text{RT} = \beta_0 + \beta_1 \text{UA} + \beta_1 \text{PD} + \beta_1 \text{MAS} + \beta_1 \text{IND} + \beta_2 \text{GOP} + \beta_3 \text{ETP} + \beta_4 \text{COR} + \text{en} \quad (3)$$

$$\text{PA} = \beta_0 + \beta_1 \text{UA} + \beta_1 \text{PD} + \beta_1 \text{MAS} + \beta_1 \text{IND} + \beta_2 \text{GOP} + \beta_3 \text{ETP} + \beta_4 \text{COR} + \text{en} \quad (4)$$

Equations 2–4 further specified the endogenous variables such as innovation (INN), risk-taking (RT), and proactiveness (PA); exogenous variables such as uncertainty avoidance (UA), power distance (PD), masculinity (MAS), and individualism (IND); government policies (GOP) and entrepreneurship training programs (ETP).

## 4 Analysis and results

### 4.1 Factor analysis

Exploratory factor analysis was used to test the hypothesis that the constructs have significant data structure. We found that the constructs have significant factor structure. The anti-image matrix  $> 0.5$ , supporting our assumption that the items measuring the constructs correlate with one another, and correlation coefficients ( $\geq 0.3$   $r \leq 0.7$ ), confirmed our initial assumption that there is significant correlations between the constructs, and no multicollinearity problems. Equally, communalities coefficients ( $\geq 0.52$ ) across most of the items supported our earlier assertion that the items shared common variance. Likewise, ten (10) factors extracted explained 66.12% variance in the data structure, as evident in the factor loadings, which supported the inclusion of most of the items in the instrument. However, contrary to our assumption of reasonable spread of eigenvalues across the factors, we found that the loadings skewed to the first factor i.e. innovation (*eigenvalues* = 13.77%), and second factor i.e. proactiveness (*eigenvalues* = 9.43%). The subsequent factors such as risk-taking, corruption, entrepreneurship training programs, government policies, individualism, masculinity, power distance, and uncertainty avoidance accounted for the complementary variance of 8.6, 8.07, 5.87, 5.61, 4.39, 3.81, 3.61, and 2.99% respectively.

Nevertheless, we changed the proportion of the loadings among these factors and spread the eigenvalues variance more evenly using varimax rotation. Consequently, the first factor accounted for 9.99% variance, followed by the second factor with 8.63%. The subsequent factors accounted for the remaining variance of 7.41, 6.62, 6.49, 5.35, 4.91, 4.45, and 3.32% respectively. This more even spread of the variance is reflected in the component

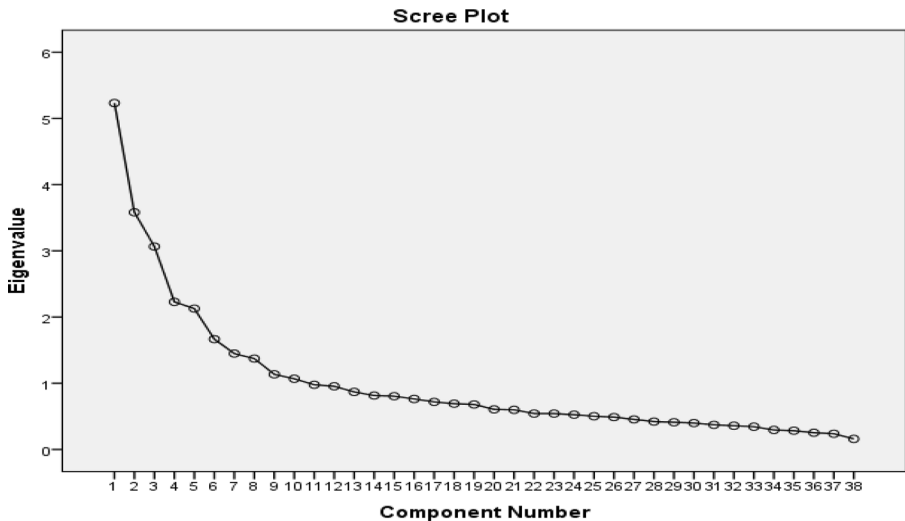


Fig. 1 Spread of eigenvalues across factors

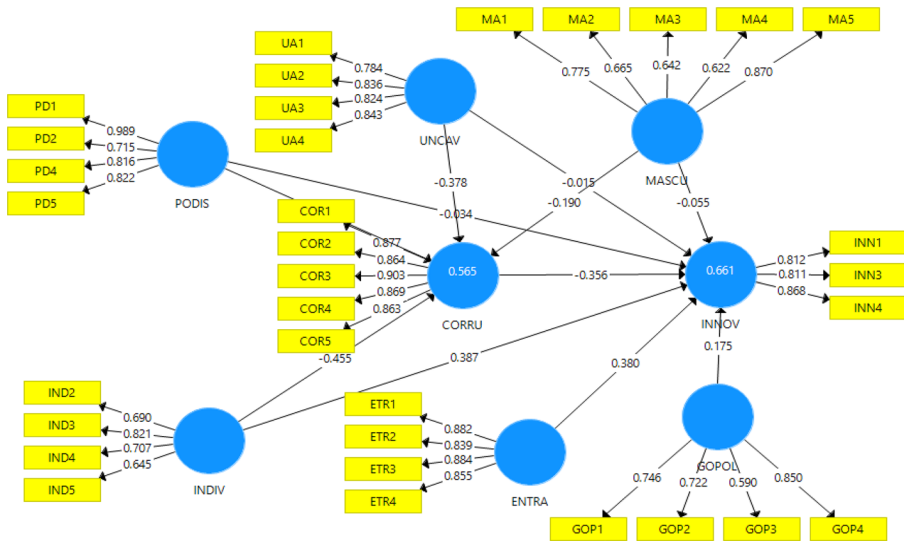
matrix after rotations and further highlighted by Fig. 1 below. However, a few items have insignificant correlations with other items. These include one item measuring innovation (INN2), power distance (PD3), individualism (IND1), government policy (GOP5), and two items measuring entrepreneurship training programs (ETR5 and ETR6). They have anti-image matrices ( $<0.5$ ), and inter-item correlation ( $<0.3$ ). Consistent with these weak results, we observed weak commonality coefficients ( $<0.52$ ) across these items, which confirmed their redundancy.

Figure 1 shows the 9 factors extracted, the spread of eigenvalues, and the number of components across each factor.

## 4.2 Confirmatory factor analysis

Confirmatory factor analysis (CFA) was used to test our hypothesized model fitness and confirmed significant data structure. The result supported our initial assumption on significant model fitness and confirmed data structure after retest. During the first test, the result showed that CMIN/df is above the threshold of 5,  $p$  value ( $<0.05$ ); the GFI (0.876) and AGFI (0.85) values are tolerable but not up to the threshold value of (0.95) and (0.80), respectively. The CFI is within the borderline of the permissible value of (0.80), while RMSEA (0.235) and PCLOSE (0.148) are not within the threshold values of (0.1) and ( $>0.05$ ), respectively. These discrepancies highlighted some model fitness issues, and rejected our initial assumption.

However, we resolve these discrepancies and improved the model through modification, which involved removing eight (8) insignificant items such as INN2, PD3, IND1, GOP5, COR6, ETR5, and ETR6. Consequently, the CMIN/df is within the permissible range of 5 (3.71), but the  $p$ -value is still ( $<0.05$ ), thus, we attributed this problem to the sample size. The GFI improved to (0.92); AGFI (0.89) satisfied the required point ( $>0.80$ ); CFI was improved to the traditional range (0.91); RMSEA improved to a moderate level (0.062); while PCLOSE is still ( $>0.05$ ).



**Fig. 2** Institutional factors, corruption, and innovation

### 4.3 Evaluation of measurement model

The measurement model assessed the empirical relationship between the indicators and the constructs and between the constructs measuring these theories as presented in the following measurement models:

Figure 2 highlighted the significant loading across the items measuring the constructs, and confirming our assumption of significant internal consistency between the items measuring institutional factors, corruption, and innovation. However, due to insignificant loading, we removed one item measuring innovation (INN2), power distance (PD3), individualism (IND1), government policy (GOP5), and corruption (COR6) each, and two items measuring entrepreneurship training programs (ETR5 and ETR6).

Figure 3 presents the model for institutional factors, corruption, and risk-taking. Consistent with Fig. 1 above, the loading of the constructs remain the same. Equally, all three items measuring risk-taking achieved significant internal consistency, confirming our initial assumption on significant internal consistency between the items.

Figure 4 examines the model for institutional factors, corruption, and the third dimension of EO (proactiveness). Consistent with Figs. 1 and 2 above, the loadings of the constructs remain the same. Likewise, all three items measuring proactiveness achieved significant internal consistency, confirming our initial assumption on significant internal consistency between the items.

#### 4.3.1 Reliability and convergent validity

Table 1 summarized reliability and convergent validity results:

##### a. Reliability test

Cronbach's Alpha and composite reliability test were used in testing our hypothesized assumptions that the items have significant internal consistency with one another. The

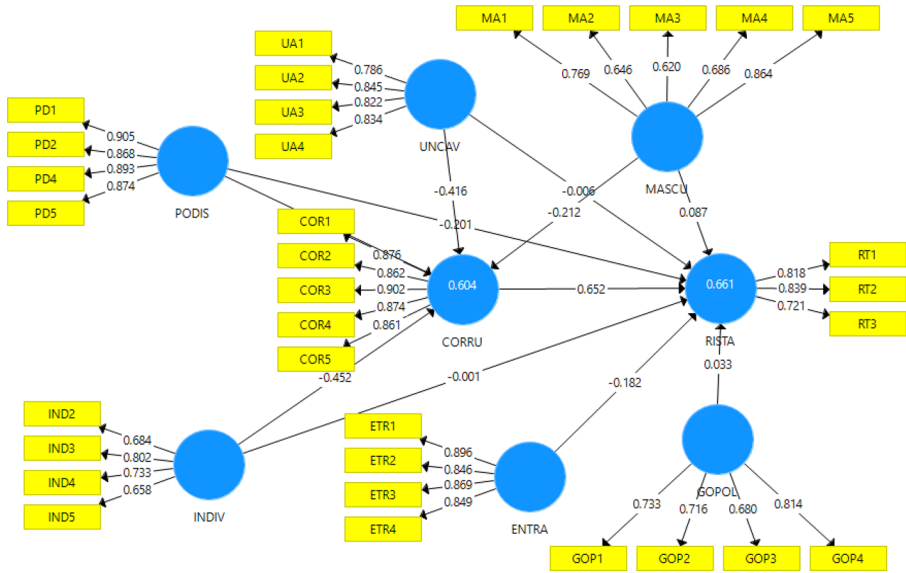


Fig. 3 Institutional factors, corruption, and risk-taking

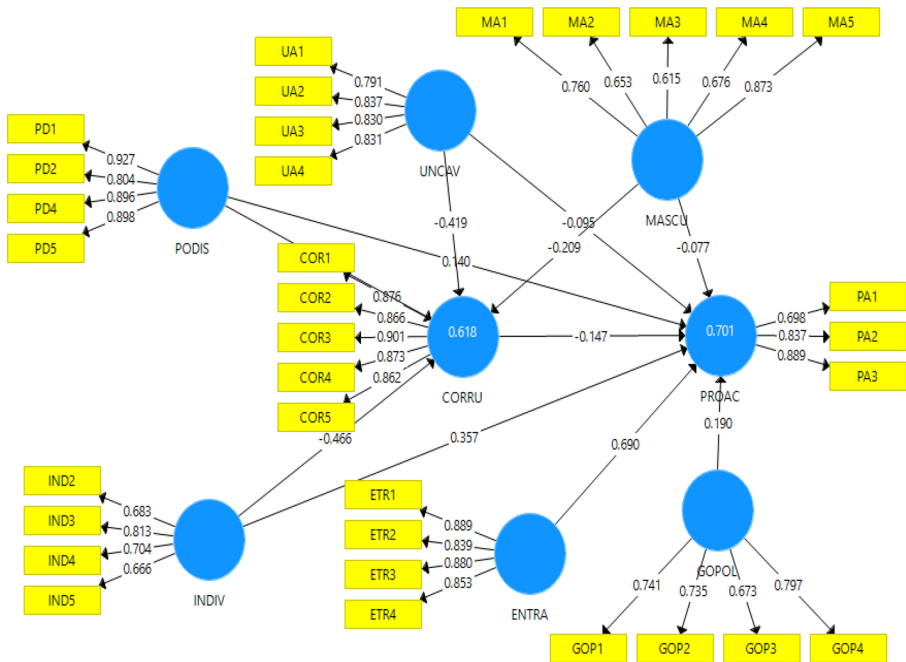


Fig. 4 Institutional factors, corruption, and proactiveness

**Table 1** Reliability and convergent validity

Theories	Constructs	Outer Loadings	Cronbach's Alpha	Composite Reliability	AVE		
THEORY OF EO	INN1	0.812	0.775	0.870	0.690		
	INN3	0.811					
	INN4	0.868					
	PA1	<b>0.698</b>	0.736	0.852			
	PA2	0.837					
	PA3	0.889					
	ANOMIE THEORY	RT1	0.818	0.708		0.836	0.631
		RT2	0.839				
		RT3	0.721				
CORRUPTION		COR1	0.877	0.924	0.942	0.766	
		COR2	0.864				
		COR3	0.903				
	COR4	0.869					
	COR5	0.863					
INSTITUTIONAL THEORY	ETR1	0.882	0.888	0.923	0.749		
	ETR2	0.839					
	ETR3	0.884					
	ETR4	0.855					
	GOP1	0.746	0.726	0.820	0.537		
	GOP2	0.722					
	GOP3	<b>0.590</b>					
	GOP4	0.850					
	IND2	<b>0.690</b>	<b>0.696</b>	0.809	0.517		
	IND3	0.821					
	IND4	0.707					
	IND5	<b>0.645</b>					
	MA1	0.775				0.774	0.842
	MA2	<b>0.665</b>					
	MA3	<b>0.642</b>					
	MA4	<b>0.622</b>					
	MA5	0.87					
	POWER DISTANCE	PD1	0.989	0.910	0.905	0.708	
		PD2	0.715				
		PD4	0.816				
PD5		0.822					
UA1		0.784	0.842				0.893
UA2	0.836						
UA3	0.824						
UA4	0.843						

*INN* Innovation; *PA* Proactiveness; *RT* Risk-Taking; *COR* Corruption; *ETR* Entrepreneurship Training Programs; *GOP* Government Policies; *IND* Individualism; *MA* Masculinity; *PD* Power Distance; *UA* uncertainty avoidance

results established that most of the items have significant internal consistency ( $\alpha > 0.7$ ) and ( $CR > 0.7$ ) across all the constructs (see Table 1). These results confirmed our initial assumption that most of the items have significant internal consistency with one another.

However, consistent with the previous tests, eight items (8) have insignificant loadings. These include INN2, PD3, IND1, GOP5, COR6, ETR5, and ETR6. Their insignificant loadings highlight their lack of internal consistency with the other items, thus, we removed such items and retested the models. Equally, the composite reliability coefficient of power distance ( $CR = 0.934$ ) is alarming and highlights possible multicollinearity problem. We checked and removed the loadings of PD1 (0.989) because it is greater than 0.93. Nevertheless, after removing this item, the Cronbach's alpha and composite reliability coefficients dropped below the cut point of 0.7. Consequently, we maintain this item and intend to consider rewording it while updating the instrument. The following figures further describe the reliability test across the models:

Figures 5a–c confirmed significant internal consistency between the items in the questionnaire. Nevertheless, individualism (INDIV) has Cronbach's Alpha coefficient less than 0.7 ( $\alpha = 0.696$ ), as highlighted by the red bar. Still, the result is considered average and acceptable at the beginning of the study, as argued by Sekaran and Bouggie (2010).

#### b. Convergent validity

Average variance extracted (AVE) and outer loadings were used in testing the hypothesized assumption that the constructs have significant convergent validity. We found that most of the items have significant outer loadings ( $\geq 0.708$ ) and AVE ( $\geq 0.5$ ). These results supported our initial assumption that the constructs have significant convergent validity, and established that most of the items adapted to measure these theories across informal enterprises positively correlate with alternative measures of the constructs Fig. 6.

Nevertheless, the loadings of PAI (0.698), GOP3 (0.590), IND2 (0.696), IND5 (0.645), MA2 (0.665), MA3 (0.642), and MA4 (0.622) are relatively weak ( $< 0.708$ ), yet above 0.4 and account for 50% variance in these constructs ( $AVE > 0.5$ ). Hence, we accepted these items because they are statistically relevant in measuring the convergent validity of these constructs. Therefore, we concluded that all constructs adapted to measure these theories in the context of informal enterprises have significant convergent validity and correlate positively with the alternative measure of the constructs. Figure 6 further highlights convergent validity using AVE:

Figure 6a–c highlight significant convergent validity in the dataset. The figures show that all the constructs correlate positively with the alternative measure of the constructs.

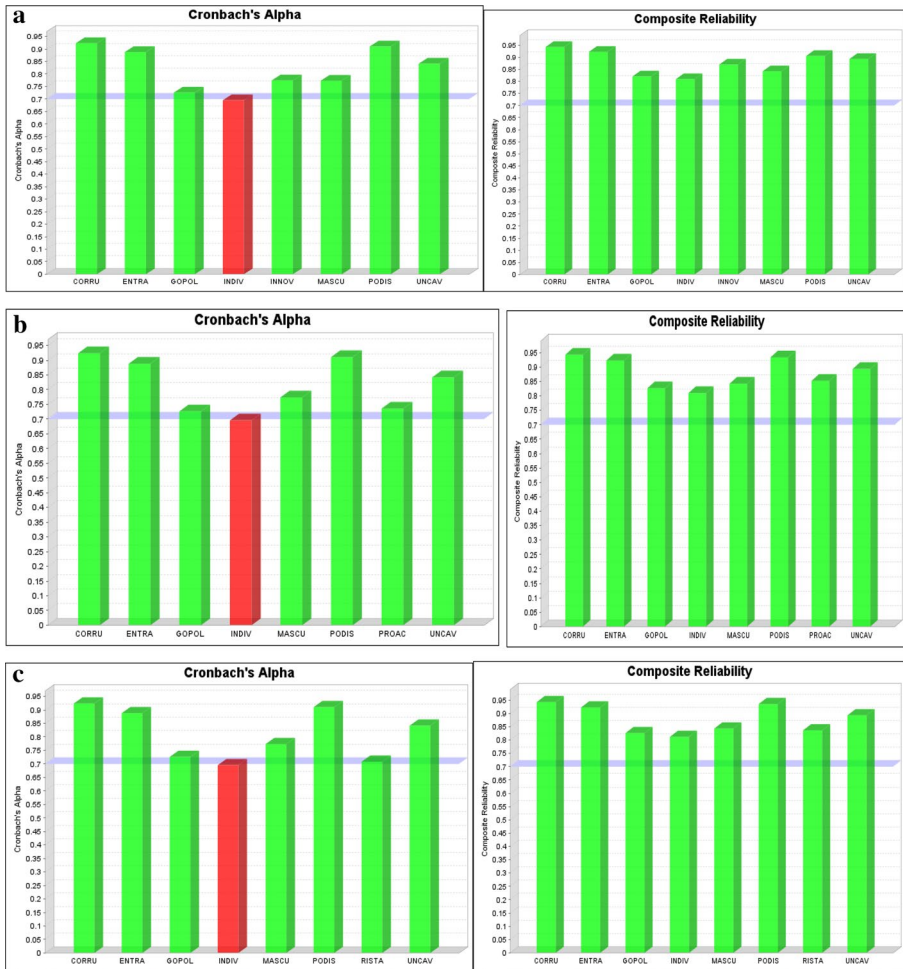
#### c. Discriminant validity

We used Fornell and Larcker criterion, Cross-Loading method, and Heterotrait-Monotrait ratio in conducting the discriminant validity test and presented the results below:

##### i. Fornell-Larcker criterion method

Table 2 presented the discriminant validity of the constructs using the Fornell-Larcker criterion. The result confirmed the hypothesized assertion that the constructs have significant discriminant validity. This is because the diagonal values across all the constructs, except government policies, are significantly higher than the corresponding values in row and column. This result supported our initial assertion that the constructs have significant discriminant validity.



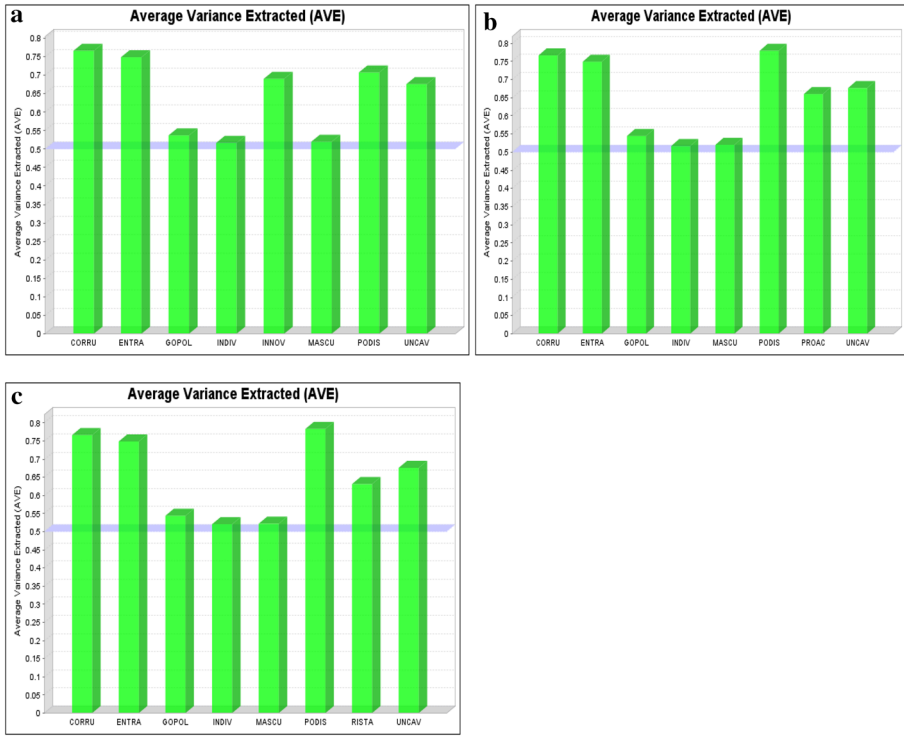


**Fig. 5** a Cronbach's alpha and composite reliability of institutional factors, corruption, and innovation, b Cronbach's alpha and composite reliability of institutional factors, corruption, and proactiveness, c Cronbach's alpha and composite reliability of institutional factors, corruption, and risk-taking

However, the coefficients of 0.733 in the third construct, i.e., government policies (GOPOL), is lower than the coefficient of 0.755 of the column of intersections between this variable and uncertainty avoidance (UNCAV), and this highlights the relative discriminant validity problem and the extent to which these constructs overlap.

ii. Cross-loading method

We used cross-loading method to further examined the discriminant validity and ascertain the reason for the overlapping between government policies (GOPOL) and uncertainty avoidance (UNCAV). We compared all indicators' cross-loadings at both rows and columns, and confirmed our assumption that the constructs have significant discriminant validity (see cross-loading method attached in online appendix vii). This table showed that most of the loadings



**Fig. 6** Average variance extracted of institutional factors, corruption, and EO **a** Innovation **b** Proactiveness **c** Risk-taking

**Table 2** Fornell-Larcker criterion (institutional factors, corruption and innovation)

	CORRU	ENTRA	GOPOL	INDIV	EO	MASCU	PODIS	UNCAV
CORRU	<b>0.875</b>							
ENTRA	- 0.809	<b>0.865</b>						
GOPOL	0.517	- 0.606	<b>0.733</b>					
INDIV	- 0.608	0.466	- 0.662	<b>0.719</b>				
EO	- 0.767	0.694	- 0.436	0.611	<b>0.831</b>			
MASCU	- 0.550	0.630	- 0.617	0.537	0.458	<b>0.721</b>		
PODIS	- 0.083	0.106	- 0.406	0.435	0.106	0.348	<b>0.841</b>	
UNCAV	- 0.568	0.621	- 0.755	0.565	0.457	0.649	0.510	<b>0.822</b>

*INNOV* Innovation; *CORRU* Corruption; *ENTRA* Entrepreneurship Training Programs; *GOPOL* Government Policies; *INDIV* Individualism; *MASCU* Masculinity; *PODIS* Power Distance; *UNCAV* uncertainty avoidance

of the indicators are higher than the loading of all other latent variables at both rows and columns (see the highlighted loadings in the cross-loading method table attached in online appendix vii and compare them with the corresponding loadings in the rows and columns).

**Table 3** Heterotrait-Monotrait ratio (HTMT)

	CORRU	ENTRA	GOPOL	INDIV	INNOV	MASCU	PODIS	UNCAV
CORRU								
ENTRA	0.895							
GOPOL	0.626	0.770						
INDIV	0.706	0.569	0.883					
INNOV	0.902	0.837	0.524	0.797				
MASCU	0.593	0.718	0.842	0.738	0.529			
PODIS	0.080	0.101	0.483	0.592	0.142	0.479		
UNCAV	0.629	0.713	<b>0.957</b>	0.760	0.561	0.818	0.623	

*CORRU* = Corruption; *ENTRA* = Entrepreneurship Training Programs; *GOPOL* = Government Policies; *INDIV* = Individualism; *INNOV* = Innovation; *MASCU* = Masculinity; *PODIS* = Power Distance; *UNCAV* = uncertainty avoidance

However, the table highlighted that the loading of one item measuring government policies ( $GOP3 = 0.590$ ) is lower than the loadings of three items measuring uncertainty avoidance ( $UA1 = -0.695$ ;  $UA2 = -0.647$ ;  $UA4 = -0.593$ ) (see highlighted loading of GOP in column 3 and compare them with the loadings of UA in the same column). The result confirmed the outcomes of the F&L criterion, which established that all constructs, except government policies, have reasonable discriminant validity. This test attributed to lack of discriminant validity in government policies (GOPOL) to the overlapping between GOP3 and three items measuring uncertainty avoidance (*UA1*, *UA2*, and *UA4*).

iii. Heterotrait-Monotrait ratio (HTMT) method

We used Heterotrait-Monotrait Ratio (HTMT) to address the insensitivity of F&L and cross-loading criterion and estimated the correlation between the constructs as indicated in Table 3 below:

Having ratios of less than 0.95% across most of the constructs, we confirmed our initial assumption that the constructs have significant discriminant validity. Nevertheless, the outcomes of the HTMT test confirmed the earlier problem between government policies (GOPOL) and uncertainty avoidance (UNCAV) (*HTMT ratio* = 0.957 at a 95%).

Having significant results across these tests, we accepted that the constructs adapted to examine these theories across informal enterprises in developing countries have significant discriminant validity. Therefore, we concluded that these constructs are independent of one another. The weakness in some of the constructs will be resolved by editing the instrument, reconsidering questions across the concerned variables, and modifying the loading to eliminate any similarities and ambiguity before the general fieldwork.

## 5 Discussion

This study validated the measurement scale of institutional factors (political, cognitive, and cultural institutions), corruption and EO (innovativeness, proactiveness, and risk-taking). We examined the data structure, validity, and reliability of the constructs, items, and measurement scales of these variables, and explored the extent to which they are valid and reliable at informal enterprises in developing countries. The study discovered significant data structure, reliability, and convergent and discriminant validity (Hair et al 2017; Costello and Osborne 2005; Gorsuch 1988).

We established significant factor structure in the dataset, as evident in the EFA and CFA. The anti-image matrix established significant correlations between the items measuring the constructs, and correlation matrix confirmed significant correlations and absence of multicollinearity problem in the dataset (Costello and Osborne 2005; Briggs and Cheek 1986). Equally, the findings established that most of the items shared common variance, as evident in the significant communalities coefficients (Costello and Osborne 2005; Gorsuch 1988). The factor loadings supported the inclusion of most of the items in the instrument (Briggs and Cheek 1986; Gorsuch 1988). However, a few items have an insignificant correlation with other items, and weak commonality coefficients. These include one item measuring innovation (INN2), power distance (PD3), individualism (IND1), government policy (GOP5), and two items measuring entrepreneurship training programs (ETR5 and ETR6) (Costello and Osborne 2005; Gorsuch 1988). These suggested their removal because they are redundant items (Briggs and Cheek 1986; Gorsuch 1988). Equally, the study established reasonable model fitness as evident in the CFA (Brown 2015; Harrington 2009; Briggs and Cheek 1986).

### 5.1 Entrepreneurial orientation

Although informal enterprises have weak financial resources to undertake research and development and radical innovation, they innovate at their level by modifying existing products, processes, and markets, thus, we defined innovation at informal enterprises based on incremental innovation (Garba et al. 2019; Halliru et al. 2018; Katila), access using four items. These consisted of *product, process, market, and structural modification*. The result shows that out of four items adapted in measuring this construct, three (product, process, and market innovation) were internally consistent with one another. However, one item, such as *structural innovation*, proved insignificant and lacked consistency with other items at the level of these enterprises. Also, the finding is consistent with other studies that measure innovation using three proxies (Covin and Slevin 1989; Miles and Arnold 1991).

Likewise, we established that all the three elements adapted to measure risk-taking and proactiveness in informal enterprises in developing countries are internally consistent and reliable parallel with other studies that adapted and measured these constructs across large firms in developed countries (Covin and Slevin 1989; Miles and Arnold 1991). The risk-taking's elements include *whether informal enterprises act boldly and aggressively towards entrepreneurial opportunities; engage in bold and quick decisions to achieve objectives irrespective of cost and probability of failure; and undertake high-risk projects because of the probability of high returns* (Covin and Slevin 1989; Miller and Friesen 1982). Likewise, the three proxies adapted to assess proactiveness in the context of these enterprises include *the ability to be among the first to initiate changes before any other enterprise;*

*modify existing products/services and or processes before any other competitor; adapt to competition and undoes most of the competitors' initiations.*

## 5.2 Institutional theory

We also used government policies to assess the political dimension of institutional theory (Urban 2019; Kostova 1997; Tan 1996). We adapted four items in measuring this construct. These include *the availability of laws that protect and support informal enterprises; quality standards of the laws toward informal enterprises; incentive policies to informal enterprises; and the existence of relevant regulatory bodies that promote the quality of informal enterprises* (Zoogah et al. 2015; Cummings 1996). The reliability result shows that all these four items adapted to measure this construct were significantly consistent with one another (Kostova 1997; Cummings 1996). Consequently, we established that studies across informal enterprises in developing countries could examine the political factor of institutional theory using these items.

Furthermore, out of six items adapted to measure entrepreneurship training, four have significant internal consistency with one another. These include *the ability of the training programs to improve the entrepreneurial knowledge and skills, whether the training programs improve the technical/ vocational knowledge and skills, the ability of the training programs to improve the business management skills, aptness of the training programs in expanding knowledge of business financing* (Busenitz & Lau 1996). However, two items, such as *the capacity of the training programs to promote knowledge of the organizational structure, and appropriateness of the training programs in stimulating the entrepreneurial competencies*, lack internal consistency with other items. This result confirmed the insignificant effect of firm structure as earlier observed from the analysis of innovation.

Furthermore, we discovered significant internal consistency in most of the items adapted to measure Hofstede's 4-D model of culture in developing countries. This framework consists of uncertainty avoidance, power distance, masculinity, and individualism (Kreiser et al. 2010; Hofstede, 1983). After the reliability test, we discovered that all items used to measure masculinity and uncertainty avoidance are internally consistent. Therefore, we established that four items could be used to measure uncertainty avoidance. *These include firms' perception about competition, encouraging uncertain initiatives characterized by inherent environmental complexities and ambiguities, breaking the rules in the best enterprises' interest, and accepting decisions even when managers have no precise answers to future outcomes.* Whereas, five items: *enterprises' perception of decisive action and its necessity for achieving objectives, attributing failure to people, seeking opportunities for advancement to a high level as the utmost important goal, nature of the approach to solving problems, and enterprises' reward and value for self-confidence*, could be used to assess masculinity at the informal enterprise of developing countries.

Likewise, four items: *enterprises' perception about consulting employees before making decisions, using power and authority in dealing with employees, the delegation of essential tasks to employees, and employees' disagreement with employees some management's decisions*, could be used to assess power distance in the context of these enterprises. However, one item measuring power distance, i.e., *enterprises' perception of the off-the-job social contacts and interaction between managers and employees*, lacks internal consistency with the other four items. As well, we argued that individualism could be assessed using four items. These include *enterprise recognition for individual autonomy and independence; recognition and values of individual achievements and efforts; emphasis*

between individual or group success, and between individual initiatives and employees' loyalty and the sense of duty. Nevertheless, one item of individualism, i.e., "enterprises' emphasis between individual rewards or group welfare, lacks internal consistency with the other four items, as evident in the lower loading of this item.

We also confirmed that corruption at informal enterprises could be examined using six items adapted from World Bank worldwide survey (2012). These include *charging illegal fees by a government official, level of illegal transactions, government effort to stop illegal charges, enterprises' perception of illegal payment, and necessity of making an illegal payment to undertake business activities*. All these items, except the *necessity of making an illegal payment to undertake business activities*, are internally consistent; hence we established the importance of using them in measuring this construct at the informal enterprise.

After establishing the reliability of the instruments, we also confirmed the significant convergent and discriminant validity of the constructs adapted to measure these theories at the informal enterprises of the developing countries. The existing studies argued that firm EO could be assessed using three constructs: innovation, risk-taking, and proactiveness (Covin and Slevin 1989; Miller 1983). The findings show that all the three proposed measures adapted to assess EO at informal enterprises in developing countries are positively correlated with the alternative measures of the constructs and proved independent from one another (Runyan et al. 2012; Kreiser et al. 2010). Likewise, all the three constructs adapted to measure institutional factors, such as entrepreneurship training programs, government policies, and Hofstede framework of culture, achieved significant correlation with an alternative measure of the constructs and proved independent from one another (Covin and Miller 2014; Hofstede et al. 2005).

Nevertheless, few items lack internal consistency with other items and caused significant problems in the convergent and discriminant validity of the constructs. The lower loading in such items caused low correlation and weak discriminant validity, as highlighted in the convergent and discriminant validity coefficients. However, after removing these items, we achieved significant results and confirmed that the constructs' psychometric properties are sufficient to measure the nexus between these theories at the informal enterprises in developing countries. However, we established that some items are too important, and their removal will further increase the problem. For example, government policies and uncertainty avoidance have minor discriminant validity issues, highlighting the extent to which such variables overlap. We discovered that inadequate cross-loading in the one essential item of measuring government policies is responsible for causing this problem.

## 6 Conclusion and recommendations

The study aims to explore the extent to which the measures of EO and institutional factors are valid and reliable for informal enterprises in the context of a developing country. Based on the model assessment indices such as EFA, CFA, reliability, and validities assessment indices, we confirmed that most of the constructs, items, and measurement scales adapted to measure *institutional factors (political, cognitive, and cultural institutions), corruption and EO (innovativeness, proactiveness, and risk-taking)* had achieved factor structure, reliability, convergent and discriminant validity. The paper contributed in defining and validating the key constructs, items, measurement scales, and indices of institutional factors (Kreiser et al. 2010; Hofstede 1983; Covin and Miller 2014), and EO (Covin and Slevin

1989; Miller 1983) at the context of informal enterprises in developing countries, which address the uniqueness of these enterprises and contributes to social sciences methodological development. To better understand the factor structure, reliability, convergent and discriminant validity of these constructs, items, and measurement scales, we recommended future studies to use them to assess the empirical nexus between these theories in the context of informal enterprises in developing countries. The researchers can confidently use the measures evaluated in this study in the informal enterprises context given the evidence of validation provided in this study. The measures can also be used in other developing countries where the context is similar to Nigeria.

## 6.1 Limitations and future research

The study only defined and validated the key constructs, items, measurement scales and indices of assessing *institutional factors, corruption and EO* at informal enterprises. Future studies can use them to assess these theories across these enterprises. The sample size is another limitation of this study. We used only 45 sample informal enterprises given that the study is a pilot study designed to validate measures of *institutional factors (political, cognitive, and cultural institutions), corruption and EO (innovativeness, proactiveness, and risk-taking)*. Another limitation is the method of data collection. The study collected data through only one channel i.e. WhatsApp due to the pandemic. Nevertheless, others studies have also done so to enhance response rate during the pandemic.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s11135-022-01357-1>.

**Funding** Not applicable.

**Data availability** The data that support the findings of this study are available from the corresponding author, Ibrahim Kabir, upon reasonable request.

## Declarations

**Conflict of interest** We declare that there is no conflict of interest in the cause of this study.

**Ethical approval** This study was approved by the Ethics Committee of the School of Business & Economics, University of Brunei Darussalam.

**Consent to participate** All the authors voluntarily agree to participate in this research study.

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