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Financial Inclusion and the Sustainability of Family Businesses: Impacts on Household Livelihoods

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Abstract

In the context of the empirical literature, the potential of a family business and financial inclusion to drive household livelihood has been a subject of exclusion. Against this backdrop, this study empirically examines how family business and financial inclusion contribute to household livelihood in Saudi Arabia. This study is the first to empirically examine how family business and financial inclusion drive household livelihood using the instrumental variable probit model. The study engaged the probit regression. However, to control for the issues of endogeneity, the study applied the instrumental variable probit regression with data sourced from the World Bank Global Financial Index 2021. Three indicators of financial inclusion were used, which are ownership of a financial account, debit card and online transactions. The results show that family business and financial inclusion are positively and significantly associated with household livelihood. This implies that the ownership of a family business is likely to improve household livelihood by 0.3. On the other hand, an increase in ownership of a financial account, ownership and usage of a debit card and online transactions is associated with the probability of a household being in the fourth and richest 20% income quantile by 0.4.

Keywords: *Entrepreneurship, Financial Inclusion, Household Enterprise, Household Livelihood*
JEL Code: D13, M13.

Introduction

Several socioeconomic, political, financial, technological, and physical factors exert varying degrees of influence on households' livelihood. Admittedly, the degree and the eventual outcome of such influence may differ from one household to another and from country to country. Hence, these outcomes are expected to assume distinct dimensions in developing and developed economies. As an economic agent, the household and its associated microeconomic activities, such as consumption and investment dispositions, represent key components of aggregate economic activities (Bahmani-Oskooee & Maki Nayeri, 2020; Feng et al., 2021; Uche, Chang & Gohar, 2022; Osabohien et al., 2020; Osabohien et al., 2022a) that stimulate both economic growth and overall development.

In most economies, household expenditure constitutes a larger proportion of national income (Bahmani-Oskooee & Maki Nayeri, 2020; Osabohien et al., 2022b) than the contributions of other economic agents. In this instance, policies are tailored towards empowering and equipping households to ensure their optimal contributions to aggregate economic progress. Hence, the overall and optimal functionality of the

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macroeconomic system is constrained when the full potential of the households is not realized. Given the pivotal roles of household contributions to the local and aggregate economy and the need to ensure its continuous optimal contributions, it becomes expedient to understand relevant factors that influence its well-being at all times.

Accordingly, income remains the most prominent among other macroeconomic factors that affect household well-being (Osabohien et al., 2021c; Uche, Chang & Effiom, 2022). Other factors are inflation (Iyke & Ho, 2020), the exchange rate (Bahmani-Oskooee, Kutan & Xi, 2015; Osabohien et al., 2020), tax rates (Gahtani et al., 2020; Osabohien et al., 2022a), and household credit (Chimere & Nwachukwu, 2020), among others.

Notwithstanding that several influential factors have been explored, it is surprising that very little is known about the influence of family business and financial inclusion on households' well-being in most developing countries. In this instance, Daniels (1999) reports that irrespective of households' participation in entrepreneurial activities, approximately 72% remain within the poverty line, whereas Kindangen & Tumiwa (2017) and Maksimov et al. (2017) contend that entrepreneurship engagements improve household livelihood significantly. On the other hand, while Manja & Badjie (2022) and Meng & Xiao (2022) affirm a deleterious influence of both formal and informal finance on household livelihood, Nsiah et al. (2021) admit that financial inclusion improves household livelihood in sub-Saharan African countries (SSA). Meanwhile, Ndlovu & Toerien (2020) posit that the effects are heterogeneous and more favourable to wealthier households than their poorer counterparts.

As expected, understanding the precise influence of these non-traditional factors on household livelihood is of immense importance for both fiscal and monetary policy formulations. This argument hinges on the background that several households in most countries now embrace entrepreneurship as a functional means of livelihood (Cheratian et al., 2019; Daniels, 1999) and community development (Chatterjee et al., 2022). Likewise, the ever-increasing rate of unemployment witnessed in most economies compels most households to adopt self-reliance through entrepreneurship as a viable alternative (Apergies & Payne, 2016; Osabohien et al., 2022a; 2022b; 2022c).

Furthermore, household welfare is among the key objectives of macroeconomic policies; hence, policies that ensure the attainment of this important goal at all times are expedient. Additionally, financial inclusion is seen as a formidable means of improving household welfare (Churchill & Marisetyy, 2020; Chakrabarty & Mukherjee, 2022). However, the realization of such an objective remains doubtful, making it a highly constable topic among macroeconomic analysts. Apparently, there is a need to explore further, mostly in countries where such narratives are critically lacking.

Following the above, this study, for the first time, provides an insightful and distinctive empirical exposition of the influence of family business and financial inclusion on household livelihood in the context of Saudi Arabia. This choice is predicated on several critical factors. Essentially, the Kingdom of Saudi Arabia is one of the fastest-growing economies in the Middle East and North African (MENA) region (Alshahrani & Alsadiq, 2014) and a notable emerging economy with abundant natural resources (Finta et al., 2019). Interestingly, the country has witnessed several policy adjustments and moderations in recent times in the areas of tax policies, energy prices and other fiscal stimulus (Gahtani et al., 2020). Likewise, among other critical areas of Saudi Arabia's economic blueprint (Saudi Vision 2030 [SV2030]) is the empowerment of all households through the proceeds of oil sales (Hasanov et al., 2022).

Specifically, the programme aims at stimulating long-term aggregate economic growth through direct cash transfers to all citizens through the Citizen Account Program (CAP), private sector financial support, the extension of soft loans to individuals and the implementation of Giga projects as contained in the SV2030 blueprint (Hasanov et al., 2022). Additionally, the increasing rate of population in the Kingdom of Saudi Arabia and the rising unemployment rate have prompted the government to increase its public spending aimed at

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altering the subsisting economic structures towards a private sector-driven economy. In all these, the household remains at the epi-Centre and the most essential fulcrum to drive these reforms.

Given this understanding, the current study aims to provide a clear-cut account of the impacts of family business and financial inclusion on household livelihood in Saudi Arabia, which has been a subject of exclusion in the empirical literature, to the best of our knowledge. Consequently, the study envisages a positive relationship between family business and household wellbeing, as well as a positive relationship between financial inclusion and household well-being.

Generally, this study is a modest extension of the literature given the notable and distinctive steps taken herein. First, based on available information, this study is the first to empirically assess the contributions of both family business and financial inclusion to household well-being in Saudi Arabia. Essentially, the ability to uncover the willingness of Saudi Arabia's households to undertake family business activities through a well-framed survey stands the study out from others. Second, very little is known about the subsisting dynamics of financial inclusions and household livelihood in most emerging countries, especially the Kingdom of Saudi Arabia. Third, the adoption of novel and enhanced econometrics techniques for its empirical analysis is also notable given that most previous studies relied on techniques that lack flexibility and the dynamism of the novel estimator applied in the present study.

Given these steps and the eventual policy prescriptions, government agencies and other policymakers will benefit immensely and draw more insights on how to further enhance household livelihood in this country. Likewise, investors and households will be guided on the essential steps towards ensuring their welfare at all times via entrepreneurship participation and inclusive finance. The rest of the study is organized as follows: The next section (section two) reviews the relevant literature, followed by section three, which exposes the materials and methods. The penultimate section presents the data analysis and discussion, while the last section contains the conclusion and policy prescriptions.

Literature Review

Theoretical Literature

The theory considers entrepreneurship an essential fulcrum of economic growth and development, poverty reduction and household welfare enhancement (Macksimov et al., 2017; Bastian et al., 2019). This perspective can be explained by the expected utility theory of entrepreneurship (Douglas & Shephard, 2002; Saridakis et al., 2021), which explains that individuals engage in entrepreneurial activities when the perceived pecuniary and nonpecuniary rewards from such acts outweigh other available options. On this basis, they began to earn meaningful income through which they discharged their daily responsibilities and consequently contributed to national income.

In another dimension, the decision to undertake entrepreneurial activities is also explained by the pull and push factors of entrepreneurship intentions (Eijdenberg & Masurel, 2013; Murnieks et al., 2020; Saridakis et al., 2021). Accordingly, Saridakis, Menoza et al. (2016) explain that the "push" factors for the option to embark on entrepreneurial activities are necessitated by some negative external factors, such as poor remunerations from paid employment and some perceived discrimination within the labour market. On the flip side, Martiarena (2020) notes that the "pull" forces motivating entrepreneurial engagement include the inner desire for a change of lifestyle, self-autonomy and the quest for potential higher income.

Pertaining to the links between financial inclusion and household livelihood, several theories have been extended in the past that established possible links between financial inclusion and household livelihood. For this study, we illustrate the dynamic nexus between the two variables based on the sustainability livelihood postulation (Serrat, 2008; Morse & McNamara, 2013) as well as finance-growth theory (Swamy, 2014).

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Accordingly, the former expresses a situation whereby household livelihood is improved and sustained through an inclusive financial system. Through the inclusive financial system, households are able to withstand financial uncertainties given their ability to own financial assets (Fiador & Amidu, 2021). The latter (finance-growth paradigm) illustrates that finance improves household welfare given that it leads to sustainable and inclusive economic development (Park & Mercado Jr, 2015). Implicatively, financial inclusivity is an essential strategy to ensure household well-being through drastic poverty reductions (Fiador & Amidu, 2021).

Empirical Literature

There are several empirical inroads to uncovering the underlying influence of entrepreneurship and financial inclusion on household livelihood. However, their opinions are both polarized and ambiguous. Meanwhile, such an empirical narrative is conspicuously lacking in the context of the Saudi economy. For an in-depth overview, this subsection presents a thematic account of these existing related studies.

Entrepreneurial Willingness/Family Business – Household Livelihood Nexus

In a bid to uncover the dynamic interactions of entrepreneurship willingness and household livelihood, Bruton et al. (2013), in a survey of 71 articles pertaining to the entrepreneurship – household wellbeing nexus, affirmed a positive relationship between the two variables. Likewise, the submissions of Adjognon et al. (2017) and Che Mat et al. (2017) upheld the household well-being-enhancing effects of entrepreneurship in Malawi and Malaysia, respectively. However, Adjognon et al. (2017) re-emphasized an unbalancing effect where households at the lower ebb of income distribution benefit more than those at the upper tail of income distributions.

More insights from the submissions of Kindangen and Tumiwa (2017) and Robeiro-Soriano (2017) affirmed the positive contributions of businesses to employment and poverty reductions (household wellbeing) in the cities of Bolaang and Mongondow as well as in the Valencia community in Spain. Furthermore, in a study of 20 developing countries that exclude Saudi Arabia, Dhahri & Omri (2018) uncovered that entrepreneurship is a critical driver of household welfare. This line of argument is also upheld by the submissions of Naminse et al. (2019) for two Chinese provinces, Manzoor et al. (2019) for Pakistan, Sri Lanka and India and Nguyen & Nguyen (2019) for Vietnam. Notably, the major drawback of these extant studies that essentially warrants the current investigation is their inability to simultaneously consider the influence of entrepreneurship willingness and inclusive finance on household livelihood, especially in the context of Saudi Arabia.

Furthermore, some recent studies, including Muhammad et al. (2021), Osabohien et al. (2022a), Osabohien et al. (2022b), Osabohien et al. (2022c) and Saridakis et al. (2021), re-emphasized that household well-being enhances the imperative of entrepreneurship in Nigeria, Pakistan and Uganda, respectively. Likewise, in very recent studies, Calabrò et al. (2022), Chikwira et al. (2022) and Pitafi et al. (2022) confirmed that entrepreneurship engagements improve household livelihood in Zimbabwe as well as in some selected rural and urban districts of Faisalabad. Irrespective of these popular opinions extolling entrepreneurship as a critical driver of household well-being, some studies have also extended contrary options about the dynamics. For instance, in a study focusing on 76 provinces in Thailand, Yanya et al. (2013) found that entrepreneurship produced an insignificant effect on household well-being. The submission of the study subsists even within three-panel estimation techniques including the Pooled OLS, Random Effects and Fixed Effects were considered.

The contrary opinion is further upheld by the submission of Najafizada & Cohen (2017) in the case of the Bamyan province of Afghanistan. Accordingly, this study submits that entrepreneurship's ability to improve household well-being is discriminatory where the populace is restricted within the poverty trajectory. Likewise, in a recent study, Chatterjee et al. (2022) argue that in the case of the Rajasthan state of India, most households remained within the poverty pyramid irrespective of their involvement in entrepreneurial activities. Undoubtedly, prior studies were unable to provide an unequivocal account of the impacts of a family business

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and financial inclusion on household livelihood given their conflicting analogies. In addition, our knowledge is restricted given that the peculiarities of some countries, such as Saudi Arabia, were not considered in these prior studies. On this realization, we, therefore, restate the first hypothesis in its null form:

Ho1: Family business does not enhance household livelihood in Saudi Arabia.

Financial Inclusion – Household Livelihood Nexus

On account of the influence of financial inclusion on household livelihood, there are still notable clouds of scepticism that beg for further clarification. From the affirmative viewpoint, Quach (2016) applied the difference-in-difference estimator in a study pertaining to the influence of financial inclusion on household welfare in Vietnam. Accordingly, the study affirmed a positive relationship between financial inclusion and household livelihood. The evidence of a positive affiliation between financial inclusion and household wellbeing is also supported by Park & Mercado, Jr. (2015) based on a study of developing Asian countries that unfortunately excludes the Kingdom of Saudi Arabia.

Likewise, studies such as Atamja & Yoo (2021), Bocher et al. (2017), Elhadidi (2018) and Tran et al. (2018) upheld the household well-being enhancing imperatives of inclusive finance in Cameroon, Ethiopia, Egypt and Vietnam, respectively. However, the submissions of Gloede and Rungruxsirivorn (2013) and Ibrahim et al. (2018) disapproved of the household livelihood-enhancing effects of inclusive finance, particularly in Thailand and Nigeria, respectively. This contrary view is also upheld by Mallick & Zhang (2019) in the case of Chinese households. Irrespective of these varying opinions, the dearth of studies pertaining to the Kingdom of Saudi Arabia remains a notable drawback.

Contradictory views on the influence of financial inclusion on household livelihood are also noted in very recent studies. For instance, Churchill & Marisetty (2020) affirmed that financial inclusion enhanced household livelihood in 45000 Indian households. This household livelihood-enhancing effect of inclusive finance is widely upheld by the submissions of Fiador & Amidu (2020) in the case of Ghana, Ofori-Abebrese et al. (2020) for 33 sub-Saharan African countries, Chakrabatty & Mukherjee (2022) for India, Hidayat & Sari (2022) for Indonesian households, Lin & Zhang (2022) for Chinese households and Mahmood et al. (2022) for Pakistani households and is invalidated by the submission of Lai et al. (2020) in the case of Chinese households. This contradictory assertion is further upheld by very recent studies, including Chikwira et al. (2022) for Zimbabwe, Li et al. (2022) for China, Manja & Badjie (2022) for the Gambia and Meng & Xiao (2022) for Chinese households and Sarki-Nyako et al. (2022) for Ghana households.

In another dimension, Zou et al. (2021) established that inclusive fiancé has a heterogeneous effect on household well-being in China. Interestingly, Song et al. (2022) still upheld the heterogeneous influence of inclusive finance on household livelihood in China. Apparently, the conflicting submissions of these studies and the unavailability of studies pertaining to the Saudi economy are critical incentives for the current investigation that seeks to uncover, simultaneously, how these two afforested explanatory variables influence the livelihood of households in Saudi Arabia. Following this, we, therefore, restate the second hypothesis in its alternative form

Ho2: Financial inclusion improves household livelihood positively in Saudi Arabia.

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Materials and Methods

Model Specification

Given that previous studies (such as Anand et al., 2021; Calabrò, et al., 2022; Osabohien et al., 2022a, Osabohien et al., 2022b) published in recognized international business journals have not sufficiently modelled how family business and financial inclusion drive household livelihood in Saudi Arabia, this study model conditions household livelihood on family business, financial inclusion and other covariates. The study applies probit regression based on the fact that it overcomes the problems associated with the linear probability model: the estimated likelihood often falls within the range of 0 and 1, and the validation integrates the nonlinear impact of independent variables as well. Following the probit regression model (Carpena, 2016), to model the household livelihood (Y) as a function of independent variables (X), equation (1)

$$E(Y|X) = P(Y = 1|X) = \Phi(\alpha_0 + \alpha_1 X_1 + \cdots \alpha_n X_n) \quad (1)$$

$E(Y \mid Xi)$

where Φ is the standard normal increasing distribution function. Given that the cumulative distribution often ranges from 0 to 1, the probit models forces predicted likelihood falls within the range of 0 and 1 as well. In this case, the result from the ordinary least squares is no longer valid. This is based on the rationale that in the probit regression model, the coefficient to be estimated α_j(the α's is observed to be in the function Φ). In this case, the probit engages the maximum likelihood estimator (MLE). Precisely, the parameter to be estimated $(\acute{\alpha}_0, \ldots, \acute{\alpha}_n)$ that optimizes the log-likelihood function is shown in equation (2)

$$max \sum_{i=1}^{n} Y_i \,.\, ln[\Phi(\alpha_0 + \alpha_1 X_{1i} + \cdots \alpha_n X_{ni})] + (1 - Y_i).\ ln[\Phi(\alpha_0 + \alpha_1 X_{1i} + \cdots \alpha_n X_n)] \quad (2)$$

Because of the suspected issue of endogeneity, the study engaged the instrumental variable probit regression model (using the lag of the variables as their instruments). The instrumental variable probit regression matches the probit equation where one or more of the independent variables are endogenously predicted. The instrumental variable probit regression is used to fit the model due to the suspected issue of endogeneity. Specifically, the model is presented in equation (3).

$$y^*_{1i} = y_{2i}\alpha + x_{1i}\gamma + v_i \quad (3)$$

$$y_{2i} = x_{1i} + x_{1i}\Pi_1 + x_{2i}\Pi_2 + v_i \quad (4)$$

where $i = 1, \ldots, N, y_{2i}$ is a $1 \times p$ vector of dependent variables, x_{1i} is a 1 x k_1 vector of independent variables, x_{2i} is a 1 x k_2 vector of additional instruments, and the model for y_{2i} is stated in reduced form. By expectations, $(v_i, v_i) \sim$ N (O, Σ), where σ_{11} is standardized to categorize the equation. Similarly, α and γ are vectors of operational parameters, and Π_1 and Π_2 are metrics of the reduced-form parameters. This recursive model, y_{2i}, is shown in the equation for y^*_{1i}; however, y^*_{1i} is not observed in the model for y_{2i}; in its place, and we notice

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$$y_{1i} = \begin{cases} 1 & y^*_{1i} \geqslant 0 \\ 0 & y^*_{1i} < 0 \end{cases} \quad (5)$$

The order condition for identification of the structural parameters entails that $k_2 \geq$ p. Apparently, Σ is not block diagonal amid v_i and v_i; then, the likelihood of y_{2i} being endogenous is not certain. This is obtained given the condition that (v_i, v_i) is independent and identically distributed $(iid)$for all i.

Data Variables and Summary Statistic

The study made use of 2021 Global Financial Index (Global Findex) by the World Bank (World Bank, 2021). Inclusive financial resources are the requirement for the actualization of the sustainable development goal of reducing all forms of inequalities (SDG-10), among others, necessary to improve livelihood and overall growth and development. The World Bank Global Findex databank has been a good and trusted avenue for data on access to financial services from payments to savings and borrowing. The data offer approximately 300 proxies on financial themes such as ownership of account, payments, savings, credit and financial resilience, among others (World Bank, 2021). The data in the global financial index cover topics for all gamut of financial resources across country, region and income group. For this study, the Global Findex for Saudi Arabia is used. It consists of 1,018 respondents across income groups.

The variables used in the model and the summary statistics are presented in Table 1. The variables include household livelihood, which is the outcome variable (1 if the household is within the fourth 20% and richest 20% income quantile and 0 if the household income quantile is among the poorest 20%, second 20% and middle 20%). The two key independent variables include family business and financial inclusion. Family business is measured by 1 if the household has saved or borrowed in the last 12 months with the purpose of starting or expanding a family business and 0 otherwise. Three variables were used to capture financial inclusion: ownership of account (1 if the respondent has an account in a financial institution and 0 otherwise), ownership and use of a debit card (1 if the respondent has a debit card and has used it in the last 12 months and 0 otherwise) and online transaction (1 if the respondent has made online transactions in the last 12 months using the internet with any electronic device and 0 otherwise).

Furthermore, household demographic and welfare characteristics such as age of the respondent (in years), educational level of the respondent (1 if the respondent has completed secondary education or more, and 0 if the respondent completed primary education or less), gender of the respondent (1 if the respondent is a male and 0 if the respondent is a female) and social protection or relief fund (1 if the household has received a relief fund from the government or donor agencies in the last 12 months and 0 otherwise).

Table 1. Variables and Summary Statistics

	N =1018		
Variable	Measurement	Mean	SD
Livelihood	1 if the household is within the fourth 20% and richest 20% income quantile and 0 if the household is within the poorest 20%, second 20% and middle 20% income quantile.	0.4390	0.4965
Family business	1 if saved or borrowed in the last 12 months with the purpose of starting or expanding a family business and 0 otherwise	0.2035	0.4027
Financial account	1 if the respondent has an account in a financial institution and 0 otherwise	0.7250	0.4468
Debit card	Have a debit card and used it in the last 12 months	0.6317	0.4827
Online transactions	1if the respondent has made online transactions using the internet for the past 12 months, and 0 otherwise	0.2141	0.4104

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Age	Age of the respondents in years	32.5531	11.8855
Education	1 if the respondent has completed at least secondary education or more and 0 if complemented primary education or less	0.8811	0.3238
Gender	Male =1, female = 0	0.6415	0.4798
Relief fund	1 if the household has received an emergency relief fund from the government or donor agencies and 0 otherwise	0.5560	0.4971

Source: Authors' compilation using the Global Findex (World Bank, 2021)

The outcomes of the summary statistics in Table 1 reveal some interesting attributes of the relevant datasets, including the expected mean values and their spread. For instance, the average household wellbeing is 0.4390, while its spread is 0.4965. This implies that 43.9% of the households fall within the fourth 20% and richest 20% of income quantiles, meaning that they are rich and improved households. On the other hand, a relatively larger proportion of the households, 56.1%, are considered poor, as they fall within the poorest 20%, second 20% and middle or third 20% income quantiles.

Furthermore, family business has an expected mean value of 0.2035 and a standard deviation of 0.4027. This shows that approximately only 20.4% of the respondents have saved or borrowed in the last 12 months with the purpose of establishing or expanding a family business. This shows that the proportion of households that own a family business is relatively small. Among the financial inclusion variables, financial account has a mean value of 0.7250, debit card usage 0.6317, and online transactions 0.2141. Accordingly, their measures of dispersion are 0.4468, 0.4827 and 0.4104, respectively. This implies that 72.5% of the respondents owned an account at a financial institution. On the other hand, 63.2% of the respondents owned a debit card and had at least been used in the last 12 months. While the ownership of account and usage of a debit seem to be good, on the contrary, only 21.4% of the respondents have engaged in online transactions for the last 12 months using an electronic device.

The average age of each participating respondent is 32.553 with a standard deviation of 11.8855. This shows that the mean age of the respondents is approximately 33 years. Likewise, on average, the education attainment of each household is 0.8811 with an attendant spread of 0.3238. This implies that a high proportion of the respondents, 88.1%, completed secondary school more, while a lower proportion, 11.9%, of the respondents completed primary education or less. For gender and relief funds, the expected values are 0.6415 and 0.5560, respectively. Their standard deviations are 0.4798 and 0.4971, respectively. This implies that a higher proportion of the respondents, 64.2%, are male, while a lower proportion, 35.8%, of the respondents are female. Similarly, it is surprising to observe that 55.6% of the households have received relief materials in the last 12 months prior to the survey. This is justified by the fact that the period the data was collected (2021) was the peak period of COVID-19 when relief materials are being distributed in the form of social protection by the government and donor agencies to mitigate the impact of socioeconomic shocks orchestrated by the COVID-19 pandemic.

Results and Discussion

In line with the objectives of the study and the need to provide in-depth analysis that enhances policy guidelines towards optimal household functionality, several unique steps were taken herein. In this regard, the study engages three distinctive econometrics estimation techniques, including the conventional Ordinary Least Square (OLS), Probit and Instrumental Variable Probit (IV-Probit) models. The outcomes of these models are summarized in Table 2, where the outcomes of the OLS, probit and IV-probit are contained in columns 1 to 3 accordingly. For brevity, the estimates of the OLS model were not interpreted. It is imperative to highlight that the influences of the selected financial inclusion indicators on household wellbeing were considered separately in each model to avoid multicollinearity.

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Given that the value of the Wald test, the text of exogeneity of the instrumented variables, across estimates is significant, the null hypothesis of no exogeneity is rejected, and the study accepts the alternate hypothesis. This means that the issue of endogeneity has been controlled with instrumental variable probit regression. The probability and chi-square (Prob > F/Prob > χ^2) values, which are significant across estimates, show that, jointly, the exogenous variables are significant in explaining the probability of improvement in household livelihood. The outcome of the probit model is consistent within the IV-probit model. This suggests the critical roles of these factors in ensuring the enhancement of household well-being in Saudi Arabia.

On the effect of a family business on household wellbeing, the results indicate significant positive relationships both for the probit result and IV-probit model. Hence, it can be said that family business and financial inclusion are significantly and positively related to the likelihood of a household being in the fourth 20% and richest 20% income quantiles (improved livelihood). The indicators of financial inclusion are significantly and positively related to the likelihood of improved household livelihood. With respect to the ownership and usage of a debit card, an increase in the usage of a debit card by one person, all things being equal, is associated with a 0.24 improvement in household livelihood. Similarly, an increase in the number of individuals having a financial account and engaging in online transactions by one person is associated with a 0.34 improvement in household livelihood, all things being equal.

For the IV-Probit estimates, having family business is positively associated with household income quantile. This implies that an increase in the establishment and expansion of a family business increase the probability of improvement in household livelihood (income quantile) by 0.1 and 0.9, respectively. Having a debit card is positively and significantly associated with the likelihood of being in the fourth and richest 20% income quantiles. This implies that an increase in the ownership of a debit card by one person is associated with a 0.1 increase in the likelihood of improvement of household livelihood. This suggests that in relation to those without a debit card, those having a debit have a 0.1 higher likelihood of livelihood improvement.

This outcome corroborates the submissions of Adjognon et al. (2017), Osabohien et al. (2022a) and Che Mat et al. (2017) in the case of Malawi, Nigeria and Malaysia, respectively. On the basis of this outcome, the null hypothesis is therefore rejected, as the study concludes that family business is a significant positive predictor of the probability of the improvement of household livelihood. On the influence of financial inclusion indicators on household well-being, the following empirical evidence subsists. First, within the probit model, when the influences of the other financial inclusion series are held constant, the likelihood of the improvement in household wellbeing is further enhanced by 0.4 given that the individual has a debit card.

The household well-being enhancing effects of financial inclusion are also observed for each indicator of financial inclusion when the effects of other indicators are held constant. The outcome supports the assertions of some prior literature (such as Ofori-Abebrese et al., 2020; Chakrabatty & Mukherjee, 2022; Hidayat & Sari, 2022; Osabohien et al., 2022b) confirming that an inclusive financial system is a veritable tool that could be relied upon for enhanced household wellbeing. In the same way, the outcomes of the IV-probit model indicate that among the indicators of financial inclusion considered herein, all are positively and significantly associated with the probability of the household being in the fourth 20% and richest 20% income quantiles.

Specifically, the likelihood of a household being in the fourth 20% and fifth (richest) 20% income quantiles is conditioned on the number of households that have a financial account. Notably, this is also said about households having a debit card or engagement in an online transaction. This outcome recorded in the IV-probit model is of critical policy importance. Remarkably, unlike the probit model, the IV-probit regression controls for endogeneity issues, which, if not circumvented, might result in spurious results. Likewise, the outcome portrays the submissions of Zou et al. (2021) and Song et al. (2022) that upheld that financial inclusions provide a heterogeneous influence on household wellbeing in China. On this score, policies that could guide against

Journal of Ecohumanism
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such discriminatory effects are expedient to ensure the overall wellbeing of all households in the Kingdom of Saudi Arabia. Meanwhile, the alternative hypothesis is accepted, but it is noteworthy to highlight that such positive effects vary among the indicators of financial inclusion.

On the influence of the other enlisted moderating variables, the estimates of both the probit and IV-probit models indicate that age as a factor provides varying insignificant positive and negative effects on household well-being. This presupposes that age is not a formidable determinant of household well-being in Saudi Arabia. On the other hand, the estimates reveal that education is a significant positive predictor of the likelihood of improvement in household wellbeing in Saudi Arabia. Specifically, within the probit model, the probability of household wellbeing improves significantly by 0.7 given a 1-year increase in household education attainment. Interestingly, this outcome is consistent with each estimate within the probit model when each variable of financial inclusion was considered exclusively. However, the estimates of the IV-probit model indicate positive but insignificant relationships between education and likelihood of improvement in household wellbeing for each estimate where an indicator of financial inclusion were held constant.

Additionally, the results show that gender has a strong influence on household wellbeing. Specifically, within the probit model, in comparison with the female household, the result shows that male respondents have a negative association with livelihood. This means that the probability of male respondents being in the fourth 20% and richest 20% income quantiles is lower than that of their female counterparts by 0.23. This outcome is consistent even within the IV-probit model, where household wellbeing shrinks by approximately 0.4 in response to the probability of being a male respondent.

This outcome entails a glaring gender bias effect in the Kingdom of Saudi Arabia. Presumably, a situation whereby most women are not allowed equal/active participation with their male counterparts, such a negative influence of gender on household wellbeing, cannot be ruled out. Given the above, policies tailored towards equal participation of all genders and equal representation are germane for improved household well-being. Last, the estimates indicate that the government relief fund is a significant positive predictor of the probability of improvement in household wellbeing in Saudi Arabia. Accordingly, within the probit model, the likelihood of a household being in the fourth 20% and richest 20% income quantile improves 0.04 for each estimate in response to increases in government relief funds received by the household.

The estimates of the IV-Probit model reveal varying positive but insignificant relationships between the probability of a household being in the fourth and richest 20% income quantile and government relief funds across the three estimates. This largely portrays that government relief funds are a potential enhancer of household well-being. However, there is a need for improvements to ensure that all households benefit and maintain such an improving trend at all times.

To provide further insights, the study estimated the marginal effects of the enlisted series on household well-being Accordingly, the results of the marginal effect provide the average effects of the probabilities of the estimated results. Furthermore, the results of the marginal effect serve as a confirmatory test on the average effects and validate the probit results. The estimates of the marginal effects for the OLS, probit and IV-probit models are summarized in Table 4.2. As highlighted earlier, the results of the OLS estimations were not interpreted for brevity and due to the issue of endogeneity. However, it is noteworthy that the estimated OLS results are consistent with the probit results.

Interestingly, the marginal effects result of both the estimated probit model and IV-probit model are generally consistent with the nonmarginal effects results of Table 4.1. The marginal effects results confirm that family business ownership significantly promotes household welfare in the Kingdom of Saudi Arabia. The marginal effects result also illustrates the positive influential effects of each indicator of financial inclusion on household wellbeing, mostly within the probit model. However, within the IV-probit model, only debit card ownership ensures a positive and significant improvement in household wellbeing.

Journal of Ecohumanism
2025
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The marginal effects result also confirmed the outputs of the nonmarginal effects results with regard to the influence of age on household wellbeing. Invariably, this further justifies the earlier notion that age structure does not significantly affect household wellbeing in Saudi Arabia. Likewise, the marginal effects result validates the earlier submissions that education and government relief funds are significant positive predictors of household wellbeing in the KSA. This outcome is generally consistent in all the estimates where only an indicator of financial inclusion was considered for both the probit model and the IV-probit model.

As highlighted earlier, a welfare-centric government will ensure unhindered access to education as well as improvements in the relief funds for all households. Interestingly, this is in tandem with Vision 2030 [SV2030]) of Saudi Arabia, which seeks the empowerment of all households through the proceeds of oil sales. Notwithstanding, more robust packages that ensure that such programmes penetrate all households will ensure the actualization of the vision. Interestingly, such funds will further enhance family business and ultimately improve household welfare.

The negative influence of gender on household wellbeing does not change even when the marginal effects were considered. Accordingly, the marginal effects result for both probit and IV-probit models revealed a significant negative influence of gender on household wellbeing except for columns 5, 6 and 7, where, respectively, the influences of having a bank account, effecting an online transaction and having a debit card were considered exclusively. On this score, the emphasis on equal and active participation of all genders remains pivotal for the success of the SV2030. Invariably, the actualization of this lofty vision will remain elusive if the observed influence of gender bias on household wellbeing in the Kingdom is not curtailed or eliminated.

Journal of Ecohumanism
2025
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Table 2: OLS, Probit and Instrumental Variable Probit Results

	OLS			Probit			Instrumental Variable probit		
Variable	1	2	3	4	5	6	7	8	9
Constant	0.017 (0.718)	0.067 (0.332)	0.126 (0.064)	-0.984*** (0.000)	-1.275*** (0.000)	-1.101*** (0.000)	-0.721** (0.027)	-0.918 (0.020)	-0.824*** (0.041)
Family business	0.089* (0.049)	0.092** (0.018)	0.0930** (0.017)	0.242** (0.04)	0.251** (0.015)	0.259** (0.012)	0.110*** (0.000)	0.949 (0.597)	0.993*** (0.001)
Has a debit card	0.132*** (0.001)			0.351*** (0.001)			0.046* (0.081)		
Has account		0.150*** (0.00)			0.436*** (0.000)			0.327*** (0.035)	
Online transactions			0.1185*** (0.000)			0.326*** (0.001)			0.1304* (0.057)
Age	-0.003 (0.838)	0.003 (0.806)	0.007 (0.573)	-0.007 (0.869)	0.002 (0.666)	0.003 (0.389)	0.003 (0.297)	-0.003 (0.938)	0.003 (0.388)
Education	0.225*** (0.001)	0.110*** (0.000)	0.214*** (0.000)	0.670*** (0.001)	0.630*** (0.000)	0.668*** (0.000)	0.317 (0.185)	0.578 (0.124)	0.333 (0.170)
Gender	-0.085** (0.040)	-0.056* (0.080)	-0.053 (0.102)	-0.233** (0.038)	-0.141 (0.108)	-0.1229 (0.159)	-0.356*** (0.000)	-0.346 (0.251)	-0.362*** 0.000
Relief fund	0.1698*** (0.000)	0.148*** (0.000)	0.138*** (0.000)	0.446*** (0.000)	0.397*** (0.000)	0.365*** (0.000)	0.064 (0.694)	0.347 (0.243)	0.0925 (0.628)
R.sq./Pseudo R2	0.0933	0.090	0.082	0.071	0.068	0.060			
Prob > F/Prob > χ^2	0.000***	0.000***	0.000***	0.000***	0.0000***	0.000***	0.000***	0.000***	0.000***
Log-likelihood				-435.34	-650.72	-656.086	-1123.737	-785.839	-1122.565
Wald $\chi^2(6)$							233.56	69.11	233.56
WT of exogeneity							6.71	2.78	3.66

Note: WT means Wald test,*p > 0.1, **p > 0.05, ***p < 0.01 is significance at 10%, 5% and 1%, respectively

Source: Authors' compilation

Journal of Ecohumanism
2025
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Table 3. Marginal Effects

	OLS			Probit			Instrumental Variable probit		
Variable	1	2	3	4	5	6	7	8	9
Family business	0.090** (0.046)	0.096** (0.012)	0.098** (0.011)	0.097** (0.041)	0.099** (0.015)	0.102** (0.013)	0.949 (0.597)	0.993 *** (0.001)	0.109*** (0.000)
Debit card	0.134*** (0.000)			0.141*** (0.001)			0.327** (0.035)		
Financial account		0.158*** (0.000)			0.166*** (0.000)			0.130 (0.517)	
Online transactions			0.125*** (0.001)			0.129*** (0.001)			-0.046 (0.801)
Age	-0.002 (0.873)	0.005 (0.666)	0.001 (0.422)	-0.002 (0.904)	0.005 (0.666)	0.001 (0.389)	-0.003 (0.938)	0.007 (0.388)	0.003 (0.297)
Education	0.225*** (0.001)	0.204*** (0.000)	0.220 (0.44)	0.253*** (0.000)	0.227*** (0.000)	0.240*** (0.000)	0.578** (0.045)	0.333* (0.010)	0.317* (0.087)
Gender	-0.083** (0.042)	-0.0501 (0.118)	-0.045 (0.159)	-0.090*** (0.04)	-0.055 (0.109)	-0.048 (0.159)	-0.346 (0.251)	-0.362*** (0.000)	-0.356*** (0.000)
Relief fund	0.169*** (0.000)	0.148*** (0.000)	-0.045*** (0.000)	0.090*** (0.000)	0.154*** (0.000)	0.142*** (0.000)	0.347* (0.083)	0.092* (0.062)	0.064* (0.069)

Note: *p > 0.1, **p > 0.05, ***p < 0.01 are significant at 10%, 5% and 1%, respectively

Source: Authors' compilation

Conclusion

Several prior studies have considered the influence of various macroeconomic indicators on household livelihood. Surprisingly, to the best of the authors' knowledge, these studies were silent on how factors such as a family business and indicators of financial inclusions influence the critical economic agent - the household. Another great incentive for the current investigation is the dearth of empirical enquiries pertaining to factors that affect household welfare in the Kingdom of Saudi Arabia. Considering the above literature gaps, the current investigation considered it necessary to provide a far-reaching empirical narrative to enhance the trajectory of empirical literature from this perspective. Household surveys were undertaken in the case of the Kingdom, while probit and instrumental-variable probit models were adopted for the updated empirical inferences. Additionally, the study aims to contribute to the policy dialogue for the actualization of sustainable development of the goal of no poverty (SDG-1), zero hunger (SDG-2), decent work and economic growth (SGD8).

From the estimates, it was realized that household livelihood remains unimpressive without the contributions of both household business, financial inclusion, education and government relief funds. The estimates revealed that owning a family business is a critical factor in ensuring improved household livelihood at all times. The household-improving effects of family business remained consistent in all the models adopted. On their part, the various indicators of financial inclusion, including having a debit card, ownership of a bank account and performing online transactions, enhanced the probability of households being in the fourth and fifth 20% income quantiles (improved livelihood). Notably, the eventual effects of these indicators of financial inclusion on the probability of improvement in household livelihood vary considerably across each enlisted model.

The estimates also illustrate that among the control variables, the effects of age remained inconsequential on households' livelihood. On the other hand, the estimates of all the models revealed that education attainment remained a critical component of household livelihood. The study identified that over time, education improved the well-being of households in the Kingdom. In contrast, a negative relationship was discovered between household livelihood and gender. Notably, this connotes some iota of gender bias whereby most women are not given equal opportunity as their men counterparts. Similar to education, household livelihood is optimized through government relief funds.

Journal of Ecohumanism
2025
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Given the above empirical inferences, it is imperative to highlight the following options for policy considerations. First, to ensure continuous improvements in the livelihood of households, policies that promote the ownership of family businesses are essential. Second, it is of utmost importance that policies that will ensure deeper penetrations of financial inclusivity and redirect it towards household welfare are crafted and implemented. Through this, the observed discriminatory effects could be reduced. Third, the appealing influence of education on household livelihood cannot be overemphasized.

Remarkably, when more households enjoy unhindered access to education, the success of Vision 2030 [SV2030]) becomes more realistic. Fourth, policies that address the issue of unequal gender participation are critical towards ensuring household livelihood and, by extension, the SV2030. Last, given its appealing effects on household livelihood, the government is encouraged to continue, or at best, improve on its financial assistance through its relief fund. It is expected that with this fund, more households could be empowered to own businesses, which, by extension, improves their livelihoods.

Notwithstanding the findings of the current investigation, it is imperative to highlight that such inferences are non-exhaustive given their coverage, focus and enlisted variables. Obviously, more insights are realizable if other emerging countries are considered. Likewise, other potential predictors of livelihood, such as income per capita, household size, location of the household and inflation rate, were included. Similarly, the influence of some sociological or psychological factors, like socioeconomic shocks such as COVID-19, family head composition and structure, could generate more insights for policy simulations. On this note, future researchers are encouraged to consider these factors in their studies for a balanced policy overview.

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Journal of Ecohumanism
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