

The impact of product portfolio decisions on reducing inequality: evidence from Bangladesh

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The impact of product portfolio decisions on reducing inequality: evidence from Bangladesh

This study attempts to understand the relationship between product portfolio strategy and inequality within a BoP context. Product portfolio is a widely adopted strategy in marketing and marketing scholars have extensively studied its effect on firm performance. Products and services offered by BoP 3.0 organizations however are different as they are aligned to development outcomes, with one of the most important outcomes being inequality. We seek to address this gap by empirically investigating the effect of product portfolio strategy of development organizations on reducing market level inequality. Our study suggests that human capacity building and income building programs follow a U-shaped and inverse-U shaped relationship with inequality respectively, thus suggesting an optimum portfolio for both types for maximizing equality. This study is expected to assist managers in configuring their product portfolios to tackle inequality and contribute to the UN SDG 10: Reducing inequality.

Product portfolio, Base-of-the-Pyramid (BoP), Inequality

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1. Introduction

The Base-of-the-Pyramid (BoP) approach was originally conceived to profitably serve the poor and alleviate poverty at the same time (Prahalad & Hart, 2002). The first iteration, BoP 1.0, was based on the notion that organizations can sell to the poor without having to make any changes to their core strategy and structure (Dembek, Sivasubramaniam & Chmielewski, 2020). After receiving heavy criticism, the second iteration, BoP 2.0, emphasized on business co-venturing and the role that the poor can play as entrepreneurs (Karnani, 2009). However, BoP 2.0 failed to provide holistic wellbeing for the poor and BoP 3.0 emerged as a result with a stronger focus on value and has since been focusing on wider innovation ecosystems and development of cross-sectoral partnership networks (Mason, Chakrabarti & Singh, 2013). One of the key outcomes for such development is inequality and studying the effect of development organizations on inequality at a granular level is effective as it takes the scope of a study beyond the realms of macro-level policy to a more local level (Allard & Small, 2013). The International Monetary Fund and The World Economic Forum have labelled inequality as one of the biggest problems facing the world in the years to come. In this paper, we define inequality as the “ways in which access to resources and opportunities are differentially distributed across a particular population” (Amis et al., 2021, p. 431).

Marketing scholarship has analysed the advantages and disadvantages of having broad versus narrow product lines, and the various strategic factors that should be considered when developing a product portfolio to influence consumer purchasing decisions, and ultimately improve performance (Moreno & Terwiesch, 2017; Morgan & Rego, 2009), but very little work has been done on social outcomes such as inequality. In addition, products and services offered by BoP 3.0 organizations are different as these offerings are aligned to development outcomes such as building human capacity and income (UNDP, 2022), which are essentially short term goals. However, the long-term goal of such organizations is inequality which is critical to development but there is limited scholarship on what products and services offered by development organizations can reduce market level inequality.

We therefore address this gap by empirically investigating the effect of product portfolio strategy on reducing inequality. Specifically, the research question that we aim to answer is: “*How does product portfolio strategy affect social performance for organizations operating in a BoP context?*” We develop and test two hypotheses using panel data on programs offered by Bangladesh Rural Advancement Committee, popularly known as BRAC, and two of its biggest competitors within the context of Bangladesh (2000-2013). Promoting equality is not only entrenched in the programs and operations of BRAC, but also well

integrated into their cultural fabric (BRAC, 2022) and BRAC is often credited for making Bangladesh one of the fastest growing economies of the world (Economist, 2019). We categorize BRAC's programs into 2 groups based on the human development index (HDI) - programs that build human capacity and programs that build income (UNDP, 2022). Our empirical analysis shows that, (1) programs that build human capacity first increase inequality and then decrease inequality, (2) programs that build income first decrease inequality and then increase inequality. Thus, our study sheds light on which categories of programs offered by development organizations reduce market level inequality in BoP markets.

The article starts with a conceptual overview discussing product portfolio strategy and motivating our hypotheses and then we discuss the methodology, data, and results in the following section. Finally, we discuss the major findings of our analysis, implications for research and practice, and limitations of our study and directions for future research.

2. Conceptual Overview and Hypotheses

2.1. Product portfolio, product breadth, and product depth

As organizations have finite number of resources, marketers have long been interested in determining the right product mix to maximize efficiency (Moreno & Terwiesch, 2017; Morgan & Rego, 2009). The level of diversification with product portfolio is based on certain strategic decisions that determine the right breadth and depth of its product lines, which delineates the scope of certain segments of the market for competitors to compete in (Griffith & Rubera, 2014; Qiu, 2014). An important strategy that marketers use to capture different segments of the market is product line breadth which is the number of different products that is offered by a firm at a given point of time (Moreno & Terwiesch, 2017). While a firm benefits from market share advantages and increase in profitability by establishing broader product lines as they are able to meet consumer needs more closely (Kekre & Srinivasan, 1990), not all products make money for companies and it is important to examine product portfolio from time to time to identify the weak ones and kill the ones that are unprofitable (Kumar, 2003). There has also been an increase in the number of offerings under each product category in the last two decades (Hamilton & Richards, 2009), a marketing concept known as product depth. Product depth is measured by the total number of variants under each product category (Chernev & Hamilton, 2009). Proponents of having a high depth of offering have established a positive relationship between depth of offering and category sales (Borle et al., 2005; Ryzin & Mahajan, 1999).

2.2. Development organizations and inequality

Development organizations around the world provide a wide variety of programs spanning across a range of categories. These programs are often categorized in terms of their contribution to human development using the HDI index: programs that build human capacity and programs that build income. Specific interventions such as health and education, although they are helpful in building capacity, do not affect inequality because they are not fungible. These interventions improve economic conditions of the poor but do not stop them from falling through the cracks (Allard & Small, 2013). Thus, inequality goes up initially when more of such programs are offered. However, over the long run, more years of schooling, quality of healthcare and other capacity building initiatives translate into more active working days, higher productivity levels and, possibly, higher salaries and inequality then starts decreasing. Therefore, we propose:

H1: There is a U-shaped relationship between human capacity building programs and inequality in BOP markets.

Financial interventions or income building programs, on the other hand, are fungible in nature and assist the poor in investing in small sized similar businesses (Seraj & Arif, 2008). Thus, resources and assets are not disproportionately allocated in the short term, and this decreases inequality. However, over time, the owner, employees and all the affiliated stakeholders of the disruptive businesses benefit from the profit and gain disproportionate income compared to the rest of the people in the market (Packard & Bylund, 2018), and thus increase inequality in the long run. Therefore, we propose:

H2: There is an inverse U-shaped relationship between income building programs and inequality in BOP markets.

3. Methodology

3.1. Empirical context and data sources

We attempt to test our two hypotheses using panel data on BRAC and two of its biggest competitors within subnational market boundaries in Bangladesh (2000-2013). BRAC, being the largest non-profit development organization in the world, is located within Bangladesh which is a developing economy in South East Asia and has a diversity of geographic regions at varying levels of development and institutional stability (Sheth, 2011). 26% of the population live under poverty line of USD 2 a day (IFAD, 2016). Bangladesh has

very clearly marked subnational boundaries within which the development organizations operate and there are 526 markets or upazilas in total.

Being the first mover in the development industry and having more beneficiaries than its competitors, we examine the product portfolio of several branches of BRAC across the entire market and their impact on market inequality level. To test our data empirically, we use a unique and comprehensive panel dataset containing product portfolio information of 2229 branches of BRAC operating across 480 markets from the year 2000 to 2013. In the next section we provide a description of our dependent, independent and control variables. Table 1 contains a snapshot of all conceptual variables, the measured variables, and our data sources.

3.2. Dependent variables (Gini)

All our hypotheses concern the dependent variable, spatial inequality, or the “Spatial Gini-coefficient” which is an increasingly used proxy for wealth or income inequality as social science measurements of wealth and poverty rates are very difficult and expensive owing to the informal nature of developing economies. Spatial inequality is derived from 1) A ‘Nighttime Lights of the World’ dataset derived from the Defense Meteorological Satellite Program’s Operational Linescan System (DMSP OLS) nighttime satellite imagery, 2) A gridded population density of the world (Sutton, 2012, p. 1). The value of the ‘Spatial GINI Coefficient’ varies from 0 to 1 with 1 being perfect inequality, and 0 being perfect equality.

3.3. Independent variables (Product depth: HumanProg, IncomeProg, AdmSupProg)

Our primary independent variable is product depth, and we use the total number of programs from each of the two HDI categories offered by BRAC per 1000 people in each subnational market for our hypotheses (UNDP, 2022).

3.4. Control variables

3.4.1. Population size (Pop)

Following past scholarship on explaining outcomes of development organizations (Vassallo et al., 2019), we control for population in each market from 2000 to 2013.

3.4.2. Geographical size (Area)

Following prior research as market geographical size can offer greater economies of scale than smaller areas, we control for market geographical areas of each market per 1000 people from 2000 to 2013 (Pralhad, 2005; Vassallo et al., 2019).

3.4.3. Literacy rate (LitRate)

People with low levels of education can find it difficult to benefit from the offerings by development organizations, which is why we control for the level of literacy within the market from 2000 to 2013 (Ault & Spicer, 2014; Vassallo et al., 2019).

3.4.4. Number of economically active people (EconAct)

We include the number of economically active people per 1000 people in each subnational market from 2000 to 2013 (Ault & Spicer, 2014; Vassallo et al., 2019) to account for levels of economic development in each market.

3.4.5. ASA stock of branches (ASASToc)

The three development organizations – BRAC, ASA and The Grameen Bank serve approximately 17 million active borrowers which is nearly 74% of the total loan portfolio in Bangladesh in 2013 (Mix, 2019). We include the number of branches of ASA per 1000 people in each subnational market every year from 2000 to 2013 to account for competitive effects.

3.4.6. The Grameen Bank stock of branches (GRAMEENStoc)

We include the number of branches of the Grameen bank per 1000 people in each subnational market every year from 2000 to 2013 to account for competitive effects.

3.4.7. BRAC stock of branches (BRACStoc)

We include the number of BRAC's own branches per 1000 people in each subnational market from 2000 to 2013 to account for high or low number of branches each market.

3.4.8. Number of cooperative societies (CoopSoc)

In developing economies, cooperative societies provide essential tools and skillset and create job opportunities within and outside the organizations and thus contribute significantly to economic development (Dogarawa, 2010). We therefore include the number of cooperative societies per 1000 people in each subnational market from 2000 to 2013.

3.4.9. Employment through cooperative societies (CoopSocEmp)

As cooperative societies are quintessential in creating job opportunities in developing economies and contribute significantly to employment, we include the number of employment created per 1000 people in each subnational market from 2000 to 2013 through cooperative societies.

3.4.10. Number of health facilities (HealthFac)

As good health enhances participation and productivity, we include the number of health facilities per 1000 people in each subnational market from 2000 to 2013.

Table 1

Summary of measures and sources		
Conceptual variable	Measure	Data Source
Spatial inequality	Gini co-efficient 1 = Perfect equality 0 = Perfect inequality	Light-at-night satellite data by the US Air Force Defense Meteorological Satellite Program
Product depth	Total number of programs offered per 1000 people from each category within a market	BRAC
Product depth	Total number of programs offered per 1000 people from each category within a market	BRAC
Product depth	Total number of programs offered per 1000 people from each category within a market	BRAC
Market population	Population at the market level	Light-at-night satellite data by the US Air Force Defense Meteorological Satellite Program
Market geographical size	Area of administrative upazila	Light-at-night satellite data by the US Air Force Defense Meteorological Satellite Program
Literacy rate	Percentage of literate population at the market level	Bangladesh Bureau of Statistics (BBS), linear interpolation using 1991, 2001 and 2011 data
Economically active people	Number of economically active people per 1000 people within a market	Bangladesh Bureau of Statistics (BBS), linear interpolation using 2002, 2006 and 2010 data
Stock of BRAC branches within market	Number of BRAC branches per 1000 people within a market	BRAC
Stock of ASA branches within market	Number of ASA branches per 1000 people within a market	ASA
Stock of The Grameen Bank branches within market	Number of The Grameen Bank branches per 1000 people within a market	The Grameen bank
Cooperative society	Number of cooperative societies per 1000 people within a market	Bangladesh Bureau of Statistics (BBS), linear interpolation using 2002 and 2006 data
Employment through cooperative society	Employment through cooperative societies per 1000 people within a market	Bangladesh Bureau of Statistics (BBS), linear interpolation using 2002 and 2006 data
Health facility	Number of health facilities per 1000 people within a market	Bangladesh Bureau of Statistics (BBS), linear interpolation using 2005 and 2006 data

3.5. Analytical methods and results

Before testing H1 and H2, a multicollinearity test was first conducted to examine if there is any correlation among the independent variables in the regression model, and we found no evidence of multicollinearity (Table 2). In the analysis of H1 and H2, we use the total number of programs offered in each category i.e. human capacity building and income building, per 1000 people within sub-national markets as the independent variable and spatial GINI coefficient as the dependent variable. We include market population, market geographical size, literacy rate, economically active people, stock of BRAC branches within market, stock of ASA branches within market, stock of The Grameen Bank branches within

Panel Regression (Model 1)		R-sq: 0.0163
	Coefficient	P> z
AdmSupProg	4.794707	0.000
BRACStoc	-.2486803	0.342
ASASToc	-.9376043	0.000
GrameenStoc	-.0648155	0.758
Pop	-.0001055	0.000
CoopSoc	.0030545	0.001
CoopSocEmp	-.0010813	0.000
EconAct	-.000297	0.334
HealthFac	-.0093567	0.179
LitRate	4.24e-06	0.924
Area	55.70004	0.001
Intercept	.6756619	0.000
Panel Regression (Model 2)		R-sq: 0.0180
	Coefficient	P> z
HumanProg	.2704202	0.316
HumanProg Int	2.440194	0.012
AdmSupProg	3.007708	0.000
BRACStoc	-.1227289	0.649
ASASToc	-.9863715	0.000
GrameenStoc	-.44634	0.056
Pop	-.0001108	0.000
CoopSoc	.0033351	0.000
CoopSocEmp	-.0010508	0.000
EconAct	-.0000269	0.383
HealthFac	-.0127318	0.070
LitRate	5.64e-06	0.900
Area	37.4797	0.039
Intercept	.6745122	0.000
Panel Regression (Model 3)		R-sq: 0.0177
	Coefficient	P> z
IncomeProg	-.2543949	0.496
IncomeProg Int	.2022188	0.928
AdmSupProg	4.893028	0.000
BRACStoc	-.229947	0.380
ASASToc	-.9276202	0.000
GrameenStoc	-.0614821	0.771
Pop	-.0001053	0.000
CoopSoc	.0031718	0.001
CoopSocEmp	-.0011005	0.000
EconAct	-.0000272	0.379
HealthFac	-.0084562	0.230
LitRate	-.730e-07	0.987
Area	61.52992	0.001
Intercept	.6739978	0.000
Panel Regression (Model 4)		R-sq: 0.0307
	Coefficient	P> z
HumanProg	1.562984	0.000
HumanProg Int	2.304561	0.034
IncomeProg	-1.009945	0.023
IncomeProg Int	-3.56003	0.180
AdmSupProg	3.827546	0.000
BRACStoc	-.0863941	0.749
ASASToc	-.963169	0.000
GrameenStoc	-.7229122	0.003
Pop	-.0001088	0.000
CoopSoc	.0043495	0.000
CoopSocEmp	-.0011625	0.000
EconAct	-.0000235	0.445
HealthFac	0.0238423	0.019
LitRate	.0000433	0.336
Area	55.46652	0.005
Intercept	.6545857	0.000

Table 3

market, cooperative societies, employment through cooperative society, and health facility as controls. A positive and significant coefficient for programs that increase life expectancy and years of schooling will show a support H1 and H2 respectively, and a negative and significant coefficient for income generating programs will show support for H3. A generalized least square regression with random effect was run for estimating the unknown parameters in our linear regression model. In the first step, we start by testing the effect of controls— that is, the association between other programs, BRAC, ASA, The Grameen Bank’s stock of branches, population, cooperative societies, employment through cooperative societies, economically active

Variable	Mean	Std. Dev.	Min	Max
BRACStoc	.006401	.0117627	0	.3528582
ASASToc	.0120547	.0164739	0	.7057163
GrameenStoc	.0074281	.0159129	0	.8233357
Pop	285.2825	165.4794	5.745	2068.22
CoopSoc	2.36078	5.453251	0	96.63028
CoopSocEmp	15.63552	23.3381	-5.841927	457.1678
EconAct	585.0081	76.85921	365.55	1028.075
HealthFac	3200682	7820461	0.10	19.37135
LitRate	485.0115	109.452	0	732.5
Area	.0001155	.000227	6.24e-07	.0063868
HumanProg	.6389206	.1631087	0	.96838
IncomeProg	.0118605	.0131286	0	.4704775
OtherProg	.012508	.0119497	.0006351	.263829
	.0040855	.005042	0	.1176194

Table 2

people, health facilities, literacy rate and inequality. In the next step, we add human capacity building programs and an interaction term (Human capacity building X Human capacity building), income building programs and an interaction term (income building X income building) to explain the curvilinear relationship. In the final model, we test the total effect by including both human capacity building and income programs and controls and inequality (Table 3). We find that the coefficient of both human capacity building programs and interactive effect is positive and significant which is in support of H1. We find that the coefficient of income building programs and interactive effect is negative and significant, which is in support of H2.

4. Conclusion

Our study suggests that development organizations should configure the right product portfolio to maximize the positive effect on market level inequality. This study is thus expected to assist managers in configuring their product portfolios to tackle inequality and contribute to the UN SDG 10: Reducing inequality.

Next steps include writing up theoretical and practical implications and future research directions.

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