

FACTORS INFLUENCING PERCEPTION OF DEVELOPMENT IN RURAL KENYA: A STRUCTURAL EQUATION MODELING APPROACH

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ABSTRACT

Data from 275 individuals, collected at the individual and household levels were analyzed using structural equation modeling techniques to examine relationships between perception of development and observed socio-economic, demographic and wellbeing variables. Perception of development was computed using 6 development-progressive statements administered in a survey, most of which relate to the future development of the respondent's community and on satisfaction with participation in development activities. The relationship between perception of development and other perceived factors such as perceived importance of electricity in development, perceived household wellbeing and perceived health were examined, after controlling for demographic and socio-economic factors such as age, gender, education, household wealth, parity and health risk factors including alcohol use and smoking. Significant relationships were found between perception of development and gender, age, perceived household wellbeing and health risk factors (alcohol use and cigarette smoking). Women and younger people had more positive perceptions of development than men and older people respectively. Perceived household wellbeing, alcohol use and smoking were also positively associated with positive perceptions of development. These results indicate that even within the same community, people's perceptions will vary depending on their age, gender, perceived household wellbeing and health risk factors including alcohol use and having ever smoked tobacco products. The study, conducted in an ethnically, culturally and economically homogenous rural poor community however did not find significant effects between perception of development and objective household wealth, level of education, parity and perceived health. Further studies need to be conducted that can study perceived development separately for males and females and also in a community that shows some economic, cultural and social variations. This would help tease out the differences in perceptions of development, which could not be adequately established in this study.

Keywords: Development, Perceptions, Structural Equation Modeling, Rural poor, sub-Saharan Africa, Kenya.

INTRODUCTION

Importance of Perceptions and Participatory Development

While the involvement of local communities in their development is widely recognized as a key step in sustainable and equitable development (Chambers R, 1983; Sen A, 1999), very few rural development projects in sub-Saharan Africa and in Kenya use this approach. Recognized as a potentially beneficial approach to meeting the needs of beneficiary communities because of the ability to help prioritize community felt needs, participatory development has either been partially used or not used at all (Claude Saha, 2008; Essendi H, Madise N, & Matthews Z, 2014). Yet, participatory development continues to be hailed as a

potentially beneficial approach in ensuring sustainable development, whose prerequisite is seeking to understand people's views regarding development and the determinants of these perceptions. This approach has potential in helping determine the best way to engage with them in implementing development projects that can best benefit them and at the same time be sustainable. Most importantly, understanding these views/perceptions and the factors influencing them can help inform the design of development projects that would not only fully involve community members but also design approaches targeted at particular groups based on their perceptions of development or of participation in development initiatives.

Perceptions and Development Participatory Approach In Kenya

Despite increased emphasis on the need to shift the development efforts towards more community-engaged approaches (Chambers R, 1983; Sen A, 1999), this approach has rarely been used in development projects in Kenya. Even fewer initiatives have incorporated this approach in development projects targeting the rural poor in the country, where most of the Kenyan population resides and where in many instances, health and development outcomes fare far worse than urban Kenya's (KNBS & ICF Macro, 2010). Yet, employing decentralized approaches in the country, more specifically participatory development has potential to drive equitable and sustainable development. The climatic, cultural, economic and infrastructural diversity within and between the regions of the country point to the need to employ a development approach that has potential to approach each group/region of the country as a separate entity in development efforts (KNBS & ICF Macro, 2010). Makueni County where the present study is located, for instance faces some of the poorest infrastructural, wellbeing and health outcomes, reinforcing the importance of approaching development in each region/County of the country as a separate entity where people's views about these efforts are also sought (CBS, World Bank, SIDA, & SID, 2005).

Amartya Sen's Capability Approach

This study employs the Capability Approach to development as posited by Amartya Sen (1999), where he defines development as a process of expanding the real freedoms that people enjoy (Sen A, 1999). Using this approach, Sen views poverty, this is the flip-side of development, as more than a lack of material resources. He emphasizes that although material resources are recognised as being necessary, they are nonetheless not sufficient to escape poverty and therefore enhance development and that poverty (and development) must be seen as the deprivation of basic capability rather merely as income based measure. In order to address sustainable development therefore, the Capability Approach has two main tenets; Capability and Functioning whereby Functioning relates to the things that a person may value being and doing and these vary from very simple ones for instance, having proper nourishment, being free from preventable disease and premature mortality to complex ones like being able to participate in community activities (Sen A, 1999). Capability on the other hand refers to the factors that enhance people's freedoms. Capability and Function concepts are therefore used to emphasize the need to expand the real freedoms that people enjoy, including; political freedoms, economic facilities; social opportunities; transparency guarantees and protective security. Sen further argues heavily against looking at development as just the rise or fall in incomes. Rather, income should be considered to be valuable only in so far as it can increase the capabilities of individuals and thereby enable people's functionings in society (Sen A, 1999).

In addition to understanding these two main principles of development (Capability and Functioning), Sen (1999 p. 19) also talks about the role of an agent in development-bringing about a change in society. He talks of an agent ‘...as someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well.’ He further stresses that the role of an agent can be through an individual or member of society and as a participant in economic, social and political actions (Sen A, 1999). This perspective points to the importance of community participation in development. His contribution to the debate on community participation in development emphasizes the importance of empowerment of beneficiary communities (Sen A, 1999).

CONCEPTUAL FRAMEWORK

The background and theoretical approach reinforce the need to revisit the issue of participatory development approach that includes understanding of people’s perceptions of development and the factors influencing these perceptions, both issues that have potential to enhance participatory development approaches. To address this research area, this paper seeks to assess the factors influencing perceptions of development using a Structural Equation Modeling approach. This paper fits a model adapted from Porter & Garman’s Conceptual Model of Financial Well-Being (Porter NM & Garman ET, 1993). We adapt this model, after reviewing literature by these and other researchers on the factors influencing well-being. Although no single approach exists focusing on the factors influencing the perceptions of development, there has been extensive research into the factors influencing the perceptions of well-being, ranging from objective factors such as demographic characteristics to socio-economic characteristics and subjective (perceived) factors (Hayhoe CR, 1990; Leach LJ, Hayhoe CR, & Turner PR, 1999). Factors influencing perceptions of wellbeing are adopted in this study because although perceptions of wellbeing and development are different concepts, they nevertheless are close enough and are both perceived concepts of improved livelihoods.

Gender: Among the demographic characteristics argued to have an influence of perceptions of well-being, is gender, argued to have a big influence on perception of economic well-being as this relates to the engendered roles that individuals are socialised in, hence the need to seek the views of both gender in wellbeing studies and efforts (Hayhoe CR & Wilhelm MS, 1998). Other researchers have also found gender to have a big impact on perceptions of wellbeing (Leach LJ et al., 1999). Findings of these studies argue therefore that, in order to clearly understand the perceptions of well-being, researchers need to put into consideration the role that gender plays, as these views are quite engendered.

Age: Age of participant has also been found to be a significant factor in the perceptions of one’s economic well-being. It has therefore been used as a background factor in studies investigating perceptions of well-being (Leach LJ et al., 1999).

Other objective factors: While Hayhoe & Wilhelm focus on the variations in perceptions of well-being by men and women at the family setting, they also include other objective variables, that they argue, can potentially contribute to these perceptions (Hayhoe CR & Wilhelm MS, 1998). These factors are given both at the individual and household level. They include various factors included in the model besides gender and age. Education and health of participant at the individual level and household income and size at the household level are some of the factors found to influence perceptions and therefore included in this model.

This present study groups the factors that are likely to influence the perception of development into three blocks; personal characteristics, represented by age, gender and parity; socio-economic characteristics focusing on household wealth status and respondent's education level and perceived attributes focusing on perceived health-risk factors, perceived household economic wellbeing and perceived measure of development (this study uses the perceived importance of electricity in development) as subjective variables (Figure 2). The study incorporates the importance of electricity as a proxy for perceived development, based on the reported importance of electricity in socio-economic development (Kanagawa M & Nakata T, 2008) through such means as creating opportunities for growth. Two community variables (place of residence-district and source of water) are also considered in the descriptive analysis of this paper, although they are not included in the model as these variables do not show variations for the respondents. Place of residence is used to give a context-background to the interpretation of the results. Source of water at the household on the other hand, is used to show the level of socio-economic status of the community. As postulated by Porter & Garman (1993), perceived factors are used as mediating factors on the effects of the personal and socio-economic characteristics on perception of development (Porter NM & Garman ET, 1993). Other studies have used mediating factors in assessing the effects of these primary factors on the outcome variable. Leach et al (1999) used two mediating variables (comparison of Economic Outcomes and Level of Financial Strain) as mediating factors on the effects of individual, socioeconomic and other study-specific variables on the outcome variable (Leach LJ et al., 1999).

While seeking to understand beneficiary communities' views regarding development, incorporating the factors that influence these views can greatly help the Kenyan government, county governments and development practitioners to apply focused approaches in understanding beneficiary communities' felt needs and their perceptions and development priorities thereby designing sustainable strategies that meet the needs of rural communities.

The research presented in this paper seeks to understand factors influencing perceptions of development among members of Kitonyoni sub-location of Makueni County. This study hypothesises that individual personal and demographic characteristics as well as health risk factors and perceived attributes influence their perception of development in their context. Based on the model of perceived development (Figure 1), this paper seeks to assess:

1. Whether the hypothesised model fits the data
2. Whether there is there a significant relationship between the personal characteristics, socio-economic characteristics, health risk factors and perceived attributes and Perception of Development. It also seeks to assess whether the variance between these factors in the model are significant (see figure 1).

METHODOLOGY

Study Setting

The study was conducted in Kitonyoni sub location of Kathonzweni district in Makueni County in October 2012. The sub-location, an area covering 27.1 sq km and Density of 96 has a total population of 2,500; 1,284 males and 1,306 females (KNBS, 2010). Makueni county is a semi-arid area where residents traditionally depend on farming as the primary means of livelihood, although now shifting to other means of livelihood, specifically, migrant labour to the towns and cities as a result of increased poverty in the district (Nzioka C, 2000).

Data

The study uses individual and house-level data collected from a sample of 275 of the 487 households in the sub-location. Within the sampled households, a male and female of reproductive age (18 and 49 years for women and 18 and 54 years for men) were selected and interviewed in each household alternately. Questions were asked on household economic status, respondent's education level, parity, perceived health, perceived household wellbeing and perceived importance of electricity in development. Their health risk was also assessed by collecting data on their smoking and alcohol consumption habits.

Dependent Variable

The outcome variable is perception of development (PerDvlpt), using variables generated by asking 5-point scale questions. Respondents were asked a set of questions that reflect their perceptions of future development, their participation in development activities and custodianship of development. These questions/statements include:

1. Community development in this area is a responsibility of government
2. International community has a responsibility to help in development e.g. climate
3. How satisfied are you with the level of your personal involvement in development?
4. How satisfied are you with the level of your community's involvement in development?
5. How do you feel about being asked to participate in development activities?
6. How much do you think that development in your community will improve?

Methods

This paper uses structural equation modelling (SEM) using the IBM SPSS Amos 20 package (Byrne BM, 2010) to assess the relationship between perception of development and the selected predictor variables. SEM is used in this paper because of the latent nature of the perception of development variable, being a complex and multi-faceted variable that cannot be adequately captured by the use of one variable, hence is computed using 6 variables (Figure 2 and Table 1). Using SEM's two main assumptions, that the causal processes under investigation are presented by a series of structural (regression) equations; and that these structural relations can be modelled pictorially to enable a clearer conceptualization of the theory under investigation, this paper models the personal, socio-economic and wellbeing factors hypothesised to influence perceived development (Byrne BM, 2010). The process statistically tests the hypothesised model in a simultaneous analysis of all the variables in the hypothesis to determine the extent to which it is consistent with the data (Byrne BM, 2010).

Running SEM

This was done using a two stage approach. The first model run was Confirmatory Factor Analysis (CFA). This was run to test the measurement model and was run first before proceeding with the structural equation model. Running CFA was done in the first stage in order to test whether the relationships specified between the latent variable (perception of development) and the observed variables give a good fit. Once this was done, Latent Variable Path Analysis (LVPA) which incorporates the relationships between the observed variables and latent variable and the error/residuals, was done (see figure 2)

Variables In The Model

Variables in the model are grouped into 4 as outlined in Table 2. These groups are:

1. Observed, endogenous variables
2. Observed, exogenous variables
3. Unobserved, endogenous variables
4. Unobserved, exogenous variables

The paper incorporates some community factors which were not incorporated in running the model because there are no variations in the sample regarding this (Figures 1 & 3 and Table 3). The two community variables are place of residence (district) and source of drinking water at household (see table 3).

Perceived Health (Hgeneral): Perceived health was computed using one perceived health indicator that reflected the respondent's perceived general health.

Perceived Family Wellbeing (HHWB): Perceived family wellbeing was constructed using one scale variable reflecting perceived family position on a 10-point wellbeing ladder.

Perceived Development Factor (DvlptElec): This endogenous variable refers to whether the community perceives electricity to be important in the development of their community.

Perceived Development (PerDvlpt): The six indicators of perceived development (Table 1) focus on the respondents' satisfaction with engagement in development projects and future development prospects. All the variables contribute factor loadings to the latent variable (PerDvlpt). The statements used to compute this variable all represent a positive attitude towards the community's involvement in development and on the future prospects of the community's development. They capture the respondent's level of satisfaction in regards to involvement of self and community in development projects as well as the anticipated prospects of development in the community.

Dependent Variable

The dependent variable in this paper, perception of development (**PerDvlpt**) was computed using 6 observed/endogenous variables. These are P2, P3, P4, P5, P6 and P7 (Table 1). These were administered to the respondents in form of statements/questions in a questionnaire.

RESULTS

(see table 2)

Assessment of model fit

Assessing how best a structural equation model fits the data is one of the most important steps in structural equation modeling. In this study several tests were done to assess how the model fits the data, based on the recommendations of several researchers (Bentler PM & Bonnett DG, 1980; Joreskog KG, 1993). Chi-square test is one of the recommended goodness of fit tests. The chi-square value in this paper, at 138.075 (df=44) with $p=0.000$, indicates that the model is not a good fit. However, it is also recommended not to only rely on chi-square as the measure of a good fitting model, rather to include other measures such as the Root Mean Squared Error of Approximation (RMSEA), Incremental Fit Index (IFI) and Comparative Fit Index (CFI) (Byrne BM, 2010). This is because chi-square tests tend to depend on sample sizes while RMSEA takes into account this approximation error (Byrne BM, 2010). These

other goodness of fit tests indicate that the model is a good fit for the data. The (RMSEA) value was 0.055 [0.040, 0.069] indicating that the model is an acceptable fitting model. The RMSEA value less than .05 is considered an indicator of a good model fit while a value between 0.05 and 0.08 is considered an acceptable fit (Bentler PM & Bonnett DG, 1980). The goodness of the assessment of fit was also supported by the high Incremental Fit Index (IFI = 0.927) and Comparative Fit Index (CFI = 0.922) as proposed by Bentler and Bonnett (Bentler PM & Bonnett DG, 1980). The CFI and IFI values normally range from 0 to 1 with 0 indicating the absence of model fit and 1 indicating perfect model fit. A CFI/IFI value of approximately .9 can be interpreted as a good model fit. These approaches have previously been used to test model fit in structural equation models.

(See table 3 & 4)

Measurement Model

The estimated unstandardized coefficients and their associated p values for the measurement variables on the various latent variables and on perceived development are reported in Tables 3 and 4.

Default Model

Perceived household wellbeing (HHWB) had a significant effect on perceived development. This effect however indicated a negative direction, where the total effect of household wellbeing on Perception of Development was -0.080 implying that when household wellbeing (HHWB) goes up by 1 measurement scale value, Perception of Development reduces by 0.08 scale values (this is on a scale of 1 to 10). Perceived health (Hgeneral) household wealth and perceived importance of electricity in development on the other hand did not have a significant effect on perceived development. The various effects are: perceived health (0.043), wealth (0.074) and perceived importance of electricity (0.044). These variables do not have such big effects on Perception of development; as perceived health (Hgeneral) and perceived importance of electricity on development (DvlptElec) go up by 1 measurement scale value on a 5-point measurement scale; perception of development (PerDvlpt) goes up by 0.043 scale values and 0.044 measurement scale values respectively.

Effects of Observed, Exogenous Variables

Gender, age, and health risk factors (alcohol use and smoking) were the only exogenous personal and socio-economic characteristics variables that had significant effects on perception of development (PerDvlpt) with gender having highly significant effect on perceived development. The direct effect of gender on perceived development was -0.321, indicating that women had higher perceptions of development compared to men. This effect (combined direct and indirect effect) however slightly reduced to -0.391 when mediated with household wellbeing (HHWB), perceived health, and perceived importance of electricity in development. The direct effect of alcohol consumption on perceived development on the other hand was 0.260 which increased slightly to 0.262 when mediated with perceived health. Cigarette smoking's effect on perceived development was 0.212 but increased slightly (for the total effects) when mediated with perceived health.

The effect of age on perception of development was borderline significant, where its direct effect on perceived development was in the negative direction, at -0.006. This effect (factor

value) did not change when mediated with perceived importance of electricity on development. In addition, the effect of age on perception of development is on a small scale, such that 1 year's increase in age reduces the measurement scale value of perception of development by 0.006 scale values. Younger respondents were therefore likely to report higher perceptions of development regardless of gender, level of education, perceived household wellbeing, perceived health and health risk factors, including cigarette smoking and alcohol consumption.

Education and parity did not have significant effects on perceived development with values of -0.064 and 0.026 respectively, implying that level of education and number of children did not influence one's perception of development.

Revised Model of Perceived Development

After fitting the model for perceived development with personal, socio-economic and perceived factors, the results were analysed and amendments made to the model. One of the main reasons for these amendments was arrived at after assessing how well the model fits the data. To do this, the source of misfits in the model had to be identified as proposed by Byrne (2010) where she proposes that a focus is made on the adequacy of the parameter estimates and the model as a whole (Byrne BM, 2010). Variables that had correlations of >1.00 and those with negative variances and covariance were dropped from the hypothesised model, and a new one (Figure 3) before it was re-run.

(See figure 3)

In this section please present the results including tables, figures, numbers and graphs (if any). Font Size 12, Times New Roman, single spaced. All the subheadings in this section should be in font size 12 Bold, Times New Roman, single spaced. The first letter of each word in subheading should be capital. For tables please use font size 10. Tables/graphs or figures should be named as Table 1/ Figure 1/ Graph 1 and be given in center of the page.

DISCUSSION

This study found gender to be highly significant in its association with perceived development; women were found to have higher (more positive) perceptions of development compared to men. This emphasizes the importance of gender as found in other studies, especially those investigating factors influencing perception of economic wellbeing (Leach LJ et al., 1999). All these studies highlight the importance of gender as they argue that socialization engenders the viewpoints that men and women have and would therefore influence how they perceived their economic situations. In some of these studies, these analyses are even conducted separately, which differs from the analysis in the present study which had very few data to run the model once the data was split by gender. The issue of considering gender in development initiatives has also been emphasized by other development studies (Lilja & Dixon, 2008).

Although household wealth status in this study did not have a significant effect on perception of development, the same variable, objective economic wellbeing, measured using household income or wealth status has been found to have an impact elsewhere (Bookwalter JT & Dalenberg D, 2004). A recently published paper from this study also found that people's circumstances will influence how they perceive their circumstances (Essendi H et al., 2014).

Another study looking at the impact of household factor on subjective well-being in South Africa found that different factors were important among groups based on socio-economic status (Bookwalter JT & Dalenberg D, 2004). Although the theme of this paper was not directly related to the present study (perceived development), it nevertheless points to the importance of economic wellbeing. This current study finds the average perceived family position on a 10-step development ladder to be 2.32 with a standard deviation of 0.04 and median of 2, indicating a very low perception of one's wellbeing. In addition, other socio-economic characteristics including access to water, household income, housing material and education status (Table 3) point to a poor community. Consequently, these results may influence one's perception of development. Other studies, although focusing on perceptions of one's economic wellbeing have found perceived financial situation, in comparison to friends or neighbours to have a significant effect on one's perceived economic wellbeing (Hayhoe CR, 1990; Porter NM & Garman ET, 1993).

There is need to conduct further research on the wellbeing factors affecting perception of development in a more culturally and economically diverse community in order to adequately assess the impact of these factors on perceived development. This is because some of the studies investigating the factors influencing perceived economic wellbeing do find culture, social class, and ethnicity as important factors in how one perceives their situation because the personal values they hold often lead to differences in these perceptions (Hayhoe CR, 1990; Leach LJ et al., 1999). Further investigation therefore is needed to develop greater understanding on this important aspect of perceived economic well-being in a culturally, ethnically and economically diverse environment. In addition, further studies putting gender into consideration are needed. This is because since women do report a higher likelihood of economic adversity, it is important to determine what factors contribute to this gender difference. It also is important to study economic adversity's role in affecting perceived economic well-being and to determine if economic adversity, rather than differences in gender values, is the underlying factor affecting perceptions of economic well-being.

CONCLUSIONS

This study adds to the voice advocating for increased community participation in development, by understanding individuals' perceptions of development in their context. The study contributes to the study of development through the revised model (Figure 3) by indicating factors found to be important in the way the rural poor in a developing country context perceive development. The study adds to development studies through its analytical approach by advancing the methods that could be applied when analysing such latent factors as perception of development. This study also highlights the importance of personal, socio-economic and other factors in how the rural poor perceive participation in development, anticipated development outcomes and custodianship of development. It is clear from the results of this study that progress in the community (development) is perceived differently by men and women. This is an important finding for development researchers and students, development planners and implementers as well as policy makers who design projects to benefit communities. The study does not only emphasize the importance of employing participatory approaches in understanding poverty and development among poor communities of developing countries, but also the consideration of the various personal and socio-economic factors of the beneficiaries. Understanding the influences of perceptions of development that are unique to men and women has potential in informing approaches and development plans that can cater for the needs of both gender separately. This is likely to enhance efficiency in design of approaches for these groups when encouraging participation

in development activities. This would help improve success outcomes of development strategies and development projects implemented in rural poor communities.

This study also has potential to inform development planners, practitioners and policy makers of development on the importance of age in perceptions of personal and community participation in development, future development prospects and custodianship of development. This understanding would help incorporate the views of people of various ages in development projects that have potential to have a great and quick impact on the lives of everyone in a community, regardless of age.

In addition, since one's perceptions of household economic wellbeing also have an influence on their perceptions of community development/progress, this result point to the need to design development initiatives in a way that all members of the community, their wealth status or perceived wealth status notwithstanding, are able to participate in these initiatives. This is because sometimes, even where participatory development may be applied, the very poor may be excluded from decisions and initiatives.

These findings therefore emphasize that development plans are prioritised based on communities' felt needs, but most importantly findings of this study offer focus in understanding the factors influencing how the rural poor perceive development. Development efforts would therefore benefit from findings of this study by incorporating these findings in their plans. This study therefore emphasizes the multidimensionality of development as perceived by the study's respondents, supporting the view that development goes beyond monetary and quantitative values, even in a community where there is less economic, cultural and social variation, like the case of the community where this study was conducted, based on the wealth status, average household incomes and other measures of wellbeing including source of water. Further, the study emphasises that development is a complex concept, requiring the need to use non-specific and contextual measures to understand and plan policies focused on communities' perceptions, needs and anticipated development outcomes based on their other individual and socio-economic characteristics.

In conclusion, this study could be applied to other more culturally diverse contexts and on a larger population where the analysis can be done for men and women separately in order to improve the understanding of the factors influencing development perceptions on gender lines. The same analysis could also incorporate the views of other younger (15-17 years) and older (above 49 years for women and above 54 years for men) persons since age was a factor influencing these perceptions.

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Table 1 Acronym definitions of variables in the model

Variable	Description/interview question	Mean (SD)/% ¹	Median
<i>Observed, endogenous variables (Scale-level data)</i>			
1. P2	Community development in this area is a responsibility of government (1.Strongly agreed 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree)	1.96 (0.72)	2
2. P3	International community has a responsibility to help in dvlpt e.g. climate (1. Strongly agreed 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree)	2.95 (1.01)	3
3. P4	How satisfied are you with the level of your personal involvement in dvlpt? (1.Very satisfied 2. Satisfied 3. Neutral 4. Dissatisfied 5. Very dissatisfied)	1.70 (0.70)	2
4. P5	How satisfied are you with the level of your community's involvement in dvlpt? (1.Very satisfied 2. Satisfied 3. Neutral 4. Dissatisfied 5. Very dissatisfied)	1.71 (0.74)	2
5. P6	How do you feel about being asked to participate in development activities? (1.Very happy 2. Happy 3. Neutral 4. Unhappy 5. Very unhappy)	1.52 (0.56)	1
6. P7	How much do you think that development in your community will improve? (1.Very much 2. Quite a lot 3. Neutral 4. Not much 5. Not at all)	1.73 (0.77)	2
7. Hgeneral	How is your health in general? Would you say it is...? (1. Very good 2. Good 3. Fair 4. Bad 5. Very bad)	2.20 (0.29)	2
8. HHWB	Position of respondent's household on a 10-step ladder where the least-developed 9. are on step 1 while most developed on the 10 th step.	2.32 (0.04)	2
10. Wealth	If respondent's household is wealthy (2 upper wealth quintiles)	40.4%	
11. Income	Average household income in Ksh @Ksh.85=1\$	5,935.82 (5,392.25)	4,000
12. DvlptElec	Whether supply of electricity would constitute development	68.7%	
<i>Observed, exogenous variables</i>			
13. Gender	Respondent's gender (Male)	49.1%	
14. Age	Respondent's age (continuous variable)	31.17 (9.08)	30
15. Parity	Number of children (If has 1 or 2 children)	15.6%	
16. Education	If respondent had secondary or higher education	26.1%	
17. Alcohol	If respondent uses alcohol	9.8%	
18. Smoking	If respondent had ever smoked	17.1%	
<i>Unobserved, endogenous variables</i>			
19. PerDvlpt	Latent (Outcome variable) computed using P2 to P7 observed variables		
<i>Unobserved, exogenous variables</i>			
E _i	Where i corresponds to variable 1-19		

¹ The figures in bold are percentage values of the corresponding variables

Table 2 Demographic and household socio-economic characteristics of sample

Characteristic	N=276	
	n	%
Gender (Sgen)		
Male	135	49.1
Female	140	50.9
Educational status		
Pre-primary/Primary	201	73.1
Secondary+	71	26.1
Age		
18-24 years	74	26.9
25-29 years	57	20.7
30-34 years	44	16.0
35-39 years	37	13.5
40-44 years	33	12.0
45-49 years	30	10.9
Parity (number of children)		
None	60	21.8
1-2	43	15.6
3+	172	62.5
Religion		
Christian	272	98.9
Other	3	1.1
Employment status		
None	228	82.9
Self	22	8.0
Other	25	9.1
Household income (Kes)- Mean(SD)	5,935.82 (5392.25)	
Educational status		
Pre-primary	201	73.1
Primary complete	67	24.6
Secondary+	4	1.5
Missing	3	1.1
Housing material (floor)		
Natural	183	66.5
Finished	92	33.5
Source of water at household		
Well (protected)	71	25.8
Unprotected (eg surface, unprotected well)	202	73.5
Other	2	0.7

Table 3 Parameter Estimates of perceived development and independent characteristics

Parameter	Estimate	P
Wealth	0.074 (0.064)	
DvlptElec	0.044 (0.067)	
Perceived household wellbeing	-0.080 (0.042)	**
Perceived health	0.043 (0.064)	
Age	-0.006 (0.004)	*
Gender	-0.321 (0.076)	***
Education	0.064 (0.073)	
Parity	0.009 (0.088)	
Alcohol use	0.262 (0.116)	**
Smoking (ever smoked)	0.212 (0.093)	**

*p<.10

**p<.05

***p<.001

Table 4: Total (Direct & Indirect) Effects of Independent variables on perception of development

Variable	Total Effects
Age	-0.006
Parity	0.007
Education	0.074
Gender	-0.319
Wealth	0.074
Hgeneral	0.043
HHWB	-0.080
DvlptElec	0.044
Alcohol use	0.262
Smoking	0.216

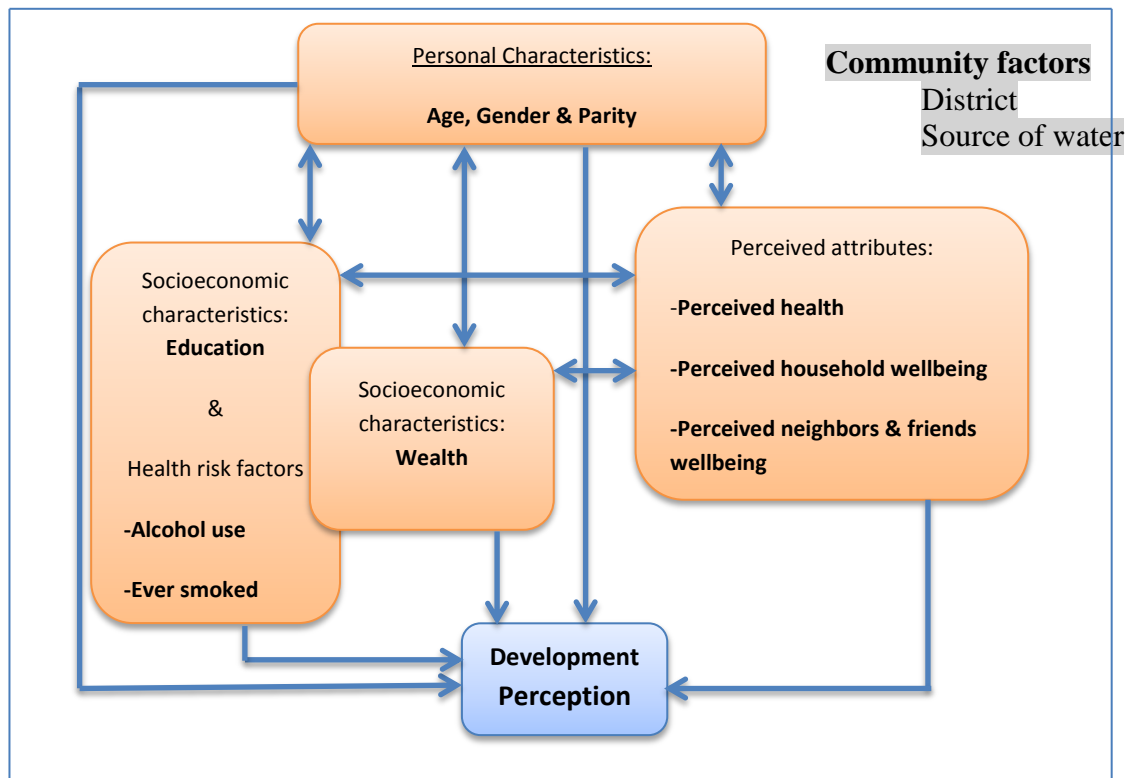


Figure 1: Model of Perceived Development (Adapted from: Porter & Garman's Conceptual Model of Financial Well-Being (Porter NM & Garman ET, 1993))

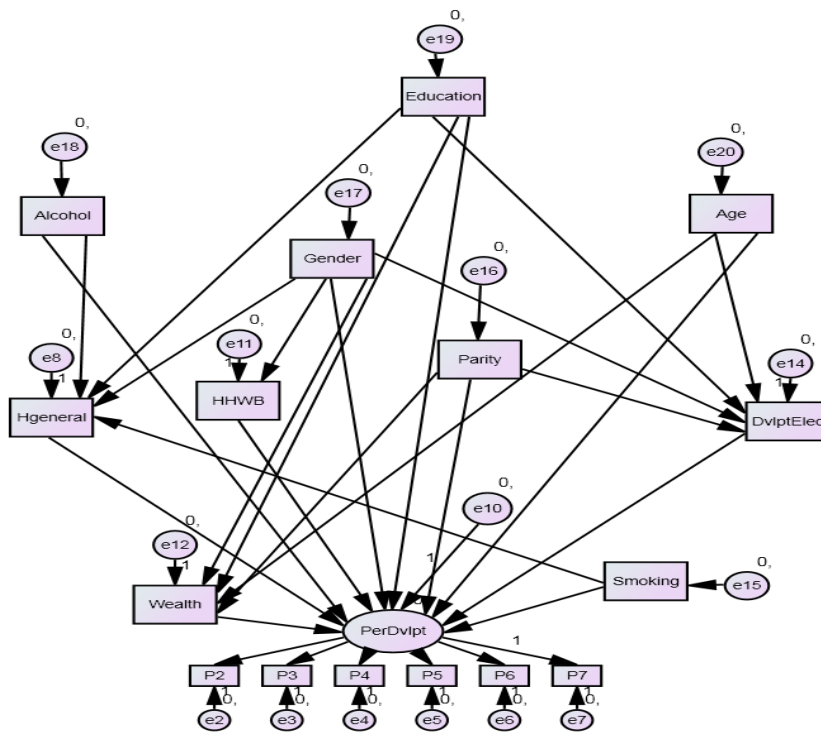


Figure 2: Model of perceived development and factors influencing perception of development

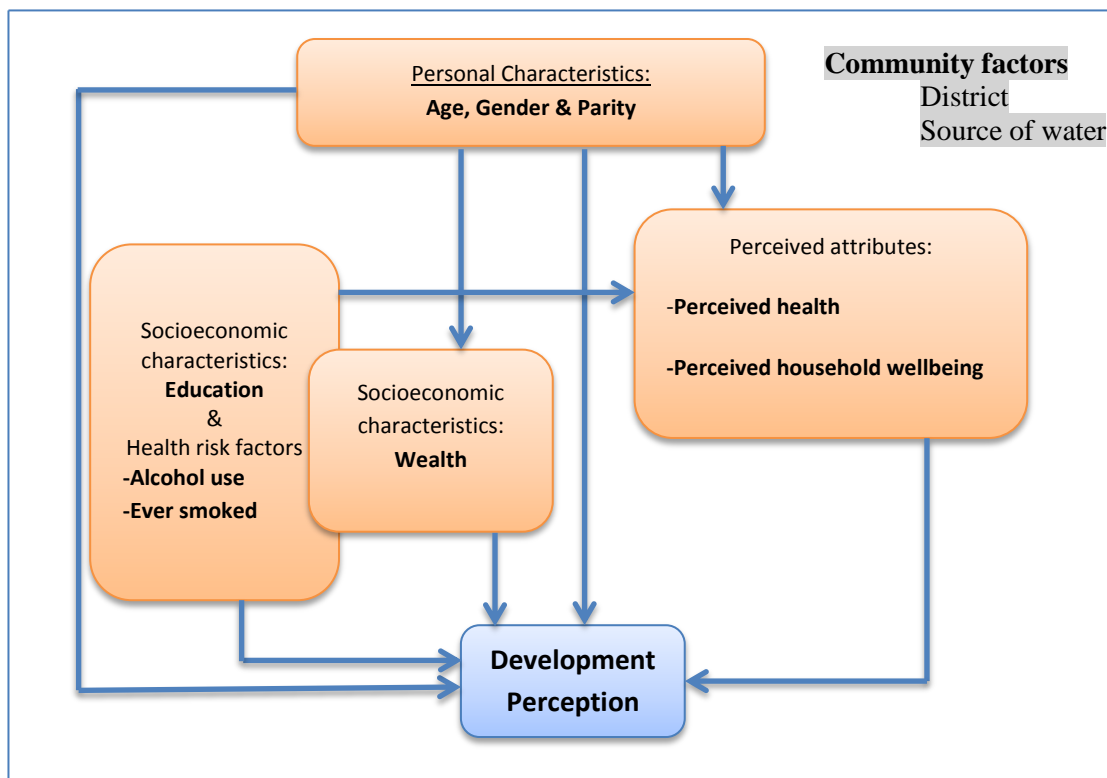


Figure 3: Revised Model of perceived development (Adapted from: Porter & Garman's Conceptual Model of Financial Well-Being (Porter NM & Garman ET, 1993))