# A STUDY ON RURAL WOMEN'S EMPOWERMENT DETERMINANTS USING INTERPRETIVE STRUCTURAL MODELING

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**Abstract**

Gender equality and social status can be improved with the empowerment of women, and this holds good for rural women as well. The primary objective of this study is to attempt to examine the determinants of empowerment of rural women's empowerment, analyse the leadership and governing criteria, and establish the hierarchical relationship structure between them. A relationship between the determinants is to be built to understand priorities, and to ascertain the driving force and power of the enablers in terms of dependence. The Interpretive Structural Modelling (ISM) technique, which is a well-established methodology, is used to identify relationships among specific items and defines problems or issues. It is observed from the results of the test that the ability to make small purchases, buy and sell cattle, and secure an education is characteristic of independent enablers. Linkage enablers include economic /monetary security, interacting effectively in the public sphere, and participating in non-family groups. Determinants such as the decision-making power in the household, involvement in major decisions, house repairs, social learning and mobility including visiting banks, bazaars in the locality, hospitals, and relatives/friends' places - are categorised as ddependent enablers, while autonomous enablers have no determinants.

**Keywords:** Empowerment, Rural women, ISM, Determinants

## INTRODUCTION

Rural women from underdeveloped, as well as developing countries comprise the poorest and most pitiful sector of the population. In developing countries, since most girl children are not in school (Lloyd,

2005); the World Economic Forum has focused on the impact of educating girls in developing countries. The World Bank and United Nations have also focused on women's issues, especially the empowerment of poor women in rural areas. Consequently, the importance of involving women in economic activities has been increasing in developing countries (McNamara, 2003). Providing sources of employment for poor rural women can result in greater empowerment of women and increase their standard of living. Empowering women through self-employment and entrepreneurship in different socio-economic sectors results in new opportunities for income generation. Microcredit is a useful tool for the empowerment of women, for poverty alleviation, and a relatively new approach for developing economies to resolve women's difficulties in obtaining financing. Microfinance appears to offer a "win-win" solution, where both financial institutions and poor clients, especially rural women in developing countries, will benefit (Mayoux, 2001). Identification of variables which enable to empower women more effectively and increase the standard of living for poor families in developing countries will be useful in women wellbeing and development. Identifying variables which empower women effectively, coupled with raising the standard of living for poor families in developing countries, will help the cause of women's well-being and development.

## LITERATURE REVIEW

Kabeer (2010) stated that women's empowerment is an expansion in a range of potential choices available to women so that actual outcomes reflect the particular set of choices which women value. Zimmerman (1995) presented three areas in the lives of human beings in which empowerment occurs: psychological, oorganizational and community analysis. Psychological empowerment refers to empowerment at an individual level of analysis, organizational empowerment refers to improved organizational effectiveness, and at the community level of analysis, empowerment refers to individuals working together in an organized fashion to improve their collective lives and linkages among community organizations and agencies that help maintain that quality of life. He further expounded on the theory by distinguishing between

empowering processes and empowered outcomes. He defined empowering processes as those "where people create or are given opportunities to control their own destiny and influence the decisions that affect their lives".

Kithuka & Otuya's (2016) model of empowerment involves local self-reliance, direct participatory democracy, and social learning. This also covers the position that women's empowerment can be measured by factors contributing to personal, economic, familial, and political empowerment, including household and interfamilial relations. The authors believe these variables significantly affect women's empowerment. Nazrul et al. (2016) split the concept of women's empowerment into three components, each measured separately: an inter-spouse consultation index, which seeks to represent the extent to which husbands consult their wives in household affairs; an individual autonomy index, which represents women's self-reported autonomy of physical movement outside the house and in matters of spending money; and an authority index, which reports on actual decision-making power. Comparable components of empowerment are included in the eight indicators by Julia Wiklander (2010), i.e., mobility, economic security, ability to make small purchases, ability to make larger purchases, involvement in major decisions, relative freedom from domination by the family, political and legal awareness, and involvement in political campaigning and protests.

A basic problem when dealing with female empowerment is that measuring empowerment has always been a difficult task, and there is hardly any consensus. Also, a single empowerment indicator is certainly not appropriate for every economy, since empowerment is influenced by socio-econ-cultural factors that are not unique to every community. Hence the measurement of female empowerment is highly context-specific. In Bangladesh, a study identified six dimensions of empowerment: i) a sense of self and a vision of the future; ii) mobility and visibility; iii) economic security; iv) decision-making power in the household; v) participation in non-family groups; and vi) interacting effectively in the public sphere. Some likely indicators of female empowerment are family structure, marital characteristics, financial

autonomy, freedom of movement, and lifetime experience of employment participation in the modern sector (Kabeer, 2010). Using data from Bangladesh, another study examined the determinants of women's within-household autonomy, focusing particularly on the relative contribution of earned versus unearned income in raising female autonomy and the role of employment outside the husband's farm (Anderson and Eswaran, 2005).

***Constructing the Determinants***

From the literature survey, different factors recommended by different authors are considered for the construction of women's empowerment determinants. Individual journal papers have focused on different research contexts, and determinants include local self-reliance; social learning; personal, economic, familial, and political empowerment; and household and interfamilial relations. Further, mobility, economic security, ability to make small and large purchases, involvement in major decisions, relative freedom from domination by the family, political and legal awareness, and Involvement in political campaigning and protests are determinants to be reckoned with. In addition, there are such determinants as a sense of self and a vision of the future, mobility and visibility, decision-making powers in the household, participation in non-family groups, ability to make small purchases (food, personal items, utensils, apparel for children and women), education-related expenses, house repairs, buying and selling cattle, visits (to relatives/friends, bazaars in the locality, hospitals, and banks), and Interacting effectively in the public sphere. As the determinants overlap or replicate themselves, the following are considered for the study.

1. Ability to make small purchases
2. Buying and selling cattle
3. Decision-making powers in the household
4. Securing an education
5. Economic/Monetary security
6. Interactingeffectively in the public sphere
7. Involvement in major decisions
8. Participation in non-family groups

9. House repairs
10. Social learning
11. Mobility - visiting banks, bazaars in the locality, hospitals, and relatives'/friends' places

## RESEARCH METHOD

### Research Objectives

**T**he primary objective of this study is to attempt to examine the determinants of empowerment of rural women and analyze the various leadership and governing criteria, as well as establish the hierarchical relationship structure between them. A relationship between the determinants is to be built to understand priorities, and to ascertain the driving force and power of the criteria in terms of their dependence.The establishment of a hierarchical relationship structure is modeled through interactive structural modeling.

### Sample Design

A sample size of 127 has been considered for the study, after eliminating 12 respondents with incomplete data. Two others from an urban background, temporarily stationed in the rural study area for a few months and expected to return, were likewise eliminated.

### Research Techniques

Interpretive structural modeling (ISM) is a well-established methodology for identifying relationships among specific items which define a problem or an issue. This approach has been increasingly used by researchers to represent inter-relationships amongelements related to the issue. A contextually relevant subordinate relation is then chosen. Having decided the contextual relation, a structural self-interaction matrix (SSIM) is developed, based on a pairwise comparison of the variables. After this, the SSIM is converted into a reachability matrix (RM) and its transitivity is checked. Once the transitivity embedding is complete, a matrix model is obtained. The elements are partitioned and an extraction of the ISM structural model is derived. ISM offers a variety of advantages, such as a systematic research approach. It considers all possible pair wise relations of system elements, either directly from participants' responses, or by transitive inference. The process demands no knowledge of the underlying process. Participants

only need to possess enough understanding of the object system to produce a structured model or graphical representation of the original problem situation. This can be communicated most effectively to others. The ISM enhances the quality of interdisciplinary and interpersonal communications, within the context of the problem situation, by focusing participants' attention on one specific question at a time. In spite of its advantages, the ISM model has limitations. An **i**ncreased number of variables to a problem increase the complexity of the ISM methodology. This imposes limits, which means that fewer variables must be considered in the development of the ISM model.

**Interpretive Structural Modeling (ISM):**

Interpretive Structural Modelling(ISM) is an interactive learning process. In this technique, a set of differentdirectly and indirectly related elements is structured into acomprehensive systematic model. The steps involved in ISM methodology include*variable identification, reachability matrix, level partitions, digraph, ISM model, model review* and *MICMAC analysis.*

**ANALYSIS AND FINDINGS**

**Development of SSIM:**

The ISM methodology suggests the use of expert opinions based on diverse management approaches, such as brainstorming and the nominal group technique, in developing a contextual relationship among the variables. For this purpose, 21 experts from the SOE were consulted to identify the nature of the contextual relationship among the factors concerned. On this basis, the contextual relationship between the factors identified is developed. Keeping in mind the contextual relationship for each factor, and the existence of a relationship between any two factors (*I* and *j*), the associated direction of the relationship is questioned. The following four symbols are used to denote the direction of relationship between the two factors, *i* and *j*:

(a) *V indicates* the relation from factor *i* to factor *j* (i.e., factor *i* will influence factor *j*)

(b) *A indicates* the relation from factor *j* to factor *i* (i.e., factor *i* will be influenced by factor *j*)

(c) *X indicates the* relations for both directions (i.e., factors *i* and *j* will influence each other)

(d) O *indicates* no relation between the factors (i.e., barriers *i* and *j* are unrelated).

Based on the contextual relationships, the SSIM is developed. To obtain a consensus, the SSIM must be further scrutinized by a few rounds of discussions. Miscellaneous leadership and governing creteria were discussed and related pair wise enablers were put together, enabling organisations to implement supply chian management and sustain themselves in a competetive market. The relationship between the enablers is denoted by various symbols, as depicted below:

**Table 1 Structural Self-Interactive Matrix**

| S. No | Study Criteria | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ability to make small purchases | X | A | O | V | V | V | V | V | V | V | O |
| 2 | Buying and selling cattle | | X | V | V | O | O | O | V | O | O | O |
| 3 | Decision-making power in the household | | | X | A | A | A | V | A | V | X | V |
| 4 | Securing an education | | | | X | V | V | V | V | V | V | V |
| 5 | Economic/ Monetary security | | | | | X | V | V | X | O | O | V |
| 6 | Interactingeffectively in the public sphere | | | | | | X | V | V | V | V | V |
| 7 | Involvement in major decisions | | | | | | | X | A | A | A | O |
| 8 | Participation in non-family groups | | | | | | | | X | V | V | V |
| 9 | House repairs | | | | | | | | | X | A | O |
| 10 | Social learning | | | | | | | | | | X | O |
| 11 | Mobility - visiting banks, bazaars in the locality, hospitals, and relatives'/friends' places | | | | | | | | | | | X |

Let *i* and *j* be the enablers under consideration for this study, and the symbols

'V' denotes that enabler *i* will help enabler *j* achieve its ends.
'A' denotes that enabler *j* will help enabler *i* achieve its ends.
'X' denotes that both *i* and *j* help each other.
'O' denotes that both *i* and *j* are not related to each other.

An initial reachablity matrix is developed and depcted in Table 1 with the above notations.

The SSIM is converted into the initial reachability matrix by substituting the four symbols (i.e., V, A, X or O) of the SSIM by 1s or 0s in the initial reachability matrix. The rules for this substitution are as follows:

(a) If the $(i, j)$ entry in the SSIM is V, the $(i, j)$ entry in the reachability matrix becomes 1, and the $(j, i)$ entry becomes 0.

(b) If the $(i, j)$ entry in the SSIM is A, the $(i, j)$ entry in the matrix becomes 0, and the $(j, i)$ entry becomes 1

(c) If the $(i, j)$ entry in the SSIM is X, the $(i, j)$ entry in the matrix becomes 1, and the $(j, i)$ entry also becomes 1.

(d) If the $(i, j)$ entry in the SSIM is O, the $(i, j)$ entry in the matrix becomes 0, and the $(j, i)$ entry also becomes 0.

**Reachability Matrix:**

The structural self-interaction matrix (SSIM) is converted into the initial reachability matrix (IRM), in which the symbols 'V', 'A', 'X' and 'O' represent binary digits.

The binary indications of 0 and 1 are shown in Table 2.

**Table 2. Initial Reachability Matrix**

| S. No | Study Criteria | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ability to make small purchases | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 2 | Buying and selling cattle | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3 | Decision-making power in the household | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 4 | Securing an education | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 5 | Economic/Monetary security | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 6 | Interactingeffectively in the public sphere | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | Involvement in major decisions | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8 | Participation in non-family groups | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 9 | House repairs | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 10 | Social learning | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| 11 | Mobility-visiting banks, bazaars in the locality, hospitals, and relatives'/ friends' places | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

After incorporating the transitivity concept as described above, the final reachability matrix is obtained.1* entries are included to incorporate transitivity to fill the gap, if any, in the opinions collected during the development of the structural self-instructional matrix. A conical matrix is developed byclustering factors in the same level across the rows and columns of the final reachability matrix. The driving power of a factor is derived by summing up the number of ones in the rows, and its dependence power by summing up the number of ones in the columns. Next, driving power and dependence power ranks are calculated by giving the highest ranks to the factors that have the maximum number of ones in the rows and columns, respectively. The final reachability matrix is represented in Table 3.

**Table 3. Final Reachability Matrix**

| S. No | Study Criteria | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | Driving Power |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ability to make small purchases | 1 | 0 | 1* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1* | 10 |
| 2 | Buying and selling cattle | 1 | 1 | 1 | 1 | 1* | 1* | 1* | 1 | 1* | 1* | 1* | 11 |
| 3 | Decision-making power in the household | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 5 |
| 4 | Securing an education | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 9 |
| 5 | Economic/ Monetary security | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1* | 1* | 1 | 8 |
| 6 | Interacting effectively in the public sphere | 0 | 0 | 1 | 0 | 1* | 1 | 1 | 1 | 1 | 1 | 1 | 8 |
| 7 | Involvement in major decisions | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 8 | Participation in non-family groups | 0 | 0 | 1 | 0 | 1 | 1* | 1 | 1 | 1 | 1 | 1 | 8 |
| 9 | House repairs | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
| 10 | Social learning | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1* | 5 |
| 11 | Mobility - visiting banks, bazaars in the locality, hospitals, and relatives'/ friends' places | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Dependence Power | | 2 | 1 | 8 | 3 | 6 | 6 | 10 | 6 | 9 | 8 | 9 | 68/68 |

## Partitioning of Levels

From the final reachability matrix, the reachability set and antecedent set are derived for each factor. The reachability set consists of the factor itself and the other factor that it may impact, whereas the antecedent set consists of the factor itself and the other factor that may impact it. Thereafter, the intersection of these sets is derived for all the factors, and the levels of the different factors are determined. The factors for which the reachability and the intersection sets are the same occupy the top level in the ISM hierarchy. The top-level factors are those factors that do not lead the other factors above their own level in the hierarchy. Once the top-level factor is identified, it is removed from consideration. The same process is repeated to find the factors in the next level. This process is continued until the level of each factor is found. The conclusion is the partitioning of levels, as shown in Table 4.

## The ISM Model

This partitioning of levels help in building the digraph and the ISM model. A digraph is used to represent the elements and their interdependencies in terms of nodes and edges, or, in other words, a digraph is a visual representation of the elements and their interdependence. In this development, the top-level factor is positioned at the top of the digraph and the second-level factor is placed at the second position and so on, until the bottom level is placed at the lowest position in the digraph. The digraph is converted into an ISM model by replacing the nodes of the factors with statements. The digraph is represented in Figure 1.

**Table 4. Partitioning of Levels**

| S. No | Study Criteria | Reachability Set | Antecedent Set | Interaction Set | Level |
|---|---|---|---|---|---|
| 1 | Ability to make small purchases | 7,9 | 1,2,3,4,5 ,6,8,9,10 | 9 | II |
| 2 | Buying and sellingcattle | 1,3,4,5,6,7,8 9,10,11 | 1,2 | 1 | VII |
| 3 | Decision-making power in the household | 11 | 1,2,3,4,5,6, 8,10,11 | 11 | I |
| 4 | Securing an education | 3,4,5,6, 7,8,9,10 | 1,2,4 | 4 | VI |
| 5 | Economic/ Monetary security | 3,5,6,7,8, 9,10,11 | 1,2,4,5,6,8 | 5,6,8 | V |
| 6 | Interactingef fectively in the public sphere | 3,5,6,7,8, 9,10,11 | 1,2,4,5,6,8 | 5,6,8 | V |
| 7 | Involvement inmajor decisions | 7 | 1,2,3,4,5,6, 7,8,9,10 | 7 | I |
| 8 | Participationin non-family groups | 3,5,6,7, 8,9,10,11 | 1,2,4,5,6,8 | 5,6,8 | V |
| 9 | House repairs | 1,2,3,4,5,6,7,8,9,10,11 | 2 | 2 | VIII |
| 10 | Social learning | 3,7,9,10,11 | 1,2,3,4,5,6,8,10 | 3,10 | III |
| 11 | Mobility - visiting banks, bazaars in the locality, hospital, relatives/friends places etc | 3,7,9,10,11 | 1,2,3,4,5,6,8,10 | 3,10 | IV |

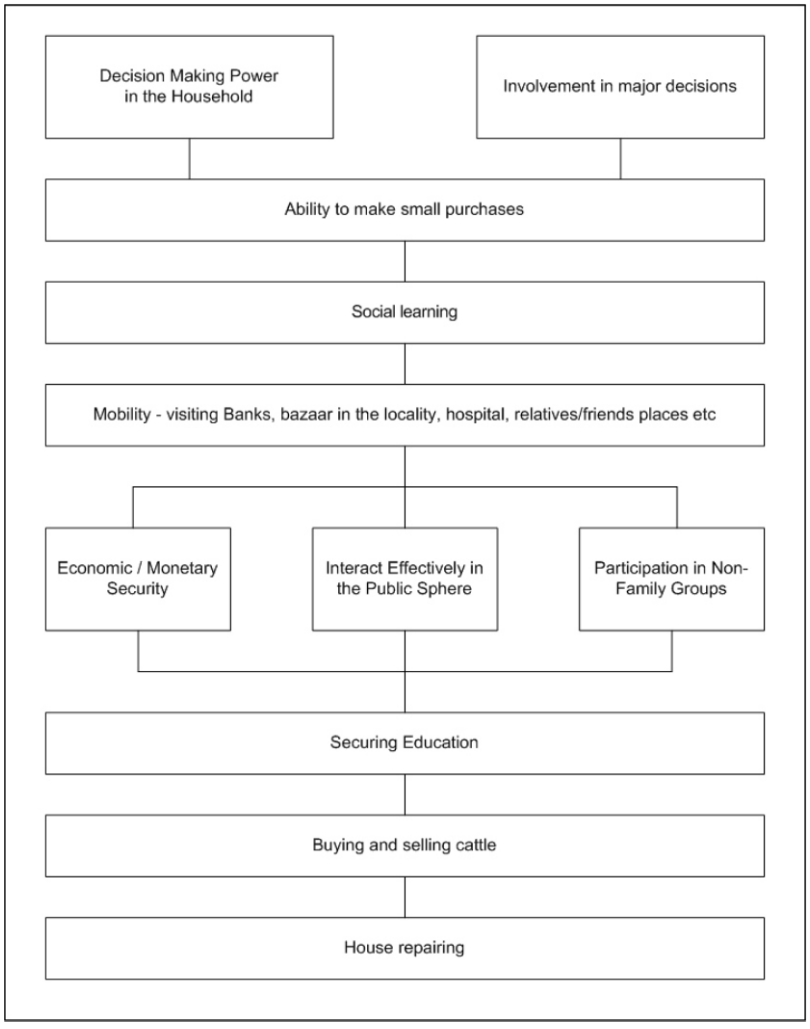


**Figure 1: ISM Model (CAUTION: Figure 1 needs minor edits.)**

**MICMAC Analysis:**

Matriced' impacts Croises multiplication appliquéea unclassement (cross-impact matrix multiplication applied to classification) is abbreviated as MICMAC. The purpose of MICMAC analysis is to analyze the driving power and dependence power of factors. The MICMAC principle is based on the multiplication properties of matrices, as shown in Table 3. It is done to identify the key factors that drive the system in various categories. Based on their driving power and dependence power, the factors are classified into four categories, i.e. autonomous, linkage, dependent and independent.

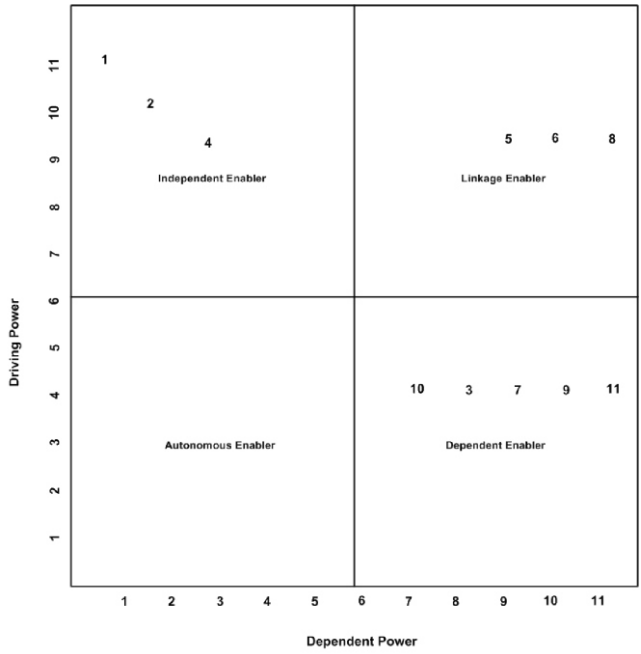


**Figure 2: MICMAC (CAUTION: Figure 2 needs minor edits.)**

***Autonomous Enablers:***

These enablers have weak driving and dependence powers. They are relatively disconnected from the system, with which they have few strong links. In this case, there are no enablers in the quarter.

***Dependent Enablers:***

These enablers have weak driving power but strong dependence power. The enablers are decision-making power in the household, Involvement in major decisions, house repairs, social learning, and mobility in the form of visits to banks, bazaars in the locality, hospitals, and relatives'/friends' places.

***Linkage Enablers:***

Linkage enablers have strong driving and dependence powers. These factors are unstable, and any action on them will affect others and, in addition, have a feedback effect on themselves. Linkage enablers comprise economic/monetary security, interacting effectively in the public sphere, and participating in non-family groups.

***Independent Enablers:***

Independent enablers have strong driving power but weak dependence power. A factor with a very strong driving power, called the 'key factor', falls into the category of independent or linkage factors. They include the ability to make small purchases, buying and selling cattle, and securing an education.

## CONCLUSION

The most obvious finding of this study is that the eleven determinants considered for the study are classified into one of the four quadrants of the MICMAC table. The determinants referred to are the ability to make small purchases, buying and selling cattle, decision-making power in the household, securing an education, economic/monetary security, interacting effectively in the public sphere, involvement in major decisions, participation in non-family groups, house repairs, social learning, and, mobility in the form of visits to banks, bazaars in the locality, hospitals, and relatives'/friends' places.

No determinants are part of autonomous enablers, quadrant- wise. Independent enablers include the ability to make small purchases, buy and sell cattle, and secure an education. Linkage enablers are economic/monetary security, interacting effectively in the public sphere, and participating in non-family groups. Dependent enablers include decision-making powers in the household, involvement in major decisions, house repairs, social learning, and mobility - in the form of visits to banks, bazaars in the locality, hospitals, and relatives'/friends' places.

Further studies need be carried out on the uncovered aspects of women's empowerment, especially the relationship between women's empowerment and microfinance, women's autonomy, and participation in the labour force. The limitations of the derived model, with the interpretive structural modeling technique, are that the model is highly dependent on expert opinions that may be subjective and biased.

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