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A Multi-Level Analysis of Barriers in the Pradhan Mantri Bhartiya Janaushadhi Pariyojana

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ABSTRACT

The "Pradhan Mantri Bhartiya Janaushadhi Pariyojana" (PMBJP) aims at enhancing the accessibility of basic medicines in terms of geographic and economic efficiency through promoting generic preparations. The data were collected from 90 respondents and 17 doctors and experts in medical sciences. The current research paper broke down the hierarchical structure and interdependent relationships of these barriers by implementing the technique of the Modified Total Interpretive Structural Modelling (m TISM) along with MICMAC analysis. Up-stream restrictions, in their turn, extended downwards, disrupting the variables of operations, including constrained availability, suppressed public awareness and fears related to the quality of medicines, and eventually create resistance among stakeholders and apprehension among consumers in the case of migrating to generic therapies. The investigation provided the practical knowledge that was the most relevant in overcoming systemic obstacles in the work of the public health interventions, matching its research results with the known frameworks of the public-policy implementation. Practical implications of this study were that it was essential to undertake comprehensive policy changes, optimal fiscal stimulus, robust supply-chain management, and carefully focused educational promotion to enhance the speed of adoption and effectiveness of PMBJP. This study had a significant value to the academic conversation about the issue of the public health policy in India as it systematically outlined and classified the factors that obstruct the implementation of PMBJP.

Key words: PMBJP, generic medicines, public health policy, m-TISM, MICMAC analysis

INTRODUCTION

The population of India is large and its composition is diverse and requires a never-ending improvement of governmental programs that are supposed to help in alleviating the existing issues of inequality in society and economic gaps. These programmes are well tailored to cover different layers of the population with consideration of all variables like age, sex, occupation and socio-economic status. Their fundamental goals include poverty reduction, rural and infrastructural improvement, funding of the disadvantaged groups and empowerment of women and small businesses (Patel and Desai, 2022).

One of the state-based initiatives to promote health equity is Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP). Being a federal subsidy program, it provides high-quality generic pharmaceuticals at nominal prices, is an attempt to offset inequities that dominate the provision of health services among population. The initiative was first launched in 2008, as the Jan/ Aushadhi Campaign under the banner of the Department of Pharmaceuticals, and later became PMBJP in 2015. The scheme is conducted by the Department of Pharmaceuticals that ensures that generic preparations are cost-efficient but pharmacologically equivalent to their branded equivalents those are placed in the market instead of their original counterparts. The main goal of PMBJP is to ensure continuous supply of reliable medicines, which reduces out-of-pocket spending, especially in rural and inaccessible areas (El-Jardali *et al*., 2017; Palav and Jadhav, 2022).

Moreover, the scheme contributes to the nation's economic growth by fostering self-employment opportunities through the establishment of Jan Aushadhi Kendras and

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supporting the domestic pharmaceutical industry. Aligning with the vision of a Viksit Bharat, PMBJP plays a crucial role in building a healthier, more productive workforce, thereby strengthening the country's economic resilience and advancing toward its goal of becoming a developed nation.

Despite the significant policy push behind PMBJP to ensure affordable access to quality medicines, its nationwide adoption remains uneven and limited. While existing literature highlights the benefits of generic medicines and public health initiatives (Sindhwani *et al*., 2022; Parameswar *et al.,* 2024), there is a notable lack of comprehensive studies that systematically identify the barriers hindering PMBJP adoption from a strategic, operational and performance perspective. Further, little has been done regarding the research using structured modelling methods, such as Total Interpretive Structural Modelling (TISM) and Matriced' Impacts Croiselles Multiplication Appliquée a un Classement (MICMAC) analysis to clarify interrelationships among these impediments (Shri *et al*., 2024). This gap underscores the need for a structured analytical approach to uncover the complex dynamics affecting the scheme's effective implementation and scalability.

Thus, the objective of the study was to identify the key barriers in the adoption of PMBJP, categorize them into strategic, operational and performance domains, and to develop a hierarchical model using TISM to explore their interrelationships and assess the driving and dependence power of these barriers through MICMAC analysis, ultimately providing actionable insights and strategic recommendations for enhancing the effective implementation of PMBJP across diverse socio-economic contexts.

The present research study offers several substantive contributions to the existing body of knowledge and policy discussion of initiatives of promoting public health in India. First, it provides a thorough listing and classification of barriers in adoption of PMBJP at strategic, operational and performance levels, a field with scant academic attention previously. Second, the study generates a hierarchical representation structure that explicates the contextual relations between these barriers and enhances the comprehension of the relative impact and interdependencies of these barriers. Third, it brings a new dimension to the methodology that categorises barriers by power of driving and dependence to produce more in-depth insights on prioritisation and policy intervention. Lastly, the research provides practical suggestions to policy makers, healthcare managers and stakeholders to overcome significant barriers of adoption and strengthen implementation infrastructure of PMBJP to promote better access to affordable medicines and contribute to the goals of universal healthcare in India.

METHODOLOGY

The paper examined the obstacles to successful implementation of the PMBJP and explored their interdependences. To establish the main issues which were crippling the success of the programme, a systematic literature review was carried out first. The initial investigation identified 20 major barriers, which were later substantiated and narrowed down with the help of 17 experts. These experts were doctors, healthcare professionals, professors and NGO workers (Table 1). These experts were selected based on their knowledge in the field and their academic qualifications, thus making them relevant to the obstacles that underlie PMBJP adoption. The next step was to contact actual users of PMBJP scheme at JAKs. For this a structured questionnaire was made based on the barriers as identified by experts and actual users were contacted at various JAKs. The responses were then recorded from the users willing to take part in the survey and those who understood the objectives of the study. The final number of recorded responses was 90 (Fig. 1).

To determine the most salient impediments, the information was derived through judgment sampling. It was an iterative and response-based process that is frequently applied in studying strategic decision-making to arrive at an expert agreement (Shri *et al*., 2024). The selected sample matched the description of this type of research to 17 experts, which aligned with the traditional methodology that applies such approaches, such as TISM and m-TISM (Sushil, 2012; Singh *et al*., 2025).

To determine the connections between these barriers, the expert judgments were obtained

Table 1. List of experts and doctors

S. No.	Experts designation	Specialization	Experience
1.	Doctor	Clinical doctor	15
2.	Policy analyst	Public policy and healthcare	10
3.	Doctor	Clinical doctor	18
4.	Professor	Public health	20
5.	Doctor	Clinical doctor	15
6.	Professor	Healthcare financing	12
7.	Doctor	Clinical doctor	16
8.	Professor	Generic medicines	18
9.	Doctor	Clinical doctor	14
10.	Senior executive	Healthcare industry policy	15
11.	Doctor	Clinical doctor	13
12.	Chief pharmacist, Jan aushadhi kendras	Generic drug dispensing	12
13.	Doctor	Clinical doctor	20
14.	Public health specialist	Medicine accessibility	18
15.	Healthcare consultant	Generic drug awareness	21
16.	Doctor	Clinical doctor	14
17.	NGO leader	Low-cost medicine distribution	13

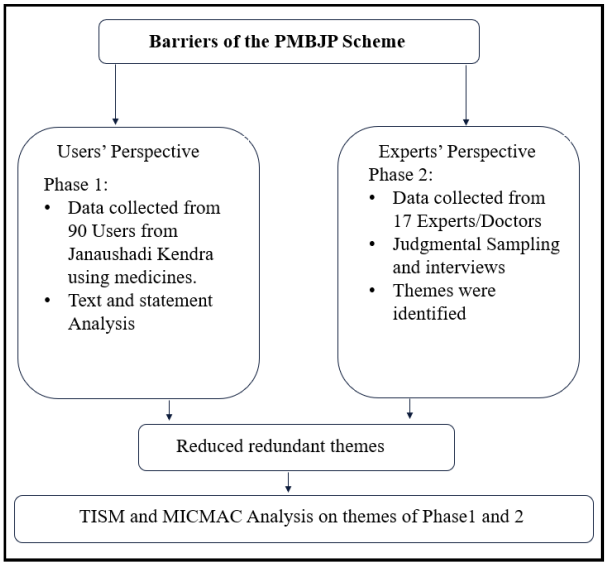

Fig. 1. Data collection for identifying the barriers in PMBJP.

on a five-point Likert scale where one point was no influence and five a very strong influence. This methodological structure gave a strong framework of how the implementation of PMBJP was directly and indirectly impacted, enabling the respondents to gauge the extent to which one barrier influenced another. Further expert data were summarized with a view to clarify the interconnection between the perceived barriers. This panel of experts played a significant part in ensuring the confirmation of the digraph structure, and therefore, the validity and reliability of the analysis.

These barriers were codified by employing the m-TISM method. It was a qualitative technique that enabled the comprehension of direct correlations and hierarchic structure of the factors (Singh and Dhir, 2022; Parameswar *et al*., 2024; Shri *et al*., 2024; Singh *et al*., 2025). Following procedures were used in the development of the (m-TISM) to determine the barriers in the successful execution of the PMBJP.

Through the literature review and interviewing the experts, the data collection was done comprehensively with the aim of identifying and defining some of the major barriers that can serve as roadblocks in implementation of PMBJP.

In step 2, it was used to establish the contextual relations among the identified barriers. In a case in point, financial stability (B_2) can have an impact on the quality of the drugs (B_7), decreasing the efficiency of the scheme. The experts and doctors were asked to create the VAXO matrix in the current form. For example:

	B_1	B_2	B_n
B_1	1	V	A
B_2	V	1	X
B_n	O	X	1

The VAXO matrix was the first useful tool for comprehending the relationships between various factors in a study, particularly in TISM analysis. VAXO stands for four different kinds of two-factor relationships. V, a strong driving variable with weak dependence indicates that the first factor influences the second, A, a weak driving variable with strong dependence indicates that the second influences the first, X, strong driving variable and strong dependence indicates that both factors

influence one another, and O, weak driving variable and weak dependence indicates that there is no direct correlation between the two. Experts were asked to examine each pair of factors and determine the kind of relationship existed between them after the key factors were identified. These four symbols were used in the VAXO matrix to represent their responses.

After the VAXO matrix was ready, it was transformed into numerical form for additional analysis. The Initial Reachability Matrix is the name given to this transformed form. The conversion is straightforward: 1 was written for (i, j) and 0 for (j, i) if the expert states that factor i influenced factor j (V). (i, j) became 0 and (j, i) became 1 if i was affected by j (A). Both sides were written as 1 if they had an impact on one another (X). Both sides were written as 0 if there was no relationship (O). In addition to preparing the foundation for building levels and the final model, this step aided in clearly illustrating the direction of influence and data collected (Table 2).

First Iteration Table

B_1	B_2	B_n	
B_1	1	V(1)	A (1)
B_2	V (1)	1	X(1)
B_n	O (0)	X (1)	1

Then, through the expert evaluations, it was analyzed how the cascading of one hindrance led to another. Establishment of these interdependences assisted in the conceptualization of a structural framework. As an example, the lack of regulatory policies (B_1) worsened the supply chain problems (B_4), and the increased unproductiveness of PMBJP. In the next stage pairwise, comparison of the identified barriers was done. This entailed developing an interpretive logic knowledge base matrix which indicated relationship using Y (Yes) to existing relationship and N (No) to absent relationship.

A binary reach ability matrix was created to reflect direct relationships between barriers (Table 3). The table was represented by the 1 indicating a positive relationship and 0 indicating no relationship. Also, a transitivity test (marked as 1*) was used to detect indirect associations between factors (Table 2). As an example, when B1 had an effect on B_3 and B_3 affected B_5 then B_1 was also related to B_5.

Second Iteration Table: Reach Ability Matrix

B_1	B_2	B_n	
B_1	1	1	1
B_2	1	1	1
B_n	0	1	1

Table 2. Structural self-interaction matrix (SSIM)

Variables	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9	B_{10}	B_{11}
B_1		X	X	V	V	V	O	O	O	O	V
B_2			X	V	V	O	O	V	V	O	V
B_3				V	V	O	V	O	O	O	V
B_4					O	V	V	V	O	O	X
B_5						X	O	V	V	V	A
B_6							X	V	V	O	A
B_7								V	V	V	O
B_8									V	V	O
B_9										X	O
B_{10}											O
B_{11}											

Table 3. Reach ability matrix after converting the VAXO in numeric form

Variables	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9	B_{10}	B_{11}
B_1	1	1	1	1	1	1	0	0	0	0	1
B_2	1	1	1	1	1	0	0	1	1	0	1
B_3	1	1	1	1	1	0	1	0	0	0	1
B_4	0	0	0	1	0	1	1	1	0	0	1
B_5	0	0	0	0	1	1	0	1	1	1	0
B_6	0	0	0	0	1	1	1	1	1	0	0
B_7	0	0	0	0	0	1	1	1	1	1	0
B_8	0	0	0	0	0	0	0	1	1	1	0
B_9	0	0	0	0	0	0	0	0	1	1	0
B_{10}	0	0	0	0	0	0	0	0	1	1	0
B_{11}	0	0	0	1	1	1	0	0	0	0	1

Fig. 2. Hierarchical structure showing the barriers to implementation of PMBJP.

The reach ability can also be discussed to locate the hierarchical position of the barriers and examine the antecedent and intersection sets. The levels were then calculated by a step by step process whereby barriers that were seen at the top of the hierarchy were separated and eliminated one by one. This was done by an iterative process, which ensured that every barrier was properly located within the overall structure (Tables 4 and 5). The entire hierarchical organization resulted in this process is displayed in Table 6.

Then, a digraph was drawn to demonstrate hierarchical relations between the barriers outlined. The directional impact of one barrier on another was defined by arrows. The digraph provided an organized review of the interdependence existing in the diverse barriers.

The validation of the relationships presented in the digraph was done by experts to confirm the fidelity of the relationships. The team of specialists used the triangulation processes in order to confirm the soundness and logical flow of the inter-realtionship between the barriers before proceeding to the next stage.

Table 4. Transitivity matrix to check the duplicate links

Variables	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9	B_{10}	B_{11}
B_1	1	1	1	1	1	1	1*	1*	1*	1*	1
B_2	1	1	1	1	1	1*	1*	1	1	1*	1
B_3	1	1	1	1	1	1*	1	1*	1*	1*	1
B_4	0	0	0	1	1*	1	1	1	1*	1*	1
B_5	0	0	0	0	1	1	1*	1	1	1	0
B_6	0	0	0	0	1	1	1	1	1	1*	0
B_7	0	0	0	0	1*	1	1	1	1	1	0
B_8	0	0	0	0	0	0	0	1	1	1	0
B_9	0	0	0	0	0	0	0	0	1	1	0
B_{10}	0	0	0	0	0	0	0	0	1	1	0
B_{11}	0	0	0	1	1	1	1*	1*	1*	1*	1

Transitivity matrix gave the results of indirect analysis. If barrier A was related to B and B was not related to C then indirectly A was related to C, this indirect link gave the outcome as transitivity matrix and authors represented transitions as 1*.

Table 5. Level partitioning (LP) matrix for identifying the levels

Elements (Mi)	Reach ability set R (Mi)	Antecedent set A (Ni)	Intersection set R (Mi)) A(Ni)	Level
1	1, 2, 3	1, 2, 3	1, 2, 3	5
2	1, 2, 3	1, 2, 3	1, 2, 3	5
3	1, 2, 3	1, 2, 3	1, 2, 3	5
4	4, 11	1, 2, 3, 4, 11	4, 11	4
5	5, 6, 7	1, 2, 3, 4, 5, 6, 7, 11	5, 6, 7	3
6	5, 6, 7	1, 2, 3, 4, 5, 6, 7, 11	5, 6, 7	3
7	5, 6, 7	1, 2, 3, 4, 5, 6, 7, 11	5, 6, 7	3
8	8	1, 2, 3, 4, 5, 6, 7, 8, 11	8	2
9	9, 10,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	9, 10	1
10	9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	9, 10	1
11	4, 11	1, 2, 3, 4, 11	4, 11	4

Table 6. Final reach ability matrix to get the driving and dependency variables by getting the total of rows (driving power) and total of column (dependency power)

Variables	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9	B_{10}	B_{11}	Driving power
B_1	1	1	1	1	1	1	1*	1*	1*	1*	1	11
B_2	1	1	1	1	1	1*	1*	1	1	1*	1	11
B_3	1	1	1	1	1	1*	1	1*	1*	1*	1	11
B_4	0	0	0	1	1*	1	1	1	1*	1*	1	8
B_5	0	0	0	0	1	1	1*	1	1	1	0	6
B_6	0	0	0	0	1	1	1	1	1	1*	0	6
B_7	0	0	0	0	1*	1	1	1	1	1	0	6
B_8	0	0	0	0	0	0	0	1	1	1	0	3
B_9	0	0	0	0	0	0	0	0	1	1	0	2
B_{10}	0	0	0	0	0	0	0	0	1	1	0	2
B_{11}	0	0	0	1	1	1	1*	1*	1*	1*	1	8
Dependence power	3	3	3	5	8	8	8	9	11	11	5	

Through the above-mentioned methodological procedures, the final m-TISM model was compiled, which provided a carefully organized description of the obstacles of impeding the effective execution of the PMBJP.

The MICMAC analysis made it easy to not only estimate the impact that each barrier had in the system and also the extent to which one is impacted by the other. The analysis has thus clarified both the barriers that are influential and volatile thus outlining areas of priority in order to intervene in the implementation of PMBJP.

RESULTS AND DISCUSSION

PMBJP significantly increased affordable healthcare availability, as characterized by a range of challenges that inhibited its complete actualisation. The list of contacted experts and their opinion was sought on the array of barriers (Table 1). The barriers were classified as being critical to the success of this scheme.

Unstable policy environment at PMBJP created some form of instability in the implementation. The constant changes in the directives of government relating to licensing, pricing and distribution created confusion among the stakeholders which included manufacturers, pharmacists and the consumers. Lack of a long-term commitment on the policy prevented investors and pharmaceutical companies to plan a long-term involvement in the programme. The further restructuring of policies led to stalling and confusion.

The PMBJP made the approval and distribution of generic medicines very lengthy through stringent regulatory preconditions. Compliance with Good Manufacturing Practices (GMP), Central Drugs Standard Control Organization (CDSCO) requirement and other formalities under the law required tedious documentation and lengthy processes to be approved. These regulatory bottlenecks detracted small and medium sized manufacturers, thus restricting availability of affordable therapeutics.

Financial sustainability of JAKs was an urgent issue, as there were low profit margins, high operation costs and high start up cost. Many pharmacy operators were struggling to continue doing business because of inconsistent stocking of medicines and poor consumption by consumers; which resulted in minimal sales. One of the key contributing factors was that the profit margins on the generic formulations were relatively low, compared to branded alternatives and thus the programme was economically not viable to the private pharmacists who depended entirely on the PMBJP products.

The ability to maintain the continuous supply of the generic medicines was possible only with the help of an efficient supply chain. However, PMBJP was faced with frequent stock-outs, bottlenecks in transportation and third-best distribution channels, thus undermining the stock of medicine at Jan Aushadhi Kendra. It was reported that crucial generics such as life-saving medication like insulin, as well as antibiotics, were often out of stock because supply-chain disruptions were common.

Without a strong infrastructure, even the best laid down policies failed to achieve their intended results. Healthcare infrastructure, such as mobile Jan Aushadhi units, should

receive a higher priority in order to bring affordable medication to the underserved communities. It was essential to make sure that Kendra's comply with the minimum requirements (cleanliness, stable power supply, cold-chain logistics, etc.) to maintain the effectiveness of drugs and encourage people to trust the programme.

A major segment of the population was still not aware of the presence, the benefits and affordability of generic medicines in PMBJP. The small scale promotional campaigns and widespread misinformation were among the reasons why the target demographic had a low adoption rate. There was poor awareness among healthcare professionals such as physicians and pharmacists which led to an outcome of fewer prescriptions to generic drugs (Agrawal, 2023)

Despite concerted efforts to expand the Jan Aushadhi Kendra network, many areas especially remote or rural ones continued to face serious barriers to accessibility. The consumers were often forced to walk long distances to access the closest facility. Availability need to be further extended with the leveraging of established health infrastructure in the country, including the existence of primary health centres (PHCs) and community health centres (CHCs), without the capital expense of prohibition (Solanki, 2022).

An existent fear within the consumer population was the perceived inferiority of the generics when compared to branded medications. The grievances focusing on poor packaging, unclear labelling and lack of brand name increased mistrust. In addition, it was essential to train pharmacists in order to competently communicate the efficacy and safety profiles of generics to strengthen consumer confidence.

Doctors often demonstrated resistance when prescribing generic drugs, especially as a result of the pharmaceutical industry pressure and prescriptive issues concerning the efficacy of the drug in treatment. The resistance occurred between manufacturers: who with lower profit margins restrained production of generics?

Patients usually fear replacing branded medicines with generic ones due to their brand loyalty and their distrust in the effectiveness of the therapy. The subjective link between high prices and quality also deteriorated the use of cheaper substitutes. The positive attitudes of physicians to generics had a great impact on the prescribing behaviours of physicians, which subsequently affect patient acceptance (Dehury *et al*., 2024). The social perception had a far-reaching effect on consumer acceptance of generic medicines. Low-price drugs were confused with low quality drugs, and even social stigma did not facilitate the use of generic drugs. The generally poor attitudes in society regarding government-sponsored healthcare programs were the barriers to the rampant adoption of generics.

The study determined and examined the key obstacles hindering the successful implementation of the PMBJP. The hierarchical framework, generated through m-TISM, provided an ordered understanding of the relationship between the barriers (Fig. 2). The VAXO matrix was prepared after interviewing the experts one by one. And putting the values based on experts, authors made the Reachability Matrix.

Based on Tables 5 and 6, the diagraph was prepared (Fig 2). In the diagraph, there were five levels of variables. The lower levels (5 and 4), were the strategic variables and middle level as the linkage variables (level 3 and 2). Both the strategic and linkage variables were considered as the dependent variables. The upper level (at level 1) the performance variables and considered as the dependent variables. To achieve the objective of trust and confidence of users and experts (B_9 and B_{10}), government must look at strong regulatory aspects with a policy framework to achieve financial inclusion (B_1, B_2 and B_3).

The results of the TISM analysis were similar to the Public Policy Implementation Model, which pointed to the fact that the key obstacles to successfully implement the PMBJP were the barriers on strategic level (Level V): inconsistent policy frameworks (B_1), financial difficulties (B_2), and regulatory barriers (B_3). These impediments had a significant impact on infrastructural shortages (B_{11}) and logistic issues in supply chains (B_4) at Level IV, which were paramount in providing smooth operations and access to medicine. A non-consistent policy framework (B_1) led to disjointed implementation, created confusion in the way strategies were implemented and postponed the decision-making processes. The inconsistency of policies, casual directions and

the inconsistency between the central and state instructions undermined the stability of PMBJP, which caused inefficiencies in implementation. Furthermore, there were financial issues (B_2) like lack of funding, long reimbursement, and incentives that presented serious challenges to the stakeholders, such as pharmacy owners and logistics companies. Such financial restrictions were barriers to the growth of JAKs as well as interruptions in the supply of medicine, which reduced the reach of the program. Also, regulatory barriers (B_3), which were reflected in bureaucratic inefficiency, complex approval systems and excessive compliance cost also hindered the formation and operation of JAKs. These difficulties discouraged the involvement of the private sector and postponed the effective acquisition and distribution of generic drugs (Maiti *et al*., 2018).

These strategic barriers, therefore, had a direct effect on infrastructural gaps (B_{11}) and supply-chain logistic challenges (B_4) at Level IV. The lack of adequate infrastructure, including poor storage units and transportation limitations, complicated the effective medicine delivery, leading to regular stockouts and transportation challenges. In Level VI, strategic barriers were comprised of infrastructural gaps (B_{11}) and supply-chain logistics issues (B_4) with a moderate driving and dependence power. They had strong impact on the operational barriers including lack of awareness and outreach (B_5), limited availability and accessibility (B_6), and low quality (B_7), all of which were at the middle of the TISM model. A relevant theory to understand how these obstacles were preventing the prevalence and adoption of the PMBJP was the Diffusion of Innovation (DOI) Theory. In the DOI context, supply-chain logistics issues (B_4) and infrastructural gaps (B_{11}) interfered with the knowledge and persuasion phase of the adoption by restricting access to quality information and affordable medicines.

Similarly, implementation and confirmation stages of DOI were directly impacted by limited availability and accessibility (B_6). Unless generic medicine was regularly found in the JAKs, the consumers were likely to develop negative attitudes about its reliability. Relative advantage of PMBJP medicines, which was mainly the affordability of them, became meaningless when patients were not available at the time when they were needed (Lavtepatil and Ghosh, 2022).

Moreover, low-quality (B_7) presents a major challenge in the persuasion and decision stages of DOI. If the perception of quality remained low due to ineffective quality control mechanisms, weak regulatory oversight, and inconsistent product availability, consumers will hesitate to switch from branded medicines. Trust plays a crucial role in adoption, and if early adopters experience concerns over medicine efficacy, negative word-of-mouth may slow down the rate of diffusion.

At Level III, the barriers of operation were lack of awareness and outreach (B_5), restricted availability and accessibility (B_6), and low quality (B_7) barriers that had moderate driving and dependence power, and to a significant degree, it was driven by resistance of stakeholders (B_8), a performance level in the TISM model. The barriers posed significant obstacles to the successful execution of the PMBJP by compromising the stakeholder trust, interest and involvement.

Limited stakeholder engagement in the program was one of the results of a lack of awareness and outreach (B_5). The lack of awareness among many healthcare professionals, pharmacists and consumers about the advantages of PMBJP made adoption of this technology reluctant. This contributed to stakeholder opposition (B_8), as medical workers and even consumers can be reluctant to switch to Jan Aushadhi medicines because of uncertainty and misinformation.

In the same manner, there was a lack of availability and access (B_6) which worsened stakeholder issues. Unless medicines under PMBJP were regularly stocked in JAKs, there was a supply uncertainty, and healthcare providers and patients cannot depend on it as a feasible alternative. Lack of consistency in supply chains may disappoint stakeholders resulting into lack of trust and commitment to the initiative.

Also, the quality (B_7) had a substantial effect on the confidence of the stakeholders. Consumers, doctors and pharmacists will not prescribe, purchase or use Jan Aushadhi medicines that they see as inferior in quality compared to branded medicines. The negative experiences associated with perceived or real quality problems have the potential of creating

long term distrust towards the program that would translate to the low attendance of the important stakeholders such as medical providers, the regulatory authorities as well as the policymakers who determine the behaviours of healthcare.

At Level II, the stakeholder resistance (B_8) became the most important barrier with the highest dependency power, which directly affected consumer unwillingness and social image (B_9) and unwillingness to change branded medicines (B_{10}).

Connecting the stakeholder resistance (B_8) to the factors of consumer reluctance (B_9) and switching hesitancy (B_{10}). Unless the stakeholder resistance was successfully removed by unfreezing, consumers will continue to be reluctant and the transition from branded to generic medicines will not be made easily. Thus, engagement strategy; involving multiple stakeholders, policy interventions, as well as trust-building initiatives were essential to the implementation of Jan Aushadhi medicines into regular healthcare practices and their widespread adoption.

MICMAC analysis represented the refinement of the insights into the location of each barrier in the process of adoption and the overall success of the PMBJP (Fig. 3). The independent obstacles, the inconsistent policy framework, the financial constraints and the regulatory lag, were revealed as the most critical barriers strategically, with a high driving power but, nevertheless, low dependency. These factors were the genesis of a continuum of bottom-line problems, thus affecting supply-chain ineffectiveness, stakeholder uncertainty and how the population views generic drugs (Solanki, 2022). The weak regulatory framework and financial constraints created uncertainties in the market, limit the scalability of the initiative and discourage more comprehensive involvement in the industry.

The linkage barriers, including logistical issues within the supply chain, lack in infrastructures, a lack of awareness and outreach, limited availability, and the perception of poor quality had a significant driving and dependent power. Insufficient logistics and infrastructure support a state of inefficiencies in the distribution, where in turn, generic remedies were not so readily available to the end-users and lack of social

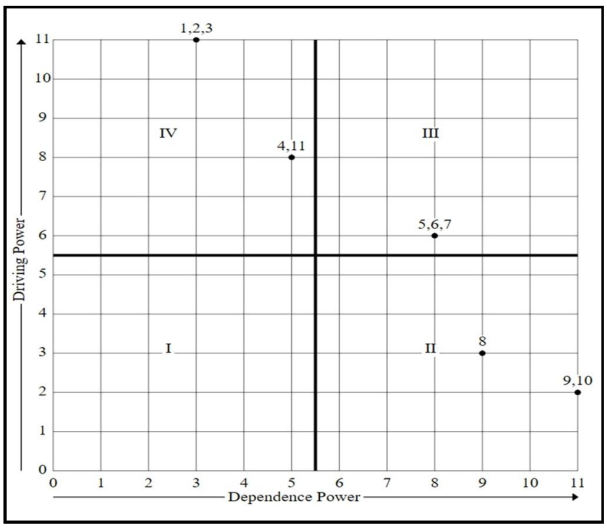

Fig. 3. MICMAC analysis.

awareness and interest towards the quality of the therapeutic content further demotivated consumers to replace generic remedies (Dehury *et al*., 2024).

The dependent barriers, which included stakeholder resistance, consumer reluctance, and unwillingness to abandon branded pharmaceuticals showed dependence but not driving power. These were primarily founded on the compounded outcome of regulatory, financial and operating inefficiencies. Resistance of stakeholders supported consumer reluctance and occurred due to uncertainty about policy implementation, inadequate financial backing, and infrastructure shortages. It is necessary to pay attention to high-driving barriers in order to stage systemic change. This will have a ripple effect of addressing the issues concerning the strategies and operations and, eventually, will result in less resistance towards generic drugs among the stakeholders and enhance consumer confidence.

CONCLUSION

The findings provide policy implications to the policymakers, healthcare providers and supply chain stakeholders. To begin with, strategic impediments which were critical can be relieved through enhancing the regulatory system and raising fiscal stimulus. One of them was a particular financial aid framework on allocation of subsidized generic drugs that can increase the degree of accessibility and affordability of medication. Second, the

knowledge gap can be bridged through specific public awareness campaigns and digital interventions, which would assist the consumers in learning the benefits of using the generic medicines compared to branded ones.

Moreover, supply-chain integration as well as infrastructural development was also required to the successful implementation of PMBJP. Significantly, the introduction of real-time tracking systems that may be founded on blockchain-driven or AI-driven logistics platforms have the potential to drastically streamline the network of medicine distribution and reduce delays and inefficiencies. In addition, the cooperation with private pharmaceutical organizations and the public-private alliances (PPP) were potentially effective to reduce the bottlenecks in the infrastructure and increase the amount of available medicines.

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