

Design Thinking and Wicked Problem Management through Consensus-Oriented Approaches: An Empirical Analysis of Indian Organisations

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Abstract

Institutions are constantly facing intricate issues which cannot be faced properly through conventional problem-solving methods. These issues are mostly considered as wicked problems, are influenced by doubt, numerous stakeholders, contradictory interests and the lack of standard solutions. Challenges like climate change, poverty, public health concerns and resource shortage need adaptive and cooperative strategies instead of linear decision-making procedures. Design thinking has surfaced as a confirming approach for facing these issues via human-oriented creativity, stakeholder management, iterative information and experimentation. This study examines the impact of design thinking and consensus-driven strategies in handling wicked problem in a institutional arena. It scrutinizes the significance of cooperative decision-making, brainstorming, stakeholder inclusion, and iterative issue erupting in a developing practical and suitable services. The research also talks about the ideas of solving, resolving, dissolving and absolving issues, including the real-word examples. The results imply that incorporating design thinking with consensus-building might assist organizations reach more productively to intricate and growing issues. 250 Indian employees from different organizations were surveyed to explore the factors that determines Design Thinking and Wicked Problem Management through Consensus-Oriented Approaches. The study concludes that there is significant impact of Consensus-Oriented Approaches on Design Thinking and Wicked Problem Management.

Keywords: Design Thinking, Wicked Problem, Consensus-Oriented Approaches, Indian Organisations, Problem Solving

Introduction

Nowadays organizations function in a extremely critical landscape defined by swift technical transformation, societal ambiguity, ecological issues and varied stakeholder expectations. Most of these issues cannot be productively handled via traditional problem-solving strategies as they are intricate, interrelated and continuously growing. These issues are mostly defined as wicked problems by Rittel and Webber (1973) to elucidate issues which are problematic to be described, include several stakeholders and absence of clear or fixed solutions. Instances like climate change, poverty, public health crisis, lack of resources, and sustainable advancement.

Traditional managerial strategies mostly depend on linear decision-making procedures and consider that issues can be distinctly explained and solved via logical analysis. Nevertheless, wicked problems need more adaptive, collaborative, and iterative strategies which acknowledge instability and contradicting stakeholder interests (Head, 2022). With respect to this, consensus-building has surfaced as an essential procedure for allowing stakeholders to boost shared comprehension and recognize appropriate plans of action inspite of a variety of mindsets (Innes & Booher, 2018).

Design thinking has achieved meaningful observation through a human-driven strategy for dealing intricate systemic and social issues. By highlighting empathy, cooperation, experimentation and iterative learning, design thinking motivates organizations to find out issues from several mindsets and create creative solutions which are reactive to stakeholder requirements (Brown & Wyatt, 2010; Liedtka, 2020). Instead of finding perfect solutions, design thinking raises constant modification and adaptation, making it specifically relatable to handling wicked problems.

This study scrutinizes between design thinking and wicked problem management via consensus-driven strategies in Indian institutions. The research finds out the features of wicked problems, the purpose of consensus-building in decision-making, various steps of problem solving, and the usage of brainstorming policies for addressing ecological and organizational issues. Moreover it points out the real-world instances of organizations which have successfully used design thinking to create social impact. By incorporating empirical mindsets with practical applications, the study tries to show how design thinking and cooperative decision-making may assist towards more productive management of complex and rising issues.

Literature Review

How To Reach Consensus on Wicked Problems

Wicked problems are considered as complicated issues that have no clear solutions and involve multiple stakeholders (Rittel & Webber, 1973; Head & Xiang, 2016). Current problem-solving paradigms are not sufficiently effective in addressing these challenges. Alternative approaches such as wicked situations seek to dissolve problems through perspective shifts and iterative learning processes (Churchman, 1967; Ackoff, 1978). “Problem-Solving Process Consensus doesn’t mean total agreement but rather shared understanding and commitment to a decision” (Innes & Booher, 2018).

The idea of wicked problems surfaced from strategies and political knowledge wherein investigators identify that several communal challenges are extremely intricate for conventional linear problem-solving approaches. These issues need involvement, concession and adaptive learning among several stakeholders (Head, 2022; Ansell & Torfing, 2021).

Wicked problems, such as climate change, poverty, and antibiotic resistance, are ethical problems where concerns about the social good are central (Levin et al., 2012; Termeer et al., 2019). Although they cannot be completely solved, they demand urgent attention. These problems are difficult to define, have no stopping rules, and have no final solutions (Rittel & Webber, 1973). Their solutions are often judged as “good or bad” rather than “true or false” (Rittel & Webber, 1973).

Investigator critic that wicked problems remain as they incorporate competitive risks, ambiguity and interrelated models. Henceforth, consensus-building aims at seeking functioning and suitable solutions instead of attaining full acceptance among all stakeholders (Bächtiger et al., 2018; Head, 2022).

Ethical problems are often regarded as wicked problems due to their complex prescriptive dimensions (Head, 2022). There is no straightforward planning or engineering solution because societies lack a universally shared conception of the common good. Instead, wicked problems must be managed through continuous engagement and adaptation (Head & Xiang, 2016).

In this context, design thinking offers a promising approach by incorporating multiple perspectives, encouraging ongoing problem formulation, and supporting iterative solution development (Brown & Wyatt, 2010; Dell’Era et al., 2020).

Design thinking motivates empathy, cooperation, research, and stakeholder involvement, resulting in a specifically appropriate for dealing with wicked problems and assisting consensus-driven decision-making (Liedtka, 2020; Norman & Stappers, 2023).

Steps to Reach Consensus

Consensus is a multi-step process, to reach consensus, certain steps must be followed, same have been mentioned in the Figure 1 ((Innes & Booher, 2018).



Figure 1 Steps to Reach Consensus Process

- *Frame the Problem Together:* input of all the stakeholders is used to define the problem in collaborative manner (Crosby & Bryson, 2022).
- *Use Structured Brainstorming:* Different ideas need to be collected with the help of open brainstorming, nominal group technique, or mind mapping (Paulus & Brown, 2023).
- *Cluster and analyse Ideas:* The ideas are grouped into themes where common ground within them is identified (Bächtiger et al., 2018).
- *Evaluate Options Collaboratively:* Tools like “Multi-voting, Delphi Method, or Dot Voting” are used to filter the ideas (Hasson et al., 2020).
- *Repeat & Refine Solutions:* Ideas are adjusted by encouraging feedback and revisiting assumptions (Dell’Era et al., 2020).
- *Build Shared Commitment:* At this stage dialogue are facilitated, trade-offs are acknowledged and seek “good enough” solutions that all can support (Innes & Booher, 2018).
- *Document Agreement:* The agreed-upon direction and next steps are clearly defined at this stage of complete process (Bächtiger et al., 2018).

Methods of Problem Solving:

The biggest myth associated with the process of problem solving is that there is a solution for all the problems, which is incorrect assumption. In real, problems can either be “solved, resolved, dissolved or absolved”, where

“solved, resolved, dissolved” actually remedy the issue (Ackoff, 1978). Generally, the word “solve” is used that means “solved, resolved, dissolved”, but when we talk about wicked problems, we use a better word “remedy” due to the reason that the wicked problems can only be managed by improving the situation. Figure 2 shows the four ways of remedying the wicked problem completely (Ackoff, 1978). The discussion is given after that.

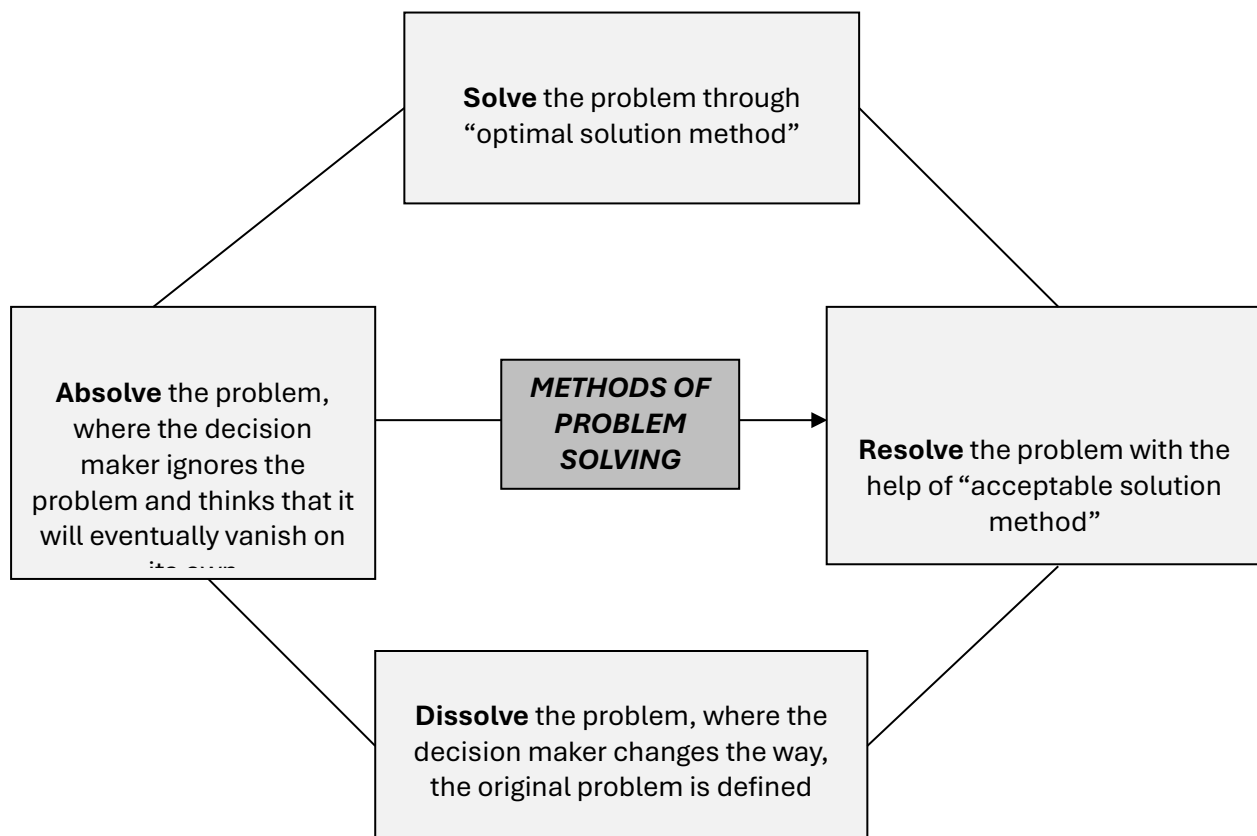


Figure 2 Methods of Problem Solving

1. Solve the problem through “optimal solution method” where the decision maker selects and choose some possible values from the problem that can be controlled to get the best results (Ackoff, 1978).
2. Resolve the problem with the help of “acceptable solution method” where the decision maker selects and choose the variables that possibly do not give the best results but, give the results that are good enough and acceptable (Ackoff, 1978).
3. Dissolve the problem, where the decision maker changes the way, the original problem is defined, so that the original issue is no longer exists. This approach of dissolving the issues brings in new innovative and creative solutions (Ackoff, 1978; Norman & Stappers, 2023).
4. Absolve the problem, where the decision maker actually ignores the problem and thinks that it will eventually vanish on its own. Sometimes, decision maker ignores the issue intentionally as it is very expensive to remedy. There are number of technical and social capabilities are required to remedy the issue that are not known to them and are unaffordable as well (Ackoff, 1978).

Brainstorming to solve wicked issue such as environmental challengea

Brainstorming is a creative and innovative technique that generates and evaluates the ideas to solve the environmental challenges. The brainstorming technique helps to “explore different perspectives, identify potential

solutions, and build consensus” among stakeholders while working on a “project, a policy, or a campaign.” Some steps are discussed below to solve environmental challenges using brainstorming:

Define the problem: In the brainstorming process, the first step is to clearly define the issue that one wants to solve. The problem can be framed with the help of a “problem statement, a question, or a goal”. Example, one may ask: “How can we reduce our carbon footprint by 20% in the next year?”. One may state: “We want to improve the water quality of our local river”. One can focus on brainstorming session when the problem is well defined and avoid getting unfocussed by unrelated issues (IDEO, 2021). Problem framing is cited as an essential factor of design thinking as stakeholders mostly view wicked problems inversely. A clearly described problem statement supports participants view their struggles and launch a common comprehension of the problems prior producing solutions (Brown & Wyatt, 2010; Dell’Era et al., 2020).

Gather information: After defining the issue, the next step is to collect relevant information related to problems and its context. Various data sources like “reports, surveys, interviews, observations, or experiments” can be used to know the “cause, effect, and implication” of the issue. Tools like “SWOT analysis, PESTLE analysis, or stakeholder analysis” are used to assess the strength, weakness, opportunity, threat, political, economic, social, technological, legal, and environmental factors, and the interest and expectation of the people that are involved and affected by the problem. When we gather the information, it helps to broaden the knowledge and perspective and also get ready to generate ideas (Johnson et al., 2020). Information gathering is particularly essential when dealing wicked problems as these issues mostly include ambiguity, contradicting stakeholder interests and inadequate knowledge. Wide-ranging data gathering allows decision-makers to comprehend the larger perspective and recognize undisclosed factors impacting the issue (Head, 2022; Norman & Stappers, 2023).

Generate ideas: Gathering information is followed by generating ideas where one generates as many ideas as possible to solve the problem. Techniques like “free association, mind mapping, brainwriting, or SCAMPER” can be used to stimulate creativity and different thinking. Tools like “sticky notes, flip charts, or online platforms” can also be used to record and organise the ideas. The key rules that need to be followed while generating ideas are to “defer judgment, encourage wild ideas, build on each other's ideas, and aim for quantity and variety” (Paulus & Brown, 2023). Production of innovative ideas develops a varied perspectives enabling participants to go beyond traditional notions and seek new ideas. Research have presented that brainstorming sessions include a variety of participants who mostly generate more creative and acceptable solution instead of those which are enhanced by common identical groups (Paulus & Brown, 2023; Micheli et al., 2019).

Evaluate ideas: Next step of brainstorming process is idea evaluation step in which the idea which is generated and selected as most promising one is evaluated for further development. Different criteria like “feasibility, effectiveness, impact, cost, time, or alignment with the problem and the goals” are used to assess the idea. Along with this, the tools like “voting, ranking, or scoring” are used to prioritize and filter the ideas. “Constructive, respectful, objective, and realistic” are the key rules for evaluating the idea.

Develop solutions: Next brainstorming step is to develop and convert the selected idea into a more comprehensive and actionable solution. “Prototyping, testing, or refining” are different techniques that can be used to elaborate and improve the solution. In this step, tools like “logic model, action plan, or budget” are used to define the “input, output, outcome, activities, resources, and indicator of the solution”. To be “collaborative, creative, flexible, and solution-oriented” are the key rules that need to follow while developing the solution for any particular issue (Brown & Wyatt, 2010). Prototyping and iterative testing are key ideas of design thinking. Instead of seeking correct solutions instantly, design thinkers constantly update ideologies on the basis of stakeholder review and real-world examples, resulting in lack of ambiguity and improvised productiveness. (Dell’Era et al., 2020; Liedtka, 2020).

Communicate solutions: The final step is to communicate the solution to the relevant stakeholder and ask for their feedback and support. Different methods like “presentations, reports, or pitches” are used in this step to convey the solution. At the same time, tools like “visuals, stories, or testimonials” can be used to improve the appeal and trustworthiness of the solution (Brown, 2019). Effective communication serves a meaningful role in

attaining stakeholder buy-in and sustainable implementation achievement. Visual storytelling and influential communication support stakeholders comprehend the logic behind anticipated solutions and motivate cooperative acceptance of the results (Brown, 2019; IDEO, 2021).

Some Real-World Examples of How Businesses and NGOs Used Design Thinking for Social Impact

Grameen Bank

The Grameen Banks are micro-finance organizations that provide small loans to people in Destitution. These organizations use design thinking to know the requirements of their poor and illiterate borrowers. The Grameen banks appoint a team of researchers that talk to these borrowers by going out in the field and get better understandings of their challenges in paying back their loans. On the basis of the feedback, the organization develops a loan product that help the borrowers to repay their loans in small portions. There are millions of people that got help with this product which allows them to access credit and improve their lives (Yunus et al., 2010). Grameen Bank is often considered as the best instance for human-driven innovation as its services were created around the real requirements and shortcomings of underprivileged communities. The organization presented that impact of society may be attained when products and services are enhanced via direct engagement with end users (Karim, 2022; Yunus et al., 2010).

Water Health International

Water Health International company develops affordable and sustainable water treatment systems with the help of design thinking. The company aims to provide clean water to the people of developing countries. The company had appointed a team of researchers that talk to people who did not have access to clean water by going out in the field and understand that there are communities that have enough money to get the water treatment system and some of them are not even skilled to operate these systems. The company had developed affordable and easy to operate water treatment system on the basis of the feedback that helped millions of people around the world to get clean water (Prahalad, 2014). This instance emphasizes how user-driven design can deal critical public health issues. By comprehending local abilities and shortcomings, organizations can enhance technologies which are both reasonably priced and ecologically balanced for marginalized communities (World Bank, 2023; Prahalad, 2014).

Design for America

It is a non-profit organization that works in collaboration with the communities across United States to identify and solve the issues that affects these communities using design thinking. For example, the company works with Detroit residents and got to know about the difficulties they face in finding affordable housing societies. On the basis of feedback, they developed a mobile based application that help hundreds of people to search and find housing in Detroit that too as per their budget and requirement. Design for America shows how cooperative innovation can authorize local people to get involved actively in resolving societal issues. The organization focuses on co-creation making sure that services are upgraded with communities instead of for communities (Design for America, 2024).

The LEGO Foundation

The foundation promotes creativity and learning in children all over the world with the help of “LEGO Foundation’s design thinking toolkit”. The researcher’s team of LEGO foundation during their filed work get in touch with children and tried to understand their issues and challenges they faced while solving a problem. Their feedback highlights that inadequate tools and kits lead these children to struggle to come up with creative solution to their issues. The company then develops a tool kit that help thousands of children to solve their problems in creative manner (LEGO Foundation, 2023).

The Hippo Water Roller

It is a solution to the problem of “water scarcity” in rural areas of Africa using design-thinking in which rollers (large, round, barrel container) with the water storage capacity of 90 litres are used. These containers are designed in such a way that can be pulled by hand and allow women and children to transport water long distances. These “Hippo Water Rollers” are the inventions of South African entrepreneurs, Pettie Petzer and Johan Jonker that sets a successful example of design thinking of addressing a social challenge. They had seen the challenges of women and children of carrying the water from long distances and get inspired to create these rollers (Hippo Roller Foundation, 2024). The Hippo Water Roller demonstrates how reflection and empathy are the two key ideologies of design thinking might result in practical innovations and improvise the standard of living. By concentrating on consumers’ daily happening, the designers cultivated a simple but extremely meaningful solution to a constant societal issue (Norman & Stappers, 2023; Hippo Roller Foundation, 2024).

Objective

1. To explore the factors that determines Design Thinking and Wicked Problem Management through Consensus-Oriented Approaches
2. To measure the impact of Consensus-Oriented Approaches on Design Thinking and Wicked Problem Management

Methodology

250 Indian employees from different organizations were surveyed to explore the factors that determines Design Thinking and Wicked Problem Management through Consensus-Oriented Approaches. Data collection and analysis is done through “Random sampling method” and “Exploratory Factor Analysis” followed by “Multiple Regression Analysis”.

Findings

In study survey women below 38 years of age are 33.3%, 38-48 years are 38.4% and rest 28.3% are above 48 years of age. 30.8% of them are graduate and below, 28.7% are post graduate and above, 24.0% are having professional degree, and rest 16.5% are having other educational qualification. 16.5% of the respondents are in technology sector, 17.3% in health tech, 23.2% in education, 25.3% in e-commerce, and rest 17.7% in other entrepreneurial sectors.

“Table 1 General Details of Respondents”

“Variables”	“Respondents”	“Percentage”
Gender		
Male	131	52.4
Female	119	47.6
Total	250	100
Age		
Below 38 years	78	31.2
38-48 years	109	43.6
Above 48 years	63	25.2

Total	250	100
Educational Qualification		
Graduate and below	61	24.4
Post graduate and above	72	28.8
Professional Degree	57	22.8
Others	60	24.0
Total	250	100
Work experience		
Less than 5 years	83	33.2
5-10 years	103	41.2
More than 10 years	64	25.6
Total	250	100

“Exploratory Factor Analysis”

“Table 2 KMO and Bartlett's Test”

“Kaiser-Meyer-Olkin Measure of Sampling Adequacy”		.787
“Bartlett's Test of Sphericity”	“Approx. Chi-Square”	3610.655
	“df”	120
	“Sig.”	.000

KMO value is 0.787 and the “Barlett’s Test of Sphericity” is significant.

“Table 3 Total Variance Explained”

“Component”	“Initial Eigen values”			“Rotation Sums of Squared Loadings”		
	“Total”	“% Variance”	“Cumulative %”	“Total”	“% Variance”	“Cumulative %”
1	5.094	31.835	31.835	3.583	22.397	22.397
2	3.802	23.761	55.596	3.303	20.646	43.043
3	2.323	14.521	70.117	3.118	19.486	62.529
4	1.746	10.912	81.029	2.960	18.500	81.029
5	.542	3.388	84.417			
6	.490	3.062	87.479			
7	.382	2.387	89.866			
8	.361	2.256	92.122			
9	.295	1.847	93.969			

10	.250	1.564	95.533			
11	.193	1.206	96.740			
12	.169	1.056	97.796			
13	.126	.789	98.585			
14	.100	.624	99.208			
15	.068	.424	99.633			
16	.059	.367	100.000			

In a “principal component analysis”, 16 variables were grouped into 4 factors with 22.397%, 20.646%, 19.486% and 18.500% variance respectively and total variance is 81.029%.

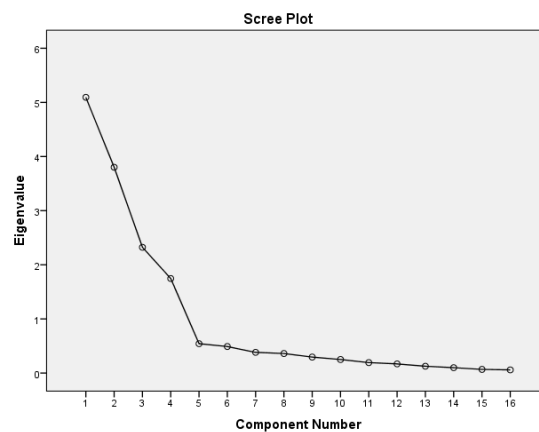


Figure 1 Scree Plot

Figure 1 shows the Eigenvalues derived from the "Total Variance Explained" table, indicating an elbow point at 4 components.

“Table 4 Rotated Component Matrix”

“S. No.”	“Statements”	“Factor Loading”	“Factor Reliability”
	Problem Framing		.960
1	Clearly define the issue that one wants to solve	.939	
2	See the challenge from all perspectives	.929	
3	Refine the problem continuously on the basis of feedback	.925	
4	Identify the root cause of the problem	.910	
	Consensus Building		.924
5	Find common ground among conflict interests	.946	
6	Negotiate and resolve disagreements in constructive manner	.919	
7	Develop the solutions accepted by all	.839	
8	Strengthen the commitment to implement	.836	
	Collaborative Decision-Making		.905

9	Encourage participation from different investors	.870	
10	Integrate different viewpoints	.868	
11	Facilitate open knowledge sharing	.840	
12	Enhance cooperative ownership of solutions	.836	
	Communication		.877
13	Make sure to share transparent information	.880	
14	Facilitate constructive discussions among investors	.864	
15	Reduce misunderstandings and conflicts	.850	
16	Enhance collaboration and consensus	.780	

Factor “Problem Framing” includes the variables like Clearly define the issue that one wants to solve, See the challenge from all perspectives, Refine the problem continuously on the basis of feedback, and identify the root cause of the problem. Factor “Consensus Building” includes the variables like Find common ground among conflict interests, Negotiate and resolve disagreements in constructive manner, Develop the solutions accepted by all, and strengthen the commitment to implement. Factor “Collaborative Decision-Making” consist of variables like Encourage participation from different investors, integrate different viewpoints, Facilitate open knowledge sharing, and enhance cooperative ownership of solutions. Factor “Communication” includes the variables like Make sure to share transparent information, facilitate constructive discussions among investors, reduce misunderstandings and conflicts, and Enhance collaboration and consensus.

“Table 5 Reliability Statistics”

“Cronbach's Alpha”	“N of Items”
0.848	16

The overall reliability is 0.848 for the 4 constructs comprising sixteen items.

“Table 6 Model Summary”

“Model”	“R”	“R Square”	“Adjusted R Square”	“Std. Error of the Estimate”
1	.842 ^a	.709	.704	.38657
Predictors: (Constant), Problem Framing, Consensus Building, Collaborative Decision-Making, and Communication				

The adjusted R-squared value is 0.709 with approximately 70% of the variation.

“Table 7 ANOVA”

“Model”		“Sum of Squares”	“df”	“Mean Square”	“F”	“Sig.”
1	“Regression”	88.988	4	22.247	148.875	.000 ^b
	Residual	36.612	245	.149		
	Total	125.600	249			
a. Dependent Variable: Overall impact of Consensus-Oriented Approaches on Design Thinking and Wicked Problem Management						
b. Predictors: (Constant), Problem Framing, Consensus Building, Collaborative Decision-Making, and Communication						

Value under significant column indicates a significant relationship between Design Thinking and Wicked Problem Management (Problem Framing, Consensus Building, Collaborative Decision-Making, and Communication) and Consensus-Oriented Approaches.

“Table 8 Coefficients”

“Model”	“Un standardized Coefficients”		“Standardized Coefficients”	“t”	“Sig.”
	“B”	“Std. Error”	“Beta”		
(Constant)	4.240	.024		173.424	.000
Problem Framing	.078	.024	.109	3.173	.002
Consensus Building	.100	.024	.141	4.087	.000
Collaborative Decision-Making	.579	.024	.816	23.645	.000
Communication	.076	.024	.107	3.104	.002
DV: Overall impact of Consensus-Oriented Approaches on Design Thinking and Wicked Problem Management					

All the factors Problem Framing, Consensus Building, Collaborative Decision-Making, and Communication are showing significant impact of Consensus-Oriented Approaches on Design Thinking and Wicked Problem Management. Highest impact is shown by Collaborative Decision-Making with beta value .816 followed by Consensus Building (.141), Problem Framing (.109), and Communication (.107).

Conclusion

Wicked problems are intricate issues defined by ambiguity, several stakeholders and lack of complete solutions. Conventional problem-solving strategies are mostly lacking for facing these challenges making cooperative and adaptive steps necessary. This research examines the significance of consensus-building that assists stakeholders boost share comprehension and recognize practical services inspite of different mindsets.

The results recommend that design thinking is a strategized method for handling wicked issues as it augments empathy, stakeholder management, innovation and iterative learning. By supporting cooperative and constant upgradation of approach, design thinking assists the development of creative and context-driven services.

The instances of Grameen Bank, WaterHealth International, Design for America, the LEGO Foundation, and the Hippo Water Roller show how the way design thinking can generate impactful societal effect by concentrating on consumer requirements and collaborative problem-solving.

Altogether, incorporating design thinking with consensus-driven strategy might assist organizations reach more productively to critical and growing issues. This method delivers a practical ideology for Indian organizations in finding creative and long-term possibilities to handle wicked problems.

The study aims to explore the factors that determines Design Thinking and Wicked Problem Management through Consensus-Oriented Approaches. It is found that Problem Framing, Consensus Building, Collaborative Decision-Making, and Communication are the factors that determines Design Thinking and Wicked Problem Management through Consensus-Oriented Approaches. The study concludes that there is significant impact of Consensus-Oriented Approaches on Design Thinking and Wicked Problem Management.

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