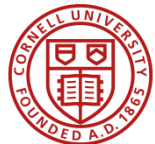
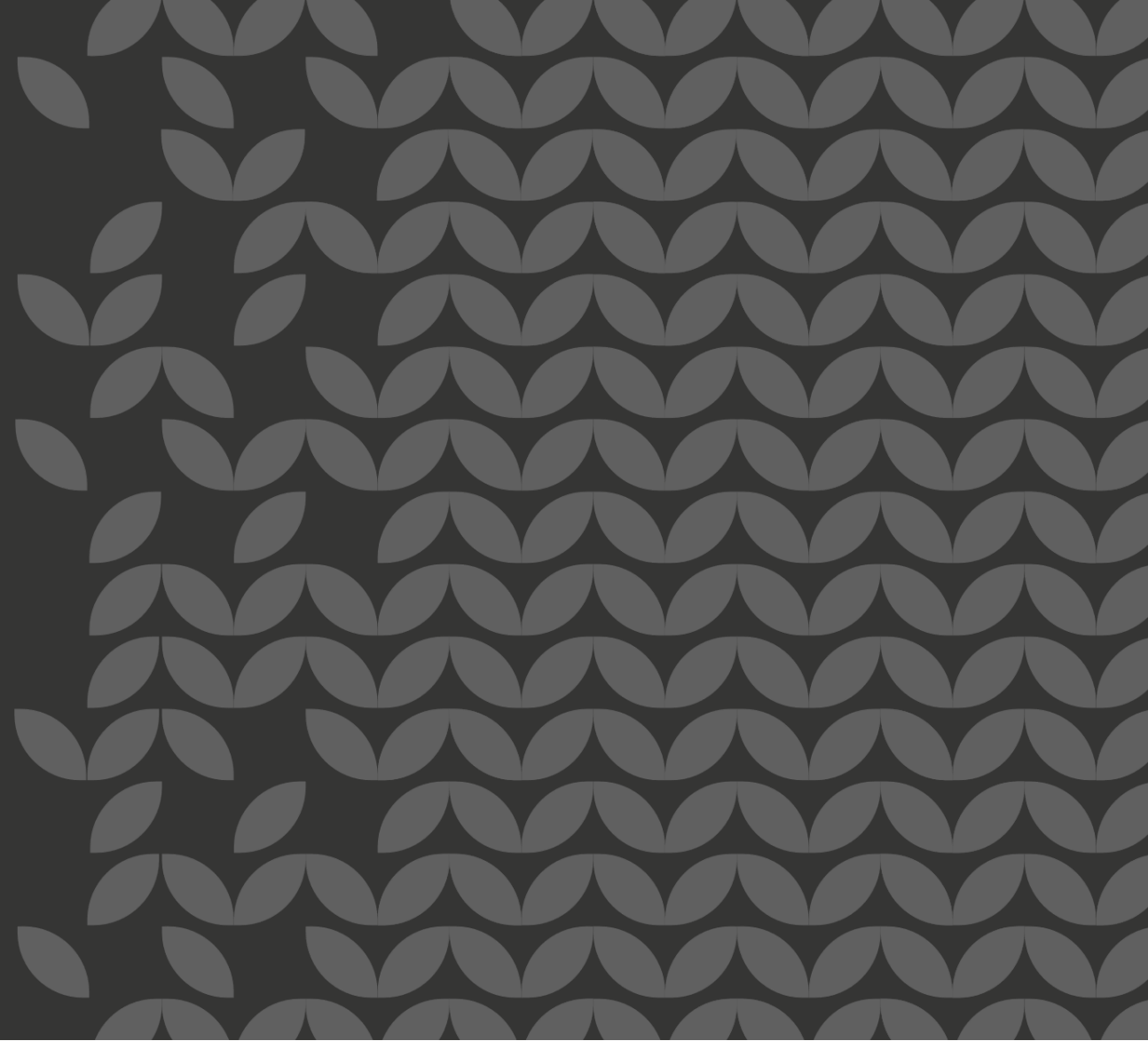


Ceres2030

Sustainable Solutions to End Hunger



Our project

We combine economic modelling with expert evidence to support efforts to achieve high-level policy targets



PARTNERSHIP
AND
DISSEMINATION

A special collection with *Nature Research Journals*

CONTEXT

2
ZERO
HUNGER



- How do we find what works? Ceres2030 models and key findings
- A donors' blueprint to achieve the Sustainable Development Goals
- How can we use evidence in the context of multiple and interacting SDGs?
- Can machine learning and methods bridge the gap between science and policy?

ON THE FARM



Adopting climate resilient crops



Solutions for short and long-term water scarcity



Sustainable and healthy approaches to feed livestock

FOOD ON THE MOVE



Implementing strategies to address post-harvest losses



Supporting activities and actors along the food value-chain

ENABLING GROWTH



Employment opportunities youth



Policies for sustainable practices

The collection will be published with *Nature Research Journals* in 2020 – subject to the highest standards of peer-review



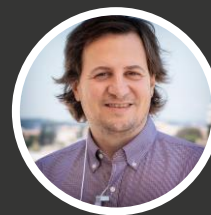
POLICIES FOR
SUSTAINABLE
PRACTICES

Learning from the reviews

What do we
know now?



Valeria
Piñeiro



Pablo
Elverdin



Nkechi
Owoo



Joaquín
Arias



Ana María
Ibáñez



Alison
Kinengyere



Cristian
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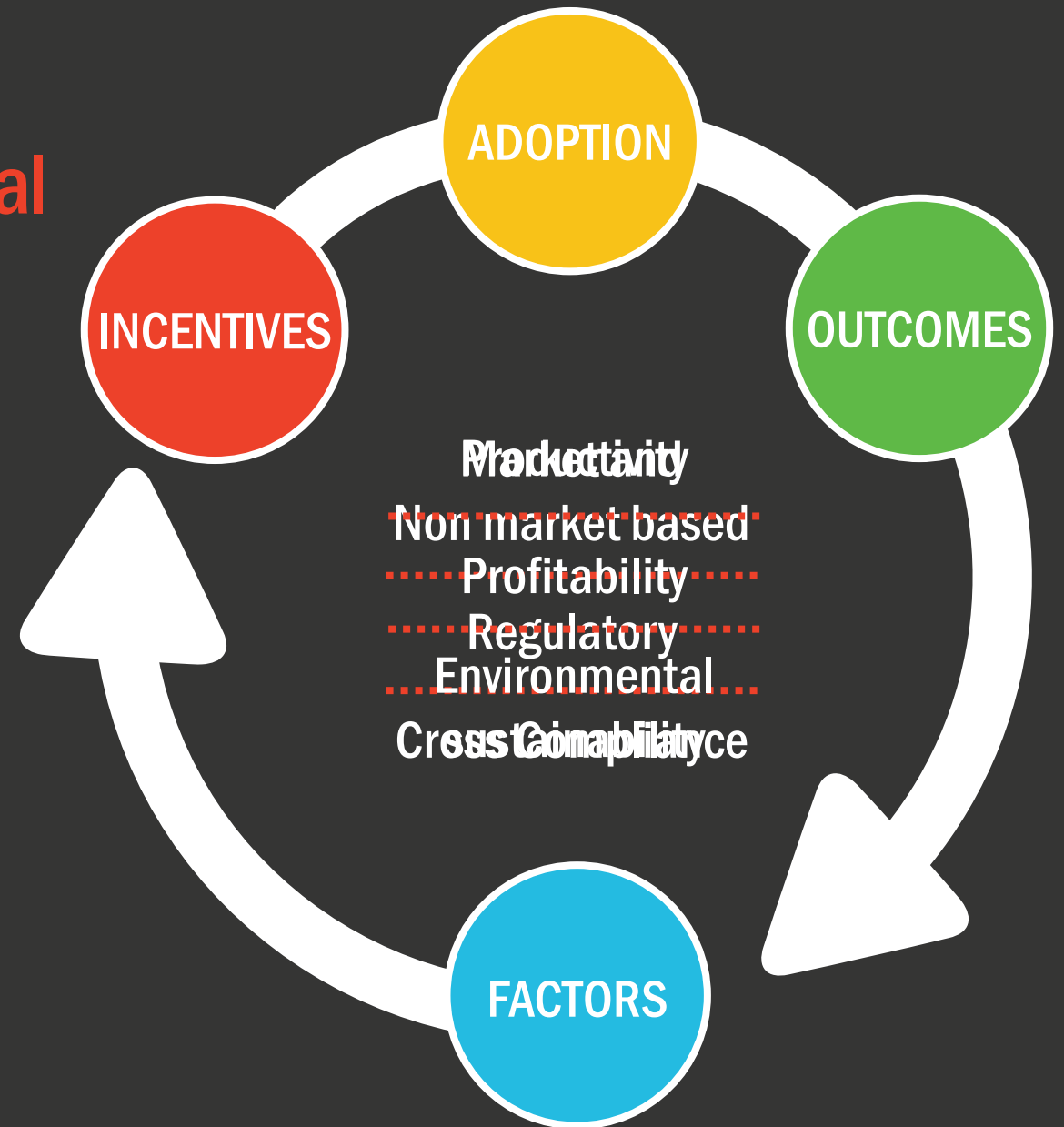


Motivation

The need to provide the necessary evidence on the effects of differentiated policy and market interventions to incentivize farmers to adopt sustainable agricultural practices that enhance farm productivity while ensuring environmental sustainability and profitability.

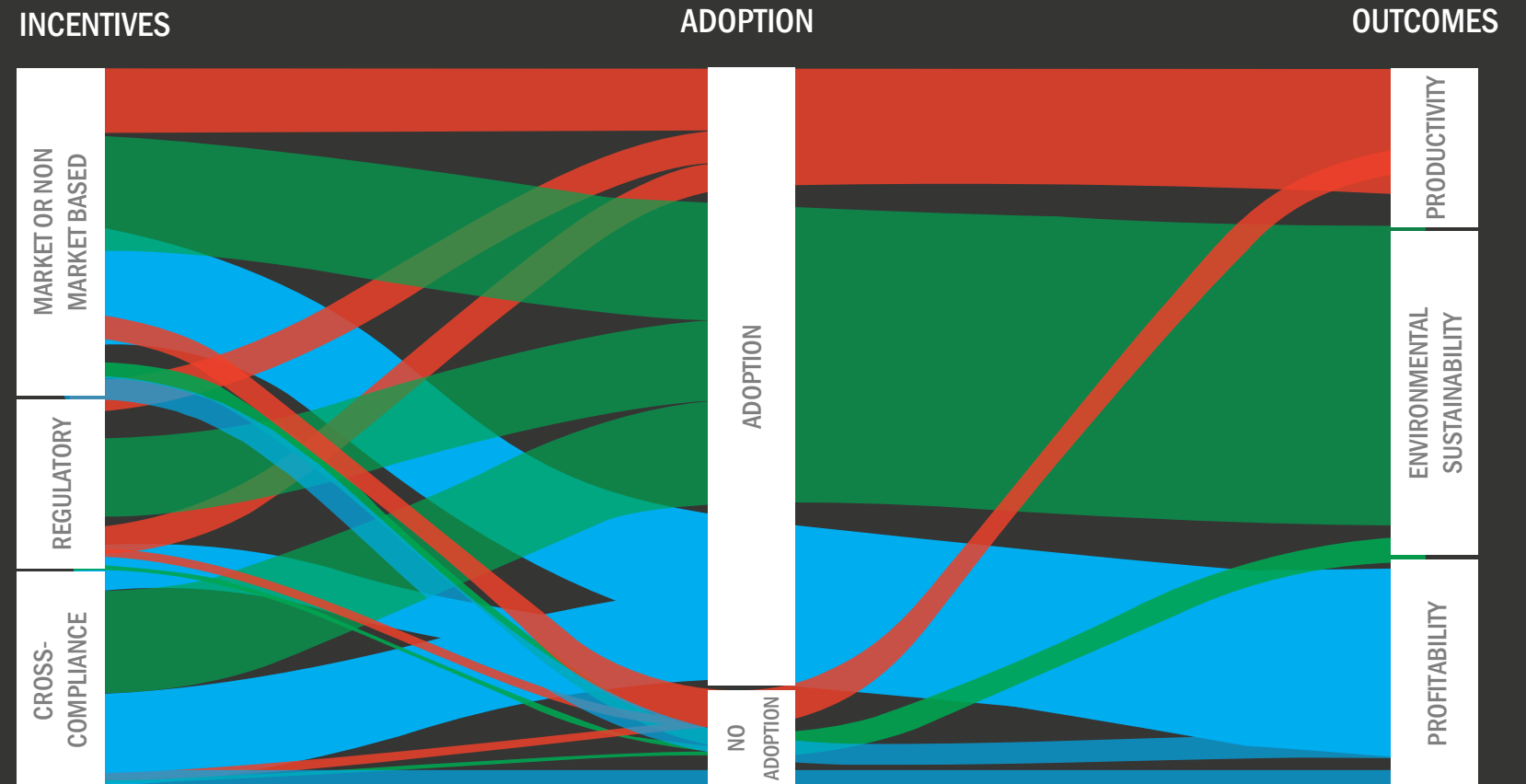
A scoping review on incentives for adoption of sustainable agricultural practices and their outcomes

- Scoping review of nearly 18,000 papers on the linkages of various incentives that are offered to farmers by many actors
- We examine the adoption of sustainable farming practices as they relate to environmental, economic and productivity outcomes
- This chain, linking incentives, adoption, and outcomes, offers a consistent logic by which to parse and evaluate best practices in agriculture policy around sustainability themes.



Full text connections between incentives, adoption and outcomes (93 articles)

- Flow from incentive type through the adoption process to the set of outcomes
- Evidence on all three incentive categories tend to be weighted first towards environmental outcomes, second toward profitability outcomes, and finally towards productivity outcomes



Evidence Map, articles reviews by intervention and outcomes (subset of 44 articles)








Size of circle corresponds to the number of article reviews in each category.
Inner circle colors indicate the level of evidence.

 Blue = strong evidence

 Green = weak evidence

Border colors indicate quality of methodology

 Red = methodology is generally strong

INCENTIVES	OUTCOMES		
	Profitability	Productivity	Environmental sustainability
Market and Non market based			
Regulatory			
Cross Compliance			

Enabling
Growth:
What are we
learning?

What policy incentives will lead farmers to adopt environmentally sustainable practices?

Evidence from a scoping review



Economic incentives are essential if we want farmers to adopt sustainable practices. When conservation technologies are offered in conjunction with measures that enhance the short-term profitability of agriculture, the adoption of conservation practices increases significantly.



Success depends not only on achieving the conservation outcome, but simultaneously improving efficiency (no net cost on the farmer, or better, an income gain), as well as being simple and easy to communicate and evaluate.

How to Create Incentives for Farmers: Policy Recommendations

KNOW YOUR
FARMERS



BALANCE THE
INCENTIVES AND
OUTCOMES



KEEP IT
SIMPLE

COMPLEMENT



BEHAVIORAL
PREFERENCES
MATTER

BE PREPARED
FOR A LONG-TIME
HORIZON



CREATE AN
ENABLING
ENVIRONMENT

Ceres2030
Sustainable Solutions to End Hunger



Thank you

Please contact
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Inclusion/Exclusion Criteria

- (1) Published in 1994 or later;
- (2) Explicit focus on incentives for sustainable environmental agricultural practices;
- (3) Explicit focus on adoption of sustainable environmental agricultural practices;
- (4) Explicit connection of the adoption of agricultural practices to sustainability outcomes;
- (5) Explicit analysis of the impact of incentives on income, production, productivity, profits, and/or environmental sustainability; and
- (6) Original research (qualitative and quantitative reports) and/or review of existing research including gray literature.

Exclusion criteria were the inverse of the inclusion criteria.

Title and Abstract Screening

17,936 Title/abstract screening was initiated with two independent reviewers reviewing each citation.

200 After, due to the very large number of citations and the strong degree of inter-rater reliability, a rapid review, single-screener methodology was adopted for all of the remaining citations.

1,792 Papers were selected; of these, 1694 were found in scholarly databases and 98 were found in grey literature sources.

Fleiss Kappa indicator

- Following Waffenschmidt et al., to test for inter-rater reliability in the full text screening, we conducted a double-blind pre-test of ten articles and then assess inter-rater reliability using the Fleiss Kappa indicator.
- This indicator is a statistical measure for assessing the reliability of agreement between a fixed number of raters when classifying a number of items. The measure calculates the degree of agreement in classification over that which would be expected by chance.
- After calculating the indicator, we can say that the level of potential bias of a single-screener method introduces in this methods section is not significant, given that the kappa value of at least 0.61 indicates substantial agreement and we have a value of 0.7.

Interpretation of Kappa

	Poor	Slight	Fair	Moderate	Substantial	Almost perfect
Kappa	0.0	.20	.40	.60	.80	1.0

<u>Kappa</u>	<u>Agreement</u>
< 0	Less than chance agreement
0.01–0.20	Slight agreement
0.21– 0.40	Fair agreement
0.41–0.60	Moderate agreement
0.61–0.80	Substantial agreement
0.81–0.99	Almost perfect agreement

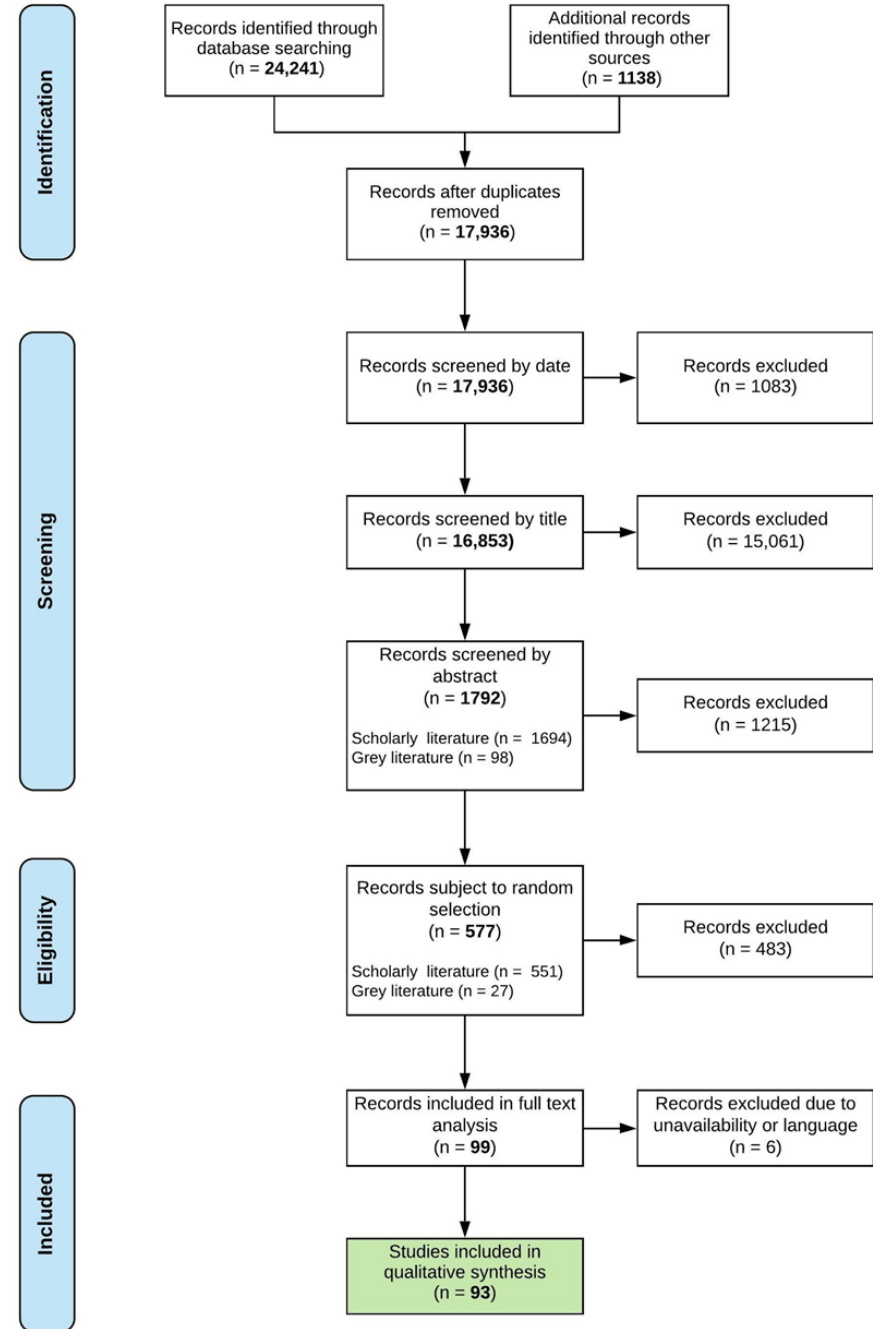
Fleiss, J. L. (1971) "Measuring nominal scale agreement among many raters." *Psychological Bulletin*, Vol. 76, No. 5 pp. 378–382

Protocol: : Market, regulatory and compliance incentives for farmers to adopt environmentally sustainable practices: a protocol for a scoping review

- Administrative information
- Introduction
- Methods- Objectives (setting, population, single intervention, comparators, outcomes of interest, study design)
- Definitions
- Research question
- Eligibility criteria (inclusion/exclusion)
- Information sources (databases, grey literature)
- Search strategy
- Study records (data management, selection process, data collection process)
- Critical appraisal of individual sources of evidence
- Data synthesis charting (incentives, outcomes, journal, factors)



Prisma Flow Diagram



Still, too many articles after the full text screening: sample clustering

	580	99
C1	20	3
C2	7	1
C3	26	4
C4	10	2
C5	12	2
C6	6	1
C7	15	3
C8	11	2
C9	12	2
C10	300	51
C11	19	3
C12	14	2
C13	18	3
C14	11	2
C15	5	1
C16	10	2
C17	9	2
C18	51	9
C19	12	2
C20	12	2

- Because a very large set of citations were included for full-text screening, a semi-structured, stratified randomized sample of 99 citations was selected.
- Our early review process suggested that certain categories of papers (e.g., regarding forestry policy) were more common than others.
- In an effort to capture relevant citations in less prevalent categories, we used smooth inverse document frequency and cosine distances to create a vector space representation of the contents of the titles, key words, and abstracts of the 577 articles.
- We then clustered the vectors (each article is represented as a vector of terms and frequencies) into 20 clusters using Ward's method for hierarchical clustering. A threshold of 20 clusters resulted in clusters ranging in size from 5 to 300 articles.
- We then implemented a stratified random sampling process to identify the set of 99 articles from the 20 clusters as a function of cluster size. The Orange Data Mining Toolbox was used for the analysis. Finally, 6 articles were not included for being written in a language not spoken by any of the authors of this research or because unavailability.



Quality assessment

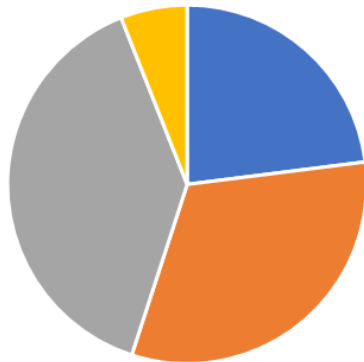
An appraisal for quality was done for the 44 articles that passed the inclusion selection process, were part of the sample chosen and had the link between incentives and adoption and adoption and outcomes. the quality assessment however was not used to further exclude papers.

The quality assessment was based on the clearness of the research question, justification of the research approach given the question of the study, clear description of the methodology used and robustness of the chosen methodology.

The assessment was done by the authors of this research for the 44 papers from a scale of 1 to 5, being 1 the lowest.

The screening process already done was key in ensuring that articles that didn't have substantive evidence were not included in this last stage.

Quality Index



■ 5 ■ 4 ■ 3 ■ <3