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# Influence of Risk Management Practices on the Sustainability of Government-Funded Women's Agaseke Cooperatives in Kicukiro District, Rwanda

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***Abstract:*** *The purpose of this study was to determine the influence of risk management practices on the sustainability of government-funded women's Agaseke Cooperatives in Kicukiro District, Rwanda, specifically the influence of risk identification, risk mitigation and risk monitoring. A descriptive cross-sectional survey within a convergent mixed-methods design was adopted. The population of 450 comprised 15 chairpersons, 45 executive committee members and 385 general members of the 15 active Agaseke Cooperatives, plus five officials of the Rwanda Cooperative Agency. Yamane's formula gave a sample of 212, allocated proportionately and selected through stratified, purposive and simple random sampling. Data were collected using a structured questionnaire ($n = 196$; $\alpha = .954$), interview guides and a documentary analysis checklist. Quantitative data were analyzed in SPSS 26 using descriptive statistics, Pearson correlation and multiple regression, while interviews and documents were analyzed thematically. Risk identification ($\beta = .395$), risk mitigation ($\beta = .315$) and risk monitoring ($\beta = .281$) each had a significant influence on sustainability (all $p < .001$) and together explained 65.8% of its variance ($R^2 = .658$; $F(3, 192) = 123.246$, $p < .001$). Interview and documentary evidence corroborated these results. The study concludes that systematically identifying, mitigating and monitoring risks strengthens the sustainability of such cooperatives. It recommends simple risk registers, contingency reserves, product and market diversification and monthly risk reviews in cooperatives, and a practical risk-management guideline and post-handover monitoring framework from the Rwanda Cooperative Agency and Kicukiro District.*

***Keywords:*** *Risk, Identification, Mitigation, Monitoring, Sustainability, Cooperatives, Rwanda*

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## 1. Introduction

Project sustainability is no longer understood only as financial viability. It is now treated as a multidimensional concept covering financial, operational and social endurance (Visser, 2024), and the Organization for Economic Co-operation and Development (OECD, 2019) defines it as the extent to which the benefits of an intervention continue, or are likely to continue, after external support is withdrawn. Because projects face uncertainty throughout their lives, the International Organization for Standardization (ISO, 2018) and the Project Management Institute (PMI, 2021) treat risk management as part of routine governance and decision-making rather than a separate administrative task. Hillson (2023) likewise argues that projects which systematically identify, respond to and monitor risks are better placed to protect their objectives over time. Empirical work supports this view. Anjum and Cheema (2024) found that integrated risk management explained 52.5% of the variation in the sustainable success of Pakistani oil and gas megaprojects, and Carvalho and Rabechini (2015), in a survey of 263 projects in Brazil, showed that risk management practices, including their behavioral aspects, contributed significantly to project success.

In Africa, community and donor-funded projects have often struggled to survive once external support is withdrawn. Tumwine and Bareebe (2024) observed that failure to

recognize human and operational risks undermined the continuity of social enterprises in Sub-Saharan Africa. In Kenya, Juma and Ondara (2024) reported that risk identification significantly influenced the sustainability of donor-funded projects in Nairobi County ($\beta = .223$, $p = .007$), while Ramadhan et al. (2023) found that project management practices, including monitoring and evaluation, explained 68.8% of the variation in the sustainability of World Food Programme-funded feeding projects in Kibera. The regional evidence is not uniform, however. In Tanzania, Mshuza et al. (2023) found that risk monitoring significantly affected the performance of public-school construction projects ($\beta = .150$, $p = .018$), whereas risk identification had no significant effect ($\beta = .012$, $p = .777$).

Rwanda has made cooperatives a central instrument of socio-economic transformation. Registered cooperatives grew from 919 in 2005 to 10,681 in 2023, with a combined membership above 5.2 million (Parliament of Rwanda, 2024). This rapid expansion came with fragile operations. In March 2024 the Rwanda Cooperative Agency (RCA) began a nationwide inquiry to identify 'ghost' and inactive cooperatives (The New Times, 2024), and the National Cooperative Policy had already listed poor governance and weak risk management among recurring weaknesses (RCA, 2020). Recent Rwandan studies support a link between risk management and project results. Nkiranuye et al. (2025) reported that risk identification ($r = .670$), risk monitoring ($r = .778$) and risk mitigation ($r = .622$) were each significantly correlated with construction project performance and together accounted for 70.6% of its variance, and Iribagiza and Kirabo (2024) found that project risk management had the largest influence on the performance of a USAID-funded project in Rubavu District.

The Agaseke Promotion Project is a City of Kigali programme that helps vulnerable, unemployed and landless women earn a lasting income from traditional basket weaving. More than 50 cooperatives with about 2,000 women were formed and trained in Gasabo, Kicukiro and Nyarugenge districts (City of Kigali, n.d.), and government support included training, working capital, weaving workshops and links to international buyers (Ministry of Trade and Industry [MINICOM], 2023). The Kicukiro District Economic Development Unit (2024) nevertheless reported that almost 25% of the district's registered handicraft cooperatives had become inactive.

Three gaps in the literature justify the present study. First, much Rwandan evidence measures project performance (cost, time and quality) rather than sustainability, and it comes from construction (Nkiranuye et al., 2025), donor-funded governance projects (Iribagiza & Kirabo, 2024) and general cooperatives (Hategekimana & Shukla, 2021). Second, studies disagree on which risk practice matters most (Juma & Ondara, 2024; Mshuza et al., 2023; Nkiranuye et al., 2025). Third, no empirical study had examined how small, women-led handicraft cooperatives funded by the Rwandan government use risk management to survive. The study is justified by the need for evidence that helps the RCA, Kicukiro District and development partners protect public investment in women's economic empowerment.

## 1.1 Statement of the Problem

Government-funded women's empowerment initiatives, such as the Agaseke Cooperatives, are expected to achieve long-term sustainability by generating income, retaining members and operating independently beyond the period of government support. Rwanda's Vision 2050 and National Strategy for Transformation recognize cooperatives as important vehicles for economic self-reliance and women's economic inclusion, while development best practices emphasize the need for project benefits to extend beyond the funding period (OECD, 2019; RCA, 2020).

However, the situation in Kicukiro District indicates a gap between these expectations and actual performance. According to the Kicukiro District Economic Development Unit (2024), nearly 25% (approximately 38) of the 152 registered handicraft cooperatives were dormant or existed only on paper, while active cooperatives experienced a 42% decline in production and a 30% reduction in membership. Similarly, an RCA (2024) evaluation reported that cooperatives lacking formal risk-monitoring systems were 35% more likely to experience financial insolvency, with annual losses among inactive cooperatives exceeding RWF 18 million. Risk identification, assessment of membership-related risks and prevention of financial mismanagement remained largely informal, resulting in reactive rather than preventive management. If these challenges persist, more cooperatives may become inactive, undermining women's economic empowerment and wasting public investment in training, equipment and market access.

Although previous studies have examined cooperative performance and project risk management, limited attention has been given to the sustainability of government-funded women's cooperatives. Existing Rwandan studies have largely focused on construction projects, donor-funded governance initiatives and general cooperative performance, while regional findings differ regarding the relative contribution of individual risk management practices. Consequently, the extent to which risk identification, mitigation and monitoring influence the sustainability of government-funded women's Agaseke Cooperatives in Kicukiro District remained insufficiently established. This study sought to address this knowledge gap.

## 1.2 Research Objectives

The general objective was to determine the influence of risk management practices on the sustainability of government-funded women's Agaseke Cooperatives in Kicukiro District, Rwanda. The specific objectives were:

1. To determine the influence of risk identification on the sustainability of Agaseke Cooperatives in Kicukiro District, Rwanda.
2. To determine the influence of risk mitigation on the sustainability of Agaseke Cooperatives in Kicukiro District, Rwanda.
3. To determine the influence of risk monitoring on the sustainability of Agaseke Cooperatives in Kicukiro District, Rwanda.

## 1.3 Hypotheses

Each hypothesis was stated in null form and tested at $\alpha = .05$:

- **$H_{01}$:** Risk identification has no significant influence on the sustainability of Agaseke Cooperatives in Kicukiro District, Rwanda.
- **$H_{02}$:** Risk mitigation has no significant influence on the sustainability of Agaseke Cooperatives in Kicukiro District, Rwanda.
- **$H_{03}$:** Risk monitoring has no significant influence on the sustainability of Agaseke Cooperatives in Kicukiro District, Rwanda.

# 2. Literature Review

This section presents the theories that anchor the study, the conceptual framework that links each theory to an objective, and the empirical evidence for each objective, moving from global to regional to Rwandan studies. It closes by identifying the research gap.

## 2.1 Theoretical Review

Three theories were combined, each anchoring one specific objective.

**Resource-Based View (RBV).** Introduced by Wernerfelt (1984) and developed by Barney (1991), the RBV holds that lasting advantage comes from resources that are valuable, rare, inimitable and non-substitutable. Teece et al. (1997) extended the theory through dynamic capabilities, meaning the capacity to combine and reconfigure competences as the environment changes; on this view, sensing emerging threats is itself a capability that protects an organization's resources. Critics describe the RBV as circular and static (Priem & Butler, 2001) and difficult to apply to small organizations whose resources are largely intangible (Kraaijenbrink et al., 2010). The study therefore used the dynamic-capabilities extension and applied it to risk identification (Objective 1).

**Prospect Theory.** Kahneman and Tversky (1979), later refined by Tversky and Kahneman (1992), describe how people actually choose under uncertainty: outcomes are judged against a reference point, losses weigh more heavily than equal gains, and the framing of an option shapes the choice. The theory is descriptive, relies heavily on laboratory evidence and leaves the reference point unspecified (Barberis, 2013). The study used it to explain collective tendencies in cooperative decision-making rather than to predict individual choices. Loss-averse members and leaders are expected to favour measures framed as protecting livelihoods, such as reserve funds, savings and diversification, which anchors risk mitigation (Objective 2).

**Stakeholder Theory.** Freeman (1984) argued that an organization answers to everyone who affects or is affected by its goals, and Donaldson and Preston (1995) showed that organizations attentive to many stakeholders generally perform better over time. Jensen (2002) criticized the theory for lacking a single objective function. The study responded by operationalising stakeholder expectations through concrete sustainability indicators. Review meetings and audits act as channels of accountability to members, the RCA and buyers, which anchors risk monitoring (Objective 3) and the measurement of sustainability.

Each theory offsets the limits of the others: the RBV explains which capabilities matter, Prospect Theory explains how people decide under risk, and Stakeholder Theory explains external accountability. Together they supply technical, behavioural and social explanations of how risk management practices may influence sustainability.

## 2.3 Empirical Review

### 2.3.1 Risk identification and sustainability

Globally, Anjum and Cheema (2024) found that risk identification contributed significantly to sustainable success in Pakistani oil and gas megaprojects but was the weakest of four integrated risk dimensions ($\beta = .143$). In Nigeria, Oboti et al. (2025) surveyed 313 staff of 25 construction companies and found that risk identification explained 18.9% of the variation in sustained operational efficiency. Kenyan evidence is positive. Juma and Ondara (2024) studied 142 donor-funded projects in Nairobi County and reported a significant effect on sustainability ($\beta = .223$, $p = .007$), and Leshan (2024) found identification the most influential of the strategies examined for community water projects in Kajiado County. In contrast, Mshuza et al. (2023), surveying 175 consulting civil engineers in Mara Region, Tanzania, found no significant effect on project performance ($\beta = .012$, $p = .777$), suggesting that the value of identification depends on whether identified risks are acted on and on the type of project. In Rwanda, Nkiranuye et al. (2025) reported a moderate positive association ($r = .670$) and a significant coefficient ($\beta = .185$, $p = .001$) for construction performance, and Bora (2024) found that identification significantly improved the performance of the Hinga Wunguke agricultural project in Gatsibo District ($B = 0.590$, $p = .023$). These studies measured performance more often than sustainability, and none focused on women-led handicraft cooperatives.

### 2.3.2 Risk mitigation and sustainability

Carvalho and Rabechini (2015) showed across 263 projects in Brazil that risk management, including its behavioral (soft) side, significantly contributed to project success, and

Anjum and Cheema (2024) reported a positive and significant path from mitigation to long-term success (β = .228). Kamunya (2021) found that the risk response strategies of non-governmental organization projects in Nairobi were closely linked to performance, while Mutesi (2022) linked financial risk mitigation to the long-term viability of women-led cooperatives in East Africa. Rwandan results are mixed. Nkiranuye et al. (2025) found a moderate association (r = .622) but a small coefficient (β = .120, p = .023), which they attributed partly to misapplied contingency budgets, whereas Bora (2024) found no significant effect of risk treatment (B = 0.007, p = .927). Rukundo (2023) observed that women in Agaseke Cooperatives rely on localized, informal mitigation rather than on the insurance and hedging used by large firms. The statistical effect of such communal measures on sustainability had not been tested.

#### 2.3.3 Risk monitoring and sustainability

Anjum and Cheema (2024) found that monitoring and control significantly predicted sustainable success (β = .327), and Oboti et al. (2025) found that monitoring explained 21.3% of the variation in the supply chain resilience of Nigerian construction firms. In Tanzania, Mshuza et al. (2023) reported a significant effect of monitoring on project performance (β = .150, p = .018). In Uganda, John (2021) found that monitoring and control significantly improved the implementation of an early childhood education project, and in Kenya Ramadhan et al. (2023) found that practices including monitoring and evaluation explained 68.8% of the variation in the sustainability of feeding projects. In Rwanda, Nkiranuye et al. (2025) found monitoring to be the strongest of the three practices (r = .778; β = .444, p < .001), Kamali et al. (2025) found that project management practices, including monitoring and control, explained 63.4% of the performance of construction contractors, and Iribagiza and Kirabo (2024) ranked project risk management ahead of planning and monitoring and evaluation. Mugisha (2024) observed that cooperatives holding simple monthly risk-review meetings detected financial mismanagement about eight months earlier than those relying only on annual government audits, although monitoring typically weakened after the transition from government to community management.

## 2.4 Research Gap

Four gaps emerge. Conceptually, most studies measured project performance rather than sustainability; only Anjum and Cheema (2024), Juma and Ondara (2024), Oboti et al. (2025) and Ramadhan et al. (2023) used sustainability as the outcome. Contextually, studies were conducted in construction, agriculture, extractive and donor-funded settings, with little evidence from small, women-led, government-funded handicraft cooperatives. Empirically, findings were inconsistent: identification was significant in Nairobi and Gatsibo but not in Mara Region, mitigation was significant in Rwandan construction and Pakistani megaprojects but not in the Hinga Wunguke project, and explained variance ranged from 52.5% to 74.4%. Methodologically, most studies relied on quantitative surveys alone. The present study addresses these gaps by testing all three practices against sustainability in Agaseke Cooperatives with a mixed-methods design.

# 3. Methodology

## 3.1 Research Philosophy and Design

The study adopted pragmatism, which selects methods to suit the question rather than a single view of knowledge (Creswell & Plano Clark, 2018). The approach fitted the need for measurable evidence to test hypotheses on how risk practices influence sustainability, together with the accounts of cooperative leaders and RCA officials to explain how and why the practices worked. A descriptive cross-sectional survey (Cooper & Schindler, 2022) was embedded in a convergent parallel mixed-methods design: questionnaire data and interview and document data were collected in one phase, analyzed independently and merged at interpretation (Creswell & Plano Clark, 2018). Risk identification ($X_1$), mitigation ($X_2$) and monitoring ($X_3$) were the predictors and sustainability (Y) the outcome. Each was measured with four items rated from 1 (strongly disagree) to 5 (strongly agree), and the item scores were averaged into a composite for each variable. Factors that may also influence sustainability, such as market access, leadership style and access to credit, were not measured and formed part of the error term.

## 3.2 Study Area, Population and Sampling

The study was conducted in Kicukiro District, City of Kigali, where 15 active Agaseke Cooperatives operate in the Gahanga, Masaka and Kigarama sectors. These urban and peri-urban sectors received government investment in weaving workshops and market infrastructure. The target population was 450 people: 15 chairpersons, 45 executive committee members (three per cooperative), 385 general members and five RCA officials responsible for cooperative oversight in the district.

The sample size was determined with Yamane's (1967) formula at 95% confidence and a 0.05 margin of error: $n = N / [1 + N(e)^2] = 450 / [1 + 450(0.05)^2] = 211.76$, rounded to 212. The sample was allocated to categories by proportional allocation, $n_i = (N_i / N) \times 212$ (Table 2). Selection followed four stages. First, all 15 active cooperatives in the three sectors were purposively included. Second, the population was divided into four strata according to role, because each role holds a different perspective on risk (Saunders et al., 2023). Third, seven chairpersons (drawn from all three sectors) and two RCA officials were purposively selected for their specialized knowledge of governance and oversight; these nine respondents completed questionnaires and were also interviewed. Fourth, 21 executive committee members and 182 general members were drawn at random from

membership registers by lottery, giving each person an equal chance of selection (Sekaran & Bougie, 2020).

**Table 2: Population, Sample and Sampling Technique**

| Category | Population (N) | Sample (n) | Sampling technique |
|---|---|---|---|
| Cooperative chairpersons | 15 | 7 | Stratified; purposive |
| Executive committee members | 45 | 21 | Stratified; simple random |
| General cooperative members | 385 | 182 | Stratified; simple random |
| Rwanda Cooperative Agency officials | 5 | 2 | Stratified; purposive |
| **Total** | **450** | **212** | |

## 3.3 Research Instruments, Validity and Reliability

Three instruments allowed triangulation. A structured questionnaire had a demographic section, four statements each on risk identification, mitigation and monitoring, and four statements on sustainability, all derived from the indicators in Table 1. Semi-structured interview guides for chairpersons and RCA officials covered identification procedures, mitigation strategies, monitoring practices and challenges. A documentary analysis checklist guided review of financial statements, membership and attendance registers, meeting minutes, risk or contingency records and RCA audit reports for 2020 to 2025. The instruments were piloted with 21 respondents (one tenth of the main sample; Cooper & Schindler, 2022) in Gasabo District, whose Agaseke Cooperatives resemble those of Kicukiro but were not in the sample, and the wording and Kinyarwanda translation were revised accordingly.

Content validity was judged by three experts using the Content Validity Index, with an item-level threshold of 0.78 and a scale-level threshold of 0.80 (Polit & Beck, 2006). Face validity was checked in the pilot. Construct validity was examined through exploratory factor analysis, requiring a Kaiser-Meyer-Olkin value of at least 0.60, a significant Bartlett's test and loadings of at least 0.50 (Saunders et al., 2023). Reliability was assessed through Cronbach's alpha (Cronbach, 1951), split-half reliability with the Spearman-Brown correction, and test-retest reliability among the pilot participants two weeks apart, with 0.70 as the minimum. The trustworthiness of the qualitative data followed Lincoln and Guba (1985): credibility through triangulation and member checking, transferability through detailed description of the setting, dependability through an audit trail and confirmability through reflective notes.

## 3.4 Data Collection and Data Analysis

Fieldwork began after approval by the School of Postgraduate Studies, with an introduction letter from Mount Kigali University, a research permit from the National Council for Science and Technology and clearance from Kicukiro District and the RCA. Questionnaires were handed out face to face at cooperative meetings, with drop-and-pick for respondents needing more time. Chairpersons and RCA officials were interviewed face to face or by telephone for 30 to 45 minutes, and documents were reviewed at cooperative offices and the RCA.

Quantitative data were analyzed in SPSS 26. Means and standard deviations were interpreted using the bands 1.00–1.80 (strongly disagree), 1.81–2.60 (disagree), 2.61–3.40 (neutral), 3.41–4.20 (agree) and 4.21–5.00 (strongly agree). Pearson's r measured the strength and direction of association, and multiple linear regression estimated joint and separate effects using the model $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$. Before regression, the Shapiro-Wilk test checked the normality of residuals, tolerance ($> 0.10$) and the Variance Inflation Factor ($< 5$) checked multicollinearity, and the Durbin-Watson statistic (1.5 to 2.5) checked independence of residuals. Each null hypothesis was rejected when $p < .05$. Interview data were analysed thematically in the six steps of Braun and Clarke (2006) and organised by objective, and documents were analysed by content analysis using the checklist. The strands were integrated at interpretation.

# 4. Results and Discussion

This section reports the response rate, reliability and respondent profile, then the descriptive and inferential results, and then presents the results and discussion for each research question against the literature and the theories.

## 4.1 Response Rate, Reliability and Respondent Profile

Of 212 questionnaires distributed, 196 were completed and returned, a response rate of 92.45% (196 ÷ 212 × 100). Saunders et al. (2023) regard a rate above 70% as very good, and personal distribution at cooperative meetings largely explains the high return. Table 3 shows that Cronbach's alpha ranged from .944 to .948 across the four constructs

and was .954 overall, well above the .70 threshold, so no item was removed and the constructs were internally consistent.

**Table 3: Reliability of the Instrument**

| Variable | Number of items | Cronbach's α |
|---|---|---|
| Risk identification | 4 | .946 |
| Risk mitigation | 4 | .948 |
| Risk monitoring | 4 | .946 |
| Project sustainability | 4 | .944 |
| **Overall questionnaire** | **16** | **.954** |

Table 4 shows that women formed 73.0% of respondents, consistent with the focus on women's cooperatives, and that 68.9% were aged 26 to 45 years. Secondary education was the most common level (42.3%), and 90.8% had been members of or worked with the cooperatives for at least one year, so most respondents had enough exposure to comment on recurring risks and sustainability.

**Table 4: Demographic Characteristics of Respondents (n = 196)**

| Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Gender | Female | 143 | 73.0 |
| | Male | 53 | 27.0 |
| Age (years) | 18–25 | 21 | 10.7 |
| | 26–35 | 65 | 33.2 |
| | 36–45 | 70 | 35.7 |
| | 46 and above | 40 | 20.4 |
| Education | Primary | 25 | 12.8 |
| | Secondary | 83 | 42.3 |
| | Vocational/technical | 55 | 28.1 |
| | University | 33 | 16.8 |
| Years of membership or work | Less than 1 | 18 | 9.2 |
| | 1–3 | 58 | 29.6 |
| | 4–6 | 73 | 37.2 |
| | Above 6 | 47 | 24.0 |

## 4.2 Descriptive Results

Table 5 presents item-level and composite results for the three practices and for sustainability. All four composite means fell in the agree band (3.41–4.20), from 3.93 for risk identification to 3.97 for sustainability, with standard deviations of 0.93 to 0.96.

**Table 5: Descriptive Statistics on Risk Management Practices and Sustainability (n = 196)**

| Indicator | Mean | SD | Agree or strongly agree (%) |
|---|---|---|---|
| **Risk identification (composite)** | **3.93** | **0.95** | |
| Formal mechanism for identifying financial risks | 3.91 | 1.04 | 64.8 |
| Members proactively communicate operational bottlenecks | 3.95 | 1.02 | 67.4 |
| Historical record of previous risks is maintained | 3.92 | 1.03 | 65.3 |
| Systematic scanning of environmental and market risks | 3.92 | 0.99 | 64.8 |
| **Risk mitigation (composite)** | **3.94** | **0.93** | |
| Contingency plans for market price fluctuations | 3.93 | 0.99 | 67.3 |
| Reserve funds or insurance to manage losses | 3.95 | 1.02 | 63.8 |
| Capacity-building sessions on risk-handling skills | 3.93 | 0.99 | 63.7 |
| Product diversification to hedge financial risk | 3.94 | 0.99 | 64.8 |
| **Risk monitoring (composite)** | **3.95** | **0.94** | |
| Periodic reviews of the success of risk responses | 3.98 | 1.02 | 66.8 |
| System for tracking external factors | 3.94 | 1.06 | 65.8 |
| Past risk evaluations integrated into annual planning | 3.93 | 1.01 | 65.3 |
| Regular internal audit reports | 3.94 | 0.99 | 66.3 |
| **Project sustainability (composite)** | **3.97** | **0.96** | |
| Core activities generate consistent member income | 3.96 | 1.07 | 65.3 |
| Operational continuity without relying solely on subsidies | 3.91 | 1.08 | 67.4 |
| Increase in production volume over three years | 3.99 | 1.01 | 68.9 |
| Social relevance maintained in the community | 4.02 | 1.00 | 73.5 |

On risk identification, the highest-rated item was proactive communication of operational bottlenecks, while the lowest was a formal mechanism for identifying financial risks; between 24.0% and 27.6% of respondents were neutral on each item, which suggests that some members were unaware of formal procedures. On risk mitigation, reserve funds or insurance rated highest, but 28.6% to 29.6% of respondents were neutral on reserve funds and capacity building, suggesting uneven application across cooperatives. On risk monitoring, periodic reviews rated highest, while tracking of external factors drew the most disagreement (10.7%). On sustainability, social relevance rated highest and independence from subsidies lowest, with the most disagreement (11.7%). Item means varied only narrowly (3.91 to 4.02), so differences between items should be read cautiously.

## 4.3 Inferential Results

The regression assumptions were satisfied. Tolerance values were .576 to .716 and VIF values 1.397 to 1.736, so multicollinearity was not a concern; residuals were normally distributed (Shapiro-Wilk $W = .995$, $p = .747$); and the Durbin-Watson value of 2.122 indicated independent residuals.

Table 6 shows that sustainability was strongly and positively correlated with risk identification ($r = .691$), risk monitoring ($r = .671$) and risk mitigation ($r = .625$), all significant at $p < .01$. Correlations among the predictors were moderate (.422 to .582).

**Table 6: Pearson Correlation Matrix (n = 196)**

| Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Risk identification | — | | | |
| 2. Risk mitigation | .422** | — | | |
| 3. Risk monitoring | .582** | .510** | — | |
| 4. Project sustainability | .691** | .625** | .671** | — |

The regression model was significant, $F(3, 192) = 123.246$, $p < .001$, with $R = .811$, $R^2 = .658$, adjusted $R^2 = .653$ and a standard error of the estimate of 0.567. Identification, mitigation and monitoring together therefore accounted for 65.8% of the variation in sustainability, leaving 34.2% to factors outside the model. Table 7 gives the coefficients and the hypothesis decisions.

**Table 7: Multiple Regression Coefficients and Hypothesis Decisions**

| Predictor | B | SE | β | t | p | Decision |
|---|---|---|---|---|---|---|
| (Constant) | −0.018 | 0.212 | | −0.082 | .934 | |
| Risk identification | 0.402 | 0.054 | .395 | 7.491 | < .001 | $H_{01}$ rejected |
| Risk mitigation | 0.326 | 0.052 | .315 | 6.320 | < .001 | $H_{02}$ rejected |
| Risk monitoring | 0.286 | 0.057 | .281 | 5.046 | < .001 | $H_{03}$ rejected |

The estimated model was $Y = -0.018 + 0.402X_1 + 0.326X_2 + 0.286X_3$. With the other practices held constant, a one-unit increase in identification, mitigation or monitoring was associated with an increase in sustainability of 0.402, 0.326 and 0.286 units respectively. Risk identification was the strongest predictor, followed by mitigation and monitoring. Because every p-value was below .05, all three null hypotheses were rejected.

## 4.4 Discussion of Results

The findings revealed that risk identification significantly influenced the sustainability of Agaseke Cooperatives ($M = 3.93$, $SD = 0.95$; $r = .691$, $\beta = .395$, $p < .001$), making it the strongest predictor among the three practices. Interview findings indicated that early identification of operational, financial and market risks enabled cooperative leaders to take preventive action before challenges escalated. This finding is consistent with Juma and Ondara (2024), Bora (2024) and Nkiranuye et al. (2025), although it contrasts with Mshuza et al. (2023), who found no significant effect. The stronger influence observed in this study may reflect the vulnerability of member-owned cooperatives, where unexpected shocks, such as the loss of skilled members, directly disrupt production and income generation. From the Resource-Based View, early risk identification represents an essential organizational capability for protecting resources and sustaining cooperative operations (Barney, 1991; Teece et al., 1997).

Risk mitigation also had a significant positive influence on sustainability ($M = 3.94$, $SD = 0.93$; $r = .625$, $\beta = .315$, $p < .001$). Respondents and interviewees highlighted contingency planning, financial controls, reserve funds, capacity building and product diversification as important measures for managing disruptions and maintaining operations. These findings support Kamunya (2021), Mutesi (2022) and Anjum and Cheema (2024), but differ from Bora (2024), who reported an insignificant effect of risk treatment. The findings suggest that mitigation is more effective when measures are practically implemented, trusted and controlled by cooperative members rather than remaining formal plans. This is consistent with Prospect Theory (Kahneman & Tversky, 1979), which explains members' willingness to adopt protective measures to minimize potential livelihood losses. However, neutral responses regarding reserve funds and capacity building indicate inconsistencies in the application of these measures.

Similarly, risk monitoring significantly influenced cooperative sustainability ($M = 3.95$, $SD = 0.94$; $r = .671$, $\beta = .281$, $p < .001$), although its relative contribution was the smallest among the three practices. Interviewees emphasized regular management reviews, financial

assessments, operational follow-ups and audits as mechanisms for detecting problems and facilitating corrective action. The findings agree with Mshuza et al. (2023), John (2021), Iribagiza and Kirabo (2024) and Anjum and Cheema (2024), reinforcing the importance of continuous oversight and accountability. Collectively, risk identification, mitigation and monitoring explained 65.8% of the variation in cooperative sustainability, demonstrating the importance of an integrated risk management approach. Risk identification emerged as the strongest predictor, followed by mitigation and monitoring, an ordering that differs from some construction-sector studies. Nevertheless, financial independence from government subsidies remained the weakest sustainability dimension, indicating the need for stronger internal financial capacity, market access and institutional support. The remaining 34.2% of unexplained variation also suggests that other organizational and external factors contribute to cooperative sustainability.

## 4.6 Limitations

The design was cross-sectional and the survey data were perceptions reported through one instrument, so the associations should not be read as proof of causation, and shared-method effects are possible. Item means were uniformly high and narrowly spread (3.91 to 4.02) and reliability was very high, which suggests that respondents may have answered similarly across items. Only active cooperatives in one district were studied, because members of dormant cooperatives could not be traced, so the results cannot show what distinguishes dormant from active cooperatives and may not generalize beyond similar urban and peri-urban settings. Future studies could combine longitudinal designs with objective financial indicators and include dormant cooperatives.

# 5. Conclusions and Recommendations

## 5.1 Conclusions

The study concludes that risk identification, mitigation and monitoring have significant positive influences on the sustainability of Agaseke Cooperatives in Kicukiro District, jointly explaining 65.8% of its variation. Risk identification had the strongest influence ($\beta = .395$), followed by risk mitigation ($\beta = .315$) and risk monitoring ($\beta = .281$). These findings demonstrate that early identification of risks, supported by effective mitigation measures and regular monitoring, strengthens cooperatives' resilience and long-term sustainability. However, gaps in formal financial risk identification, systematic monitoring of external market factors and financial independence from government subsidies remain key challenges.

## 5.2 Recommendations

The following recommendations are based on the findings of this study:

1. **Risk identification.** Cooperative management committees should keep a simple risk register recording each risk, its cause, likely effect, responsible person and planned response, update it at every monthly meeting, and hold an annual SWOT and risk-brainstorming session that includes human risks such as member turnover, illness and conflict. They should formalize financial risk identification through quarterly review of cash flows, debts and order pipelines, and keep a record of past shocks. The Rwanda Cooperative Agency should develop a standardized risk-management guideline and register template, integrate risk reporting into its Cooperative Management Information System, and, with the Ministry of Trade and Industry, require a risk identification section in the business plans of government-funded cooperatives before funds are disbursed.
2. **Risk mitigation.** Cooperatives should build a contingency reserve from a fixed share of sales revenue, strengthen internal savings, diversify products, designs and markets (local, tourist, online and export), prepare contingency plans for raw-material price increases such as bulk purchasing, and hold regular capacity-building sessions on financial management and record-keeping. The Rwanda Cooperative Agency, the City of Kigali and Kicukiro District should link cooperatives to affordable credit, savings, micro-insurance and market-linkage programmes, and adopt a policy requiring government-funded cooperatives to build contingency reserves. Development partners should embed risk-management training, seed contingency funds and exit strategies in their support, and buyers and financial institutions should offer forward contracts, timely payment and products tailored to small women-led cooperatives.
3. Cooperatives should hold monthly risk-review meetings with documented minutes and follow-up actions, report a summary to each general assembly, track sales, production, attendance, cash position and obligations on a simple dashboard together with external indicators such as raw-material prices and demand, conduct quarterly internal audits, and use lessons from past reviews in annual plans. The Rwanda Cooperative Agency and Kicukiro District should establish a post-handover monitoring framework with periodic supportive supervision that focuses on early-warning signs such as declining orders, member attrition and unpaid obligations, and should include simple risk and sustainability indicators in annual cooperative assessments.

**Further research.** Future studies should examine the 34.2% of unexplained variation by testing factors such as market access, leadership effectiveness, financial literacy, access to credit and institutional support; compare the

ranking of practices across sectors; and use longitudinal designs and objective financial indicators in samples that include dormant cooperatives.

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