|  |  |  |  |
| --- | --- | --- | --- |
| **Date Received** | **:** | **May 2024** |  |
| **Date Accepted** | **:** | **June 2024** |  |
| **Date Published** | **:** | **June 2024** |  |
|  |  |  |  |
|  |  |  |  |

IMPLEMENTATION OF RISK MANAGEMENT OF KSPPS IKS BOGOR CITY TO SUPPRESS NPF

**Sujian Suretno[[1]](#footnote-1)**

STAI Al-Hidayah Bogor, Indonesia (sujian@staiabogor.ac.id)

**Hasnil Hasyim**

STAI Al-Hidayah Bogor, Indonesia (hasnil@staiabogor.ac.id)

|  |  |  |
| --- | --- | --- |
| **Keywords:** |  | **ABSTRACTS** |
| *Financing Risk, NPF, Financial Health, Sharia Cooperatives* |  | *Financing risk is one of the risks that occurs in financial institutions, especially Sharia cooperatives. Financing risks must be minimized and managed professionally for the business to continue and perform well. Several Islamic cooperatives experienced collapse or went out of business, one of which was due to the high Non-Performing Financing (NPF) reaching above 5%. The negative impact of a high level of non-performing financing is a low level of collection, which will directly result in low income or business profits. For this reason, it is necessary to carry out good risk management by implementing several preventive solutions after a financing failure.* |

1. **INTRODUCTION**

The intermediation function of financial institutions is how the function of collecting community funds in the form of savings and deposits and distributing community funds in the form of financing runs with a good system. Of course, the distribution function in the form of financing must be by holding the principle of prudence so that financial institutions run with good performance.

Financing risk is a risk that occurs because the customer is unable to pay the obligations agreed between the two parties after the mutually agreed schedule or maturity.

Sharia cooperatives are one of the institutions Financial institutions must have competent human resources and experience in the form of financing analysts, so that it will minimize the occurrence of financing risks. This is quite important because some sharia cooperatives are currently collapsing due to lack of attention to business management management, especially productive and healthy financing so that operational activities run well.

Sharia cooperatives must be supported for their existence because they are sharia microfinance institutions with an economic empowerment system where the composition of financing members is dominated by MSME actors (micro, small and medium enterprises) who need super micro financing or financing with a maximum ceiling of 200-250 million. This is different from the Islamic banking system and business mechanism where the number of financing customer composition is more dominated by the corporate sector or the real sector.

In addition, Sharia Cooperatives also treat financing customers as partner members which functions to prosper their members, this is also called community economic empowerment so that the key to the success of Sharia cooperatives lies in the success of their members or MSME actors in managing their businesses. In contrast to the banking system which only considers customers as savings and loans.

MSME actors contribute to national economic growth of 70 percent because it is enough to provide capital that is not too large and the turnover of goods and services is so fast, for this reason its existence must be supported by the government, both in terms of regulatory support such as ease of penetrating export routes and other facilities in the form of access to capital.

From some of the explanations above, it is clear that the existence of Sharia Cooperatives needs to be supported by various parties because they pay more attention to the concept of economic empowerment for the welfare of their members, so to achieve it needs to be managed competently and professionally so that the Sharia Cooperative has good performance.

To conduct this research, the author took several theories that corroborate the risks that occur in financial institutions. Some other theories that need to be considered include the study of financing analysis and what things need to be considered by a financing analyst when going to do his work. (Haris 2016).

Here are 10 risks inherent in Islamic banks that must be known:  
**Financing Risks**Financing Risk is the risk due to the failure of the customer or other parties in fulfilling obligations to the Bank in accordance with the agreed agreement, including Financing Risk due to debtor failure, Financing concentration risk,*Counterparty Credit Risk*and*settlement risk.* (Noerhidajati and Fahruroji 2023)

Financing concentration risk is a risk that arises due to the concentration of the provision of funds to 1 (one) party or a group of parties, industries, sectors, and/or certain geographical areas that have the potential to cause considerable losses that can threaten the Bank's business continuity.(Hidayat 2019)

Counterparty credit risk is a risk that arises due to the failure of the counterparty to fulfill its obligations and arises from a type of transaction that has certain characteristics, for example transactions that are affected by the movement of fair value or market value.

Settlement risk is a risk arising from the failure to deliver cash and/or financial instruments on the agreed settlement date from the sale and/or purchase transaction of financial instruments.

**Market Risk**Market Risk is the risk to the balance sheet and administrative account position due to changes in market prices, including risk in the form of changes in the value of assets that can be traded or leased. (Husna 2022).

Market risk includes, among others, benchmark interest rate risk, exchange rate risk, commodity risk, and equity risk. The application of Risk Management for commodity risk and equity risk must be implemented by the Bank that consolidates with the Subsidiary Company.

Commodity risk is the risk due to changes in the price of financial instruments from *trading book* and *banking book* positions caused by changes in commodity prices.

Equity risk is the risk due to changes in the price of financial instruments from a position*Trading Book*caused by changes in stock prices.   
**Liquidity Risk**

Liquidity Risk is the risk resulting from the Bank's inability to meet its maturing obligations from cash flow funding sources and/or from high-quality liquid assets that can be collateralized, without interfering with the Bank's activities and financial condition. (Zainul and Susilo 2015).   
**Operational Risk**

Operational Risk is the risk of loss resulting from inadequate internal processes, internal process failures, human errors, system failures, and/or external events that affect the Bank's operations. (Zainul and Susilo 2015).

**Legal Risks**

Legal Risk is the risk due to lawsuits and/or weaknesses in juridical aspects. Legal risks arise, among others, due to the absence of supporting laws and regulations or weaknesses of the engagement, such as the non-fulfillment of the legal conditions of the contract or imperfect binding of collateral.   
**Reputation Risk**

Reputation Risk is a risk due to a decrease in the level of stakeholder trust that comes from a negative perception of the Bank. Reputational risks arise, among others, due to negative media reports and/or rumors about banks, as well as ineffective bank communication strategies. (Fitriyandi 2019).

**Strategic Risk**

Strategic Risk is the risk due to inaccuracies in the making and/or implementation of a strategic decision as well as failure to anticipate changes in the business environment.

Strategic risks arise because the bank sets a strategy that is not in line with the bank's vision and mission, conducts an incomprehensive strategic environment analysis, and/or there is a discrepancy in the strategic plan between strategic levels. In addition, Strategic Risks also arise due to failure to anticipate changes in the business environment, including failure to anticipate technological changes, changes in macroeconomic conditions, competitive dynamics in the market, and changes in the policies of related authorities.   
**Compliance Risk**

Compliance Risk is the risk caused by the Bank not complying with and/or not implementing the applicable laws and regulations as well as Sharia Principles. (Suretno 2020).

**Risk of Return**

Rate of Return Risk is the risk due to a change in the rate of return paid by the Bank to customers, due to a change in the level of return received by the Bank from the distribution of funds, which may affect the behavior of customers of the Bank's third-party funds.

Rate of Return Risk arises, among others, due to changes in the behavior of customers of the Bank's third-party funds caused by changes in the expectations of the level of return received from the Bank. Changes in expectations can be caused by internal factors such as a decrease in the value of the Bank's assets and/or external factors such as an increase in returns/returns offered by other banks. The change in yield expectations can trigger the transfer of customer funds from banks to other banks.   
**Investment Risk**

Equity Investment Risk is the risk due to the Bank bearing the business losses of customers financed in profit-sharing-based financing, both using the net revenue sharing method and those using the profit and loss sharing method.

Investment Risk (Equity Investment Risk) arises when the Bank provides profit-sharing-based financing to the customer with the Bank also bears the risk of the customer's business losses financed (profit and loss sharing method). In this case, the calculation of profit sharing is not only based on the amount of revenue or sales obtained by the customer but is calculated from the business profits generated by the customer. If the customer's business goes bankrupt, the principal amount of financing provided by the Bank to the customer will not be recovered. Meanwhile, the calculation of profit sharing can also use the net revenue sharing method, which is that profit sharing is calculated from income after deducting capital. (Widuhung 2016). *Source: POJK 65 of 2016*

1. **METHOD**

This study uses a qualitative methodology of descriptive analysis, namely by taking secondary data from various financial institution literature, especially Sharia cooperatives. Primary data collection techniques by providing several questioners or interview techniques from various Sharia cooperative managers, especially branch heads or managers related to the risk management faced and its management. Interviews were also conducted by several supervisory boards from several Sharia cooperatives.

1. **RESULT AND DISCUSSION**

Risk Management must be applied professionally by Sharia cooperatives so that business continuity runs well. One of the risks that arise in the operational activities of sharia cooperatives is financing risk. This occurs due to the inability of members to pay the obligations that have been agreed upon by both parties. One of the indicators of the bank's health level is Non-performing Loan (NPL), which is the level of arrears that have matured so that members are unable to pay installments. The Financial Services Authority sets the NPL rate at a financial institution not more than 5%, meaning that if the financial institution has an NPL of more than 5%, it will be supervised by the OJK and receive special attention. Sharia cooperatives in the legality of operational permits under the supervision of the Ministry of Cooperatives and SMEs are different from banking where their operational activities are under the supervision of the OJK.

The Non-Performing Loan (NPL) rate of more than 5% or which is quite high will result in disruption of operational activities, this is because it will have a direct impact on the profit of the Sharia cooperative.

The negative impact that will be felt if NPL is high is that the collection level will decrease and will affect revenue and profit to decrease as well, and vice versa if NPL is low, it will have an impact on high collection levels and affect high revenue and operating profit.

To avoid the above, Sharia cooperative managers must implement good risk management. Some of the things that can be done are:

1. Prevention or prevention.

Preventive or preventive measures are better than the occurrence of bad financing has already occurred. Among several things that can be done is to analyze financing from the 5 C's (Character, Capacity, Capital, Collateral, Condition)

* Character: Character can also be referred to as the attitude or disposition of a prospective debtor or member. Sharia cooperatives can assess prospective debtors or members from their attitude towards the surrounding community or towards business partners. Attitude or disposition can also be seen by assessing the prospective debtor with a background of loan history with other parties. If in banking it is known as BI Check, this can also be applied to Sharia cooperatives by creating a network of similar businesses or the Ministry of Cooperatives to create a comprehensive information system for the community so that Shariah cooperatives get complete information about prospective members.
* Capacity: capacity is assessing the ability to pay from the source of business income, the better the business management and the source of income achieved, the greater the opportunity to get financing financing.
* Capital: Capital is the ability of capital to run a business. The larger the capital spent, the greater the opportunity to get financing.
* Colateral: Colateral is a physical and non-physical guarantee given by prospective members to Sharia cooperatives. This guarantee shows the seriousness of the members to fulfill their obligations and the sense of security given to the Sharia cooperative if the members are successful. Collateral can also be cash collateral or other securities.
* Condition: Condition is the condition and business opportunities of prospective members in the future, these opportunities can be in the form of positive and negative things, Positive things are business opportunities that have future prospects as well as negative things are risks faced both macro and micro conditions and economic uncertainty.

1. Financing is stuck.

There are several actions that must be taken if the bad financing factor occurs:

1. Rescheduling is the Rescheduling of changes in financing terms that concern the payment schedule and/or period including the grace period, whether it includes a change in the amount of installments or not;
2. Reconditioning, which is a change in part or all of the financing terms that is not limited to changes in payment schedules, term terms, and other requirements as long as it does not involve a maximum change in the financing balance and the conversion of all or part of the loan into bank participation;
3. Restructuring is a change in financing conditions in the form of additional bank funds; and/or conversion of all or part of the interest arrears into new financing principal, and/or conversion of all or part of the financing into participation in the company.

Some other things that can be done by Sharia Cooperatives to minimize financing risks are:

1. Cooperate with the insurance company by making a contract with a financing insurance premium cooperation agreement so that the financing risk is handed over to a third party, in this case the insurance company.
2. Shariah cooperatives can carry out PPAP (Write-off of Productive Assets Receivables) which classifies bad financing so that if indeed the member defaults or defaults, whitening or wite off can be carried out.
3. Executing guarantees, both physical and non-physical collateral, such as cash collateral, and of course, the stages of settlement in a family manner must be prioritized, and if this cannot be done, the final settlement can be a solution for Sharia cooperatives.

Risk management for productive financing

Risk management implemented in sharia cooperatives is carried out in 2 ways:

* + - 1. Before the occurrence of financing by, namely by analyzing the 5 C's (caracter, capacity, capital, collateral, capacity) of prospective members. Our side, especially marketing, also analyzes from the results of interviews, business location surveys, information from related parties such as the person in charge of the group, and information from the nearest neighbors related to the character of prospective members. Our financing analyst also assessed from the 5 C indicator.
      2. The policy of the management also supports to minimize risk with the rule that prospective members must keep part of their funds in the form of mandatory deposits (of 50 thousand) and principal deposits (routine monthly deposits of 10 thousand). This is to anticipate if members default in the future.

How to deal with NPF that is already running

1. In a family way. We usually schedule a meeting at the member's home or place of business to discuss solutions from overdue financing.
2. By way of rescheduling... If the member is still able to pay, then we re-contract by making a new contract with the member and asking for the ability to pay the bayhar in accordance with the mutually agreed maturity.
3. If a member moves home (returns home), gets sick or dies, then the policy is to be whitewashed from all debts and the funds are taken from the budget for the Elimination of Productive Assets Receivables (PPAP)

**Schedule of Collaborative Lecturer PkM activities with IKS Sharia Cooperatives**

**PkM Activity Schedule**

The Community Service Activity (PkM) of STAI Al-Hidayah Bogor Collaborative Lecturers in collaboration with the IKS Sharia Cooperative in Margajaya Village, West Bogor District, Bogor City will be held within 30 days starting from November 1-30, 2023.

| **NNo** | **Activities / Agenda** | **Week I** | **Week II** | **Week III** | **Week IV** |
| --- | --- | --- | --- | --- | --- |
| 11 | Issue Inventory |  |  |  |  |
| 22 | Sharia Cooperative Audience |  |  |  |  |
| 33 | Coordination Meeting I |  |  |  |  |
| 44. | Focuss Group Discussion I |  |  |  |  |
| 5 | Coordination Meeting II |  |  |  |  |
| 66 | Focuss Group Discussion II |  |  |  |  |
| 77 | Coordination Meeting III |  |  |  |  |
| 88 | SME Economic Empowerment |  |  |  |  |
| 99 | Coordination Meeting IV |  |  |  |  |
| 110 | Problem Mitigation |  |  |  |  |
| 111 | Evaluation Meeting (Solution and implementation) |  |  |  |  |

**Purpose of PkM Activities**

The objectives that will be achieved in the PKM activities are:

* 1. The realization of the active participation of the STAI Al-Hidayah Bogor Academic Community in identifying problems that occur to MSME actors in the Bogor City IKS Sharia Cooperative
  2. Fostering and empowering MSME actors in the IKS Sharia Cooperative so that it will directly encourage economic welfare with professional business governance.
  3. Encouraging IKS Sharia Cooperatives to become Sharia Microfinance Institutions that can accommodate the financial problems of MSMEs and the Community of Margajaya Village.Bogor City
  4. Fostering the MSME community which is gathered into the MSME Community of Margajaya Koto Bogor Village with Financial Management Management and Digital Marketing in helping the community improve economic and income levels
  5. Encouraging DKM Mosques, Government Apparatus and the community around the IKS Sharia Cooperative to become members of financing and savings to strengthen the financing capital structure
  6. Raising public awareness of the dangers of Riba in Conventional Microfinance Institutions due to the interest burden that is very detrimental to the community
  7. Encouraging the public to access financing in Sharia Cooperatives IKS as an alternative and solution to financing problems
  8. Mitigating people who are entangled in the interest burden of loans from Conventional Microfinance Institutions to be able to maintain family economic stability

**Benefits of PkM Activities**

From the purpose of this activity, it is hoped that this PkM activity can provide several benefits, including:

* 1. Making the STAI Al-Hidayah Bogor Academic Community play a more active role in identifying problems in the IKS Sharia Cooperative in Margajaya Village, Bogor City
  2. Sharia Savings and Loans SMEs can be an alternative to community financing institutions that use a profit-sharing system in accordance with sharia
  3. Minimizing the risk of financing or default carried out by MSME actors so that it will have a direct impact on the performance of the SME savings and loan sharia cooperative.
  4. The people of Margajaya Village, Bogor city, especially MSME actors who partner with them, will be educated on the dangers of Riba and make the Sharia Savings and Loan Cooperative of SMEs as a financing alternative to meet the needs of business capital funds
  5. The Margajaya Village Government of Bogor City has economic instruments to fulfill the governance of a prosperous community life.
  6. The relevant cooperative office and Sharia Banking can collaborate with the IKS Savings and Loan Cooperative in the form of sharia-based capital financing.

**PkM Activity Targets**

After conducting a theoretical review, concept and identification of problems in the field and paying attention to the objectives and benefits, the Activity Objectives in this PkM program include:

1. Sharia Savings and Loan SMEs Cooperative

* Supervisor of Sharia Savings and Loan Cooperatives for SMEs
* Management of Sharia Savings and Loan Cooperatives of SMEs
* Manager (Manager, Marketing, Collector) of the Sharia Savings and Loan Cooperative of SMEs

1. MSME actors who partner with IKS Sharia Cooperatives
2. Conventional Microfinance Institution (MFI) Customers

* Government Apparatus
* Community

Each target has an important role in achieving a goal of this Community Service (PkM) activity, therefore in each agenda it is necessary to involve parties who have an important role in it.

Among the target roles is that the IKS Sharia Cooperative has a role as an intermediary institution that functions as an intermediary between a group of people with surplus financial conditions by appealing to keep some of their funds in the form of deposits and deposits and distributing these funds in the form of business capital financing. Cooperative administrators and their members need to have skills in fundraising strategies, distribution management to contribute to economic conditions, in this case the scope is the village.

Meanwhile, the IKS Sharia Cooperative has a moral responsibility to improve the welfare of MSME actors who have partnered so that it is necessary to hold education related to business management so that it will have an impact on default. For this reason, what needs to be done by the IKS Sharia Cooperative is a trainer related to good business management and professional business management such as marketing management, financial management and so on.

The target of the activity, which is a Financial Institution with a Conventional system (LKK), is a target intended to hold an audience with the operation of its activities in the community. Of the several operations carried out, not a few have not yet obtained permits for the surrounding environment, even though the domicile of the office or residence is outside the village area, so when there are operations carried out in the village area, the village government must be aware.

In addition, LKK also needs to pay attention to the condition of the community so that it can give consideration to the transactions carried out so that it does not seem suffocating because it provides financing with easy terms but with an agreement on the consequences of administrative costs, term interest and late fines that do not pay attention to the ability of previous prospective customers. Through this Community Service (PkM) activity, LKK that operates in addition to obtaining an operational permit in the village area, is also able to convert its transactions to sharia-based which provides benefits or goodness and peace of mind for the blessings of transactions and businesses run.

**Target Third Party Funding.**

After the lecturer team made observations at the IKS Sharia Cooperative, data was obtained that the third-party funds collected, both in the form of deposits and term deposits, were dominated by almost 100% of the funds from the management and supervisors. Almost a small part of the outside members and the amount is not too large obtained from the principal and mandatory deposits, namely when they are started and included in the IKS activist members.

Meanwhile, the financing distributed is 100% for productive financing of working capital. The policy of the management is that productive financing or working capital will have a direct impact on increasing business turnover and improving the welfare of members.

**Results of PkM Activities**

The response of the community, especially MSME actors in Margajaya Village, West Bogor District, Bogor City, to the PkM program was very good and responsive, starting from the opening when delivering the educational programs that will be implemented. The community, especially MSME actors, feel this presence as a new spirit, because it can help human resources in the first step to solve problems in the Cooperative, MSME and Community sectors. (Suretno and Bustam 2020).

Although not all communities and MSME actors participate in this activity because there are several things, but this does not reduce the enthusiasm of the people who participate in PkM activities. With the hope that the presence of PkM participants can help and motivate the community to be more active in improving quality human resources.

PkM activities in Margajaya Village, West Bogor District, Bogor City provide changes and developments in the community. The changes and developments are contained in several programs, including:

1. Sharia Savings and Loan SMEs Cooperative
2. The creation of a work plan for the new administrators.
3. Increasing public trust in the performance of the new management of the IKS Sharia Savings and Loan Cooperative.
4. Increased insight into the management of management cooperatives around product programs, collection and distribution of funds.
5. MSME Actor Community, Margajaya Village, West Bogor District
6. Financial management coaching for MSME actors.
7. Fostering Digital Marketing strategies for MSME actors.
8. Increasing the sense of togetherness among MSME actors through the Economic Empowerment program.
9. Encouraging the management of the IKS Sharia Cooperative to accommodate the needs of MSME actors, especially in the form of capital
10. Conventional Microfinance Institution (MFI) Financing Customers
11. Guidance on the urgency of Sharia-based transactions
12. Directing for conversion in Sharia Cooperative financing products
13. Mitigation of customers who are included in the level of non-performing financing
14. Negotiation of principal debt repayment to Conventional MFIs.
15. **CONCLUSION**

Financing risk is something that must be considered by the manager or supervisor of Sharia cooperatives because this will have a negative impact on business sustainability. Financing risk is a risk that occurs due to the customer or member not being able to fulfill his obligations that have been agreed upon by both parties. Some of the ways that can be done by Sharia cooperatives are the first thing is prevention or prevention by analyzing financing from prospective members such as the 5 C's (Character, Capacity, Colateral, Capital, Condition) and other things that can be done if the bad financing occurs is by transferring the risk to other parties. One alternative solution is to establish cooperation with insurance companies to take over financing risks. Another solution that can be done is the Elimination of Productive Assets Receivables (PPAP), which is to classify members who are in default or default to be whitened. The allocation of PPAP funds is taken from part of the operating profit.

1. **SUGGESTIONS AND ACKNOWLEDGMENTS**

To further improve the competence and professionalism of MSME actors, economic empowerment activities should be carried out continuously by conducting educational activities in the form of business management training, so that it is hoped that through these training activities it can minimize the occurrence of bad financing or default which will directly encourage welfare for MSME actors themselves.

**BIBLIOGRAPHY**

Fitriyandi, Muhammad Gema. 2019. “Analisis Mitigasi Risiko Financial Technology Syariah Peer to Peer (P2P) Lending Dalam Penyaluran Pembiayaan Terhadap UMKM Di Indoneia (Studi Kasus PT. Ammana Fintek Syariah).” Jurnal Ilmiah Mahasiswa FEB 7, no. 2 (June). https://jimfeb.ub.ac.id/index.php/jimfeb/article/view/5827.

Haris, Abdul. 2016. “Analisis Komparasi Manajemen Risiko Pada Koperasi Syariah DI Kabupaten Boyolali.” Jurnal Ilmiah Ekonomi Islam 2, no. 03 (November). https://doi.org/10.29040/JIEI.V2I03.1.

Hidayat, Wahyu. 2019. “Implementasi Manajemen Resiko Syariah Dalam Koperasi Syariah.” Jurnal Asy-Syukriyyah 20, no. 2 (October): 30–50. https://doi.org/10.36769/ASY.V20I2.80.

Husna, Ovilia. 2022. “Manajemen Operasional Pada Koperasi Syariah.” Prosiding Seminar Nasional & Call for Paper STIE AAS 5, no. 1 (December). https://prosiding.stie-aas.ac.id/index.php/prosenas/article/view/216.

Noerhidajati, Sri, and Fahruroji. 2023. “Pengelolaan Wakaf Uang : Usulan Skema Pembiayaan Usaha Mikro, Kecil Dan Menengah.” Syarikat: Jurnal Rumpun Ekonomi Syariah 6, no. 1 (June): 74–90. https://doi.org/10.25299/SYARIKAT.2023.VOL6(1).10691.

Suretno, Sujian. 2020. “Kepatuhan Syariah Pada Produk Musharakah Di Bank Syariah Indonesia.” Jurnal Indo-Islamika 9, no. 1: 1–24.

Suretno, Sujian, and Bustam Bustam. 2020. “Peran Bank Syariah Dalam Meningkatkan Perekonomian Nasional Melalui Pembiayaan Modal Kerja Pada UMKM.” Ad-Deenar: Jurnal Ekonomi Dan Bisnis Islam 4, no. 01: 1–19.

Widuhung, Sisca Debyola. 2016. “Perbandingan Return Dan Risiko Investasi Pada Saham Syariah Dan Emas.” Jurnal Al-Azhar Indonesia Seri Pranata Sosial 2, no. 3 (August): 114–50. https://jurnal.uai.ac.id/index.php/SPS/article/view/166.

Zainul, Aan, and Anwar Edi Susilo. 2015. “Implementasi Manajemen Risiko Likuiditas Lembaga Mikro Syariah (Studi Kasus BMT Aman Utama Jepara).” Jurnal Dinamika Ekonomi Dan Bisnis 12, no. 2 (November): 203. https://doi.org/10.34001/JDEB.V12I2.372.

1. Correspondence author [↑](#footnote-ref-1)