**Evaluating the Impact of NMB Wakala Agency Banking on Agent Income Growth in Morogoro Municipality, Tanzania**

**Abstract**

This study assessed the contribution of NMB Wakala agency banking to the livelihoods of agents in Morogoro Municipality, Tanzania. Guided by Social Capital Theory, the research explored the income changes experienced by agents and the skills acquired through their participation. Using a descriptive research design and a mixed-methods approach, data were collected from a sample of 153 agents drawn from a population of 247 registered NMB Wakala agents. The findings indicate that agency banking contributes significantly to agents' income growth, skills acquisition, and social capital formation. Agents reported notable monthly income increases from TZS 315,968.63 before joining the Wakala network to TZS 381,420.53 afterwards, an average gain of 20.7%. In addition to financial improvements, agents reported acquiring critical business skills, particularly in customer service, financial management, and digital transaction handling. The study concludes that agency banking plays a vital role in extending financial services and in advancing livelihood outcomes. It recommends further investment in agent training, digital infrastructure, and incentive schemes to maximise socio-economic impact.

**Keywords:** *Agency banking*; *NMB Wakala*; *financial inclusion*; *income growth*; *livelihood improvement*; *Morogoro Municipality*; *Tanzania*

1. **Introduction**

Agency banking has increasingly become a pivotal innovation in the quest to expand access to formal financial services in developing economies. In many regions where traditional bank branches are sparse or economically unfeasible, agency banking has bridged the financial inclusion gap by bringing essential banking services closer to underserved populations (Raghunath *et al*., 2024). Tanzania has been at the forefront of this shift, with the National Microfinance Bank (NMB) pioneering the Wakala model as a strategy to reach both the banked and unbanked populations across the country. Agency banking allows commercial banks to delegate basic banking operations, such as cash deposits, withdrawals, fund transfers, and balance enquiries, to third-party agents who are typically shop owners, kiosk operators, or other small-scale entrepreneurs (Lotto, 2016; Nzilano, 2025). These agents serve as extensions of the bank, operating within local communities and providing services that would otherwise be inaccessible due to geographical or infrastructural limitations. The Bank of Tanzania (2023) has noted that the adoption of agency banking has enabled financial institutions to not only reduce their operational costs but also to broaden their outreach, especially in rural and peri-urban areas where the demand for formal financial services remains largely unmet.

NMB Wakala represents one of the most structured and extensive agency banking frameworks in Tanzania. As of 2023, NMB had deployed thousands of Wakala agents throughout the country (Mwakisoba & Meela, 2024). The agents play a dual role, not only extending financial services to remote areas but also acting as catalysts for grassroots economic development. By participating in the Wakala network, agents generate commission-based income from customer transactions. This additional revenue stream can significantly supplement their primary businesses or even serve as their main source of livelihood (Akighir *et al*., 2022). Thus, agency banking serves a dual purpose: advancing financial inclusion and contributing to local income generation and employment.

Despite the progress made, the real measure of agency banking's success extends beyond institutional metrics such as customer growth and transaction volume. A critical but often overlooked dimension is the livelihood impact on the agents themselves. Empirical literature highlights that agents involved in banking networks tend to experience greater income stability, improved business acumen, and strengthened social networks (Kitali *et al*., 2015; Barasa & Mwirigi, 2013). Agents often reinvest their earnings into their businesses, support their families, and use the acquired financial literacy to diversify their economic activities. Moreover, their increased interaction with customers and financial institutions equips them with interpersonal and technical skills that can further enhance their entrepreneurial potential. Nevertheless, the agency banking model is not without its limitations. Agents frequently face operational challenges that threaten the viability of their businesses. For instance, liquidity shortages, particularly the unavailability of sufficient cash or electronic float, are a common constraint that limits their ability to meet customer demands, especially during peak transaction periods (Agu *et al*., 2016). Additionally, poor network connectivity, especially in rural locations, can disrupt service delivery and diminish customer satisfaction (Kihoma, 2016). Security concerns, delayed commission payments, and lack of technical support further exacerbate the operational difficulties faced by agents, ultimately affecting their income stability and business continuity.

In the context of Morogoro Municipality, NMB Wakala has seen a steady expansion, yet limited scholarly research has examined the socioeconomic outcomes of this growth from the perspective of the agents themselves. Preliminary insights suggest a mixed picture. While some agents have reportedly experienced significant improvements in income and business resilience, others continue to struggle with limited customer traffic, technical disruptions, and high operational costs (Sehaba & Nyanda, 2022). These inconsistencies underscore the need for a comprehensive, empirical investigation into the lived experiences of Wakala agents in the region. Given the current knowledge gap, this study aims to evaluate the contribution of NMB Wakala agency banking to the livelihoods of its agents in Morogoro Municipality. Our study focuses on two key dimensions: firstly, assessing the extent of income changes experienced by agents as a result of their participation in the agency banking model; and secondly, identifying the skills and competencies acquired through their operational engagement with NMB.

Ultimately, the findings of this research are expected to offer valuable insights for policymakers, financial service providers, and development practitioners seeking to refine and scale the agency banking model. It will also contribute to the discourse on inclusive finance and livelihood development by shedding light on the micro-level outcomes of a macro-level financial innovation in Tanzania.

1. **Theoretical perspective**

This study is grounded in Social Capital Theory, which emphasises the value of social networks, trust, and norms of reciprocity in facilitating coordinated actions and achieving individual or collective goals (Bourdieu, 1986; Coleman, 1988). In the context of agency banking, this theoretical framework provides a lens through which to examine how agents' embeddedness within community structures contributes to their business success and livelihood outcomes. Social capital, as conceptualised in this study, functions as both a resource and an enabler. Agents operating within well-connected and trust-based community networks are more likely to attract and retain customers, build strong interpersonal relationships, and establish reputations as reliable service providers. These social dynamics reinforce customer loyalty and foster repeated transactions, which in turn influence the agents' income stability and business sustainability.

Through applying Social Capital Theory, the study explores how agents utilise their relational ties, not only to expand their client base but also to access informal support systems such as word-of-mouth referrals, community endorsement, and peer learning. Moreover, the trust placed in agents by their customers often extends beyond financial transactions, positioning agents as key intermediaries in the socio-economic fabric of the communities they serve. This trust-based interaction can mitigate perceived risks associated with financial services, particularly in underserved or financially excluded areas. Thus, the theory guided the study in understanding not only the economic benefits of agency banking but also the intangible, social dimensions, such as enhanced reputation, community recognition, and informal collaboration that contribute to agents' overall livelihood improvement. In this way, Social Capital Theory provided a comprehensive analytical framework for evaluating the interplay between financial service delivery and community-based relationships in the NMB Wakala model.

1. **Materials and methods**

**3.1 Study area**

The study was conducted in Morogoro Municipality, one of the key urban centres in eastern Tanzania. The municipality was selected due to its active adoption of the NMB Wakala agency banking model and its socio-economic diversity (Kihoma, 2016). Morogoro exhibits a blend of rural and urban characteristics, making it an ideal case for evaluating the impact of agency banking on livelihoods across varied population segments (Ernest *et al*., 2017). Additionally, the area hosts a significant number of NMB Wakala agents and is a regional hub for trade and small-scale entrepreneurship, allowing for practical insights into how agency banking operates within a mixed socio-economic setting.

**3.2 Research design and approach**

This study employed a cross-sectional research design based on a mixed-methods approach to examine the contribution of NMB Wakala agency banking to the livelihoods of agents in Morogoro Municipality. The cross-sectional design was appropriate as it enabled the collection of data from NMB agents at a single point in time, allowing for the analysis of current income levels, skill acquisition, and social capital outcomes associated with agency banking. This design is particularly effective for exploring associations and patterns within a defined population without manipulating variables (Kothari, 2004). A mixed-methods approach was adopted to enhance the depth and breadth of analysis. The quantitative component focused on capturing measurable indicators such as income changes before and after engagement in agency banking, as well as the prevalence of skill acquisition among agents. These data were gathered through structured questionnaires and analysed using statistical techniques to establish patterns and trends. The qualitative component complemented the quantitative findings by capturing agents' personal experiences, perceptions, and social interactions related to their participation in the NMB Wakala network (Creswell & Poth, 2018). This was achieved through semi-structured interviews, which provided deeper insights into the relational and contextual dimensions of agency banking (Creswell, 2014). As emphasised by Mwonge and Naho (2021), employing a mixed research approach enables researchers to compensate for the weaknesses of one method with the strengths of the other, thereby improving the validity and depth of insights (Mwonge & Naho, 2024). Thus, the integration of both quantitative and qualitative data enabled a comprehensive understanding of the economic and social contributions of agency banking. The use of a cross-sectional design in combination with mixed methods ensured that both the statistical significance and the lived realities of agents were effectively captured and analysed.

**3.3 Target population**

The target population comprised all registered NMB Wakala agents operating within Morogoro Municipality. According to records from the NMB Agency Banking Department, there were 247 active agents in the municipality at the time of the study. These agents were directly involved in delivering financial services such as deposits, withdrawals, and transfers on behalf of NMB Bank and represented a cross-section of small business owners, entrepreneurs, and community-level service providers.

**3.4 Sample size and sampling procedures**

The sample size was determined using Yamane's (1967) formula for finite populations:

$n=\frac{N}{1+N(e)^{2}}$ (1)

where:

$n $ is the required sample size

$N$ represents the population size

$e =$ represents the margin of error (0.05 or 5%)

Given that the total number of registered NMB Wakala agents in Morogoro Municipality at the time of the study was 247, the formula was applied as follows:

$n=\frac{247}{1+247(0.05)^{2}}$ (2)

$n=\frac{247}{1.6175}$ (3)

$n=152.70$ (4)

Thus, the sample size was approximately 153 NMB agents which was considered statistically adequate to ensure confidence and precision in the findings.

To select participants from the target population, we used a simple random sampling. This probability-based sampling technique was chosen to minimise selection bias and enhance the validity and generalisability of the results (Kothari, 2004). A sampling frame was developed, comprising a complete list of all 247 registered NMB Wakala agents within Morogoro Municipality. This list was obtained from the NMB Agency Banking Department and included details such as agent names, locations, and registration codes. Using the sampling frame, random numbers were generated through a computerised random number generator in Microsoft Excel. Each agent on the list was assigned a unique identification number, and the programme was used to randomly select 153 agents without replacement. This ensured that every agent had an equal and independent chance of being included in the sample. As such, a simple random sampling was thus appropriate to achieve a representative cross-section of agents across the municipality. It also provided each unit in the sampling frame with an equal opportunity of being selected, which is a key principle in ensuring the internal validity of survey-based research (Kothari, 2004).

**3.5 Data types, sources and collection methods**

This study used both primary and secondary data sources. Primary data were collected through structured questionnaires and semi-structured interviews administered directly to selected NMB Wakala agents. The questionnaires captured quantitative indicators such as income levels before and after engagement with agency banking, while interviews provided qualitative insights into agents' experiences, challenges, and social interactions. Secondary data on the other hand, were obtained from NMB Bank records, training materials, policy documents, and previous studies relevant to agency banking and livelihoods. Combining both types of data allowed for methodological triangulation, enhancing the validity and reliability of the findings.

Moreover, prior to data collection, the ethical approval was obtained from Jordan University College as indicated in the clearance letter (*Ref. No. DPGS/FR/MBA/25/68*). In addition, informed consent was obtained from all participants before their involvement in the study. Survey participants were provided with a detailed explanation of the study's objectives, procedures, and rights, including the voluntary nature of participation and the option to withdraw without repercussions. Interview participants were similarly briefed, and verbal and written consent were secured before initiating discussions.

**3.6 Data analysis**

Quantitative data were analysed using descriptive statistics, including means, standard deviations, and frequency distributions, to summarise changes in income, employment patterns, and skill acquisition. On the other hand, the qualitative data from interviews were analysed thematically, with responses coded and categorised into emerging themes related to business growth, social capital formation, and institutional challenges. This allowed for a deeper contextual interpretation of the agents' experiences and the broader implications of agency banking on livelihoods (Creswell & Poth, 2018). The combination of statistical and narrative techniques enhanced the robustness and richness of the findings.

1. **Results and discussions**

**4.1 Income changes among NMB wakala agents**

In this study, the researchers sought to examine the contribution of NMB Wakala agency banking to the improvement of agents' income levels, with the aim of assessing the economic value of the model beyond its primary function of delivering financial services. This inquiry is particularly relevant in Morogoro Municipality, where formal employment opportunities are scarce, and a significant portion of the population depends on self-employment or informal businesses for survival. In such a setting, determining whether agency banking offers a stable and sustainable source of income is essential for evaluating its effectiveness as a tool for livelihood enhancement, poverty reduction, and financial inclusion. One of the driving forces behind the growth of agency banking in Tanzania, especially under the NMB Wakala model, has been its potential to generate economic opportunities for individuals in underserved areas, particularly where conventional banking infrastructure is absent or inadequate. In Morogoro, this model has increasingly served as a supplementary income stream for small-scale entrepreneurs who have become agents, thereby supporting their household economies and business resilience.

To explore the financial impact of agency banking, the study focused on changes in agents' income levels before and after joining the NMB Wakala network. Prior to participation, most agents relied on modest and often unstable sources of revenue, such as petty trade or mobile money operations. However, after integrating into the agency banking system, many agents reported significant changes in their financial standing. Based on responses from 153 agents, the average monthly income before joining stood at TZS 315,968.63, which increased to TZS 381,420.53 following their engagement with NMB Wakala, an average increase of TZS 65,451.90 per month. These findings, presented in Table 1, provide empirical evidence of the model's contribution to agents' financial well-being.

**Table 1: Monthly income change of agents**

|  |  |  |  |
| --- | --- | --- | --- |
| Statistic | Income before agent (TZS) | Income after becoming an agent (TZS) | Income change (TZS) |
| Mean | 315,968.63 | 381,420.53 | 65,451.90 |
| Standard Deviation | 27,603.46 | 44,768.91 | 28,765.55 |
| Standard Error of Mean | 2,232.88 | 3,622.91 | 2,326.12 |
| Minimum | 270,000 | 290,000 | 10,000 |
| Maximum | 400,000 | 500,000 | 120,000 |
| Number of Respondents | 153 | 153 | 153 |

***Source*:** Field Data, 2025

The increase in average income, though modest in absolute terms, signals a meaningful shift in financial stability for many agents. Qualitative feedback from respondents further illustrates this improvement. For instance, one agent attested that:

*… before I became an NMB Wakala, I was running a small kiosk that barely covered rent. Now, I can save a little every month. It’s not a huge jump, but it’s stable and reliable.*

Another agent commented:

*… agency banking gave me an additional income stream. I combine it with my mobile money business, and together they help me take care of my family better than before.*

These testimonies reflect a broader pattern of agents gaining a more predictable and sustainable income. The relatively high standard deviation of post-engagement income (TZS 44,768.91) suggests variability across agents, likely influenced by factors such as geographical location, transaction volume, operating hours, and local competition. Nevertheless, the positive average gain affirms the potential of agency banking to enhance livelihoods.

The significance of these findings becomes even clearer when situated within the wider literature. For example, Muthaura (2018), reported that over 70% of agency banking participants experienced an improvement in their monthly income during the first year of operation. The study emphasised that these income gains enabled agents to reinvest in their businesses and address basic household needs. Similarly, Barasa and Mwirigi (2013), using the sustainable livelihoods approach, further supported these observations. Their research in Kenya demonstrated that income from agency banking allowed agents to stabilise their household cash flow, reduce dependency on a single income source, and diversify their income streams. Moreover, Kitali *et al*. (2015) highlighted that the benefits of agency banking extend beyond monetary gains. In their study conducted in Kenya, they observed that agents also benefited reputationally; clients trusted agents affiliated with reputable banks and preferred to transact with them. This reputational capital translated into increased customer volumes and, by extension, higher earnings.

The findings from the current study in Morogoro Municipality are therefore consistent with evidence from other regions in Tanzania and across East Africa. The average income increase of TZS 65,451.90 represents more than just a financial metric; it points to greater economic resilience for agents operating in environments characterised by informal employment and limited access to formal credit and savings facilities. While not all agents reported dramatic financial transformations, the stability and regularity of income, attributes often lacking in informal work, proved essential for meeting daily expenses, saving, and planning for the future. In a region where formal employment is scarce, the Wakala model has created a semi-formal economic space that bridges the gap between informal survivalist activities and stable entrepreneurial engagement.

**4.2 Skills and competencies acquired through agency banking**

The researchers sought to understand the skills and competencies acquired through agency banking because income growth alone does not fully capture the broader impact of the Wakala model on agents' livelihoods. Developing financial, technical, and interpersonal skills is critical for agents' long-term economic resilience and entrepreneurial advancement, especially in settings where formal training opportunities are limited (Ledgerwood *et al*., 2013; Ayyagari *et al*., 2011). Through examining the types of skills gained, such as customer service, digital literacy, and financial management, the study aimed to assess whether agency banking contributes to human capital development, enabling agents to manage their businesses more effectively, diversify income sources, and access future economic opportunities. Table 2 presents the study results.

**Table 2: Skills and competencies acquired through agency banking (n=153)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Skills acquired | Agreed | Disagreed | Chi-square (χ²) | Sig. |
| **n** | **%** | **n** | **%** |
| Financial management | 115 | 75.2 | 38 | 24.8 | 37.65 | 0.000 |
| Customer service | 106 | 69.3 | 47 | 30.7 | 23.88 | 0.000 |
| Digital/mobile literacy | 94 | 61.4 | 59 | 38.6 | 10.08 | 0.002 |
| Marketing and promotion | 52 | 34.0 | 101 | 66.0 | 16.57 | 0.000 |
| Security awareness | 46 | 30.1 | 107 | 69.9 | 23.02 | 0.000 |
| Time management | 41 | 26.8 | 112 | 73.2 | 30.59 | 0.000 |

***Source*:** Field data 2025

The results in Table 2 reveal statistically significant differences in agents’ responses across all skill domains. The statistical significance of all chi-square tests at the 1% level or better confirms that the observed differences in agreement and disagreement are not due to chance, thereby reinforcing the argument that agency banking plays a transformational role in human capital development. As noted by Jack and Suri (2011), such transformations not only influence business practices but also expand agents’ pathways to long-term economic inclusion and self-employment.

The most widely acquired competencies were financial management (75.2% agreement; χ² = 37.65, p = 0.000), customer service (69.3%; χ² = 23.88, p = 0.000), and digital/mobile literacy (61.4%; χ² = 10.08, p = 0.002). These findings strongly suggest that agency banking contributes positively to enhancing agents’ financial and digital competencies, which are crucial for managing agency operations and adapting to evolving technological platforms (Kumar *et al*., 2006). In contrast, skills such as marketing and promotion (34.0%; χ² = 16.57, p = 0.000), security awareness (30.1%; χ² = 23.02, p = 0.000), and time management (26.8%; χ² = 30.59, p = 0.000) were less frequently reported. This indicates that while agency banking enhances core operational skills, it may offer limited exposure to strategic business competencies. These gaps highlight the need for structured training programmes to improve agents’ capacity in client acquisition, fraud prevention, and time efficiency (Ayyagari *et al*., 2011).

1. **Policy and practical implications**

The findings of this study present important policy and practical implications for enhancing financial inclusion, supporting grassroots entrepreneurship, and strengthening the institutional framework governing agency banking in Tanzania. The positive impact of NMB Wakala on agents' income levels, skills acquisition, and community standing highlights the transformative potential of agency banking when well-supported by policy and practice.

From a policy perspective, there is a clear need to strengthen the regulatory environment for agency banking. The government, particularly through the Bank of Tanzania, should continue to refine policies that ensure fair remuneration for agents, protect consumers, and encourage the digital expansion of banking services. Regulatory clarity and oversight are crucial for sustaining agent confidence and minimising operational risks. Furthermore, this study reinforces the need to integrate agency banking models into national financial inclusion strategies. Given the demonstrable improvements in income and capacity among agents, agency banking should be recognised not merely as a delivery channel but as a strategic livelihood intervention within broader poverty reduction and economic empowerment frameworks. Another policy implication relates to financial and digital literacy. Since agents acquire skills largely through informal means, public–private partnerships should be encouraged to deliver structured training programmes focusing on business management, digital security, customer engagement, and technology use. Such programmes would enhance the quality of financial services offered while equipping agents with transferable skills that can support long-term entrepreneurial advancement. Moreover, considering the informal nature of most agent businesses, targeted support, such as access to micro-credit, tax incentives, or seed capital, could be introduced to help agents expand and formalise their enterprises, thereby contributing to the formal economy and job creation.

On a practical level, the findings confirm that agency banking provides a viable and stable source of income for many individuals in semi-urban and peri-urban areas. The NMB Wakala model, in particular, serves as an effective livelihood option for self-employed individuals seeking to diversify their income. Expanding access to agency banking in underserved communities could reduce dependence on informal and unstable economic activities, thereby enhancing household income security. Beyond income, the study showed that agents gained key competencies in financial management, customer service, and digital operations. These skills are not only vital for the effective delivery of banking services but also enhance agents' capacity for independent business growth. Financial institutions should therefore invest in continuous professional development for agents, focusing on operational excellence, innovation, and compliance. Empowering agents in this way can significantly increase their business confidence and economic mobility. Furthermore, agency banking strengthens the social capital of agents by enhancing their trust and visibility within their communities. Agents often become trusted intermediaries between banks and local populations. Financial institutions, such as NMB, can leverage this position by integrating agents into community education campaigns on financial literacy and inclusion. Doing so will not only build stronger relationships between banks and clients but also reinforce the agents' role as valued community members. In addition, the study highlights the importance of performance-based incentives for sustaining agent motivation and engagement. Implementing data-driven incentives, such as tiered commissions, service excellence awards, or small business support grants, can boost agent morale, reduce attrition, and improve service quality. Such measures would be particularly effective if they are transparent, consistent, and aligned with the performance metrics and operational realities of agency banking.

1. **Conclusion**

This study set out to examine the contribution of NMB Wakala agency banking to the livelihoods of agents in Morogoro Municipality. Guided by Social Capital Theory, the findings revealed that engagement in agency banking has led to improvements in the income levels of NMB Wakala agents. On average, agents experienced a 20.7% increase in monthly income after joining the Wakala network, confirming the model's role as a reliable supplementary source of earnings in an economy with limited formal employment opportunities. This income enhancement contributes to financial stability, supports daily household needs, and enables modest investment in small-scale entrepreneurial ventures. Beyond financial gains, the study demonstrated that agents also acquire valuable skills, including financial management, customer service, and digital literacy. These competencies not only enhance their effectiveness in delivering banking services but also contribute to broader human capital development. Skills acquired through agency banking have the potential to open further income-generating opportunities, promote business formalisation, and improve agents' ability to adapt to dynamic market conditions. Moreover, the study showed that agency banking strengthens agents' social capital by increasing their visibility, trust, and integration within the community. Agents were perceived not only as financial intermediaries but also as trusted community figures, which enhanced their reputational standing and deepened their ties with customers. This relational capital plays a crucial role in driving customer loyalty, repeat transactions, and informal referrals, all of which support the sustainability of agent businesses. Thus, the findings affirm that NMB Wakala agency banking has a multifaceted impact on the livelihoods of agents. It functions not only as a vehicle for expanding financial inclusion but also as a tool for socio-economic transformation through income generation, skills enhancement, and community empowerment. These contributions highlight the importance of agency banking as a practical and inclusive model for advancing Tanzania's financial sector and informal economy.

1. **Limitations and future research directions**

Although this study provides valuable insights, it is subject to several limitations. One of the major limitations is the geographical scope of the study. By focusing exclusively on Morogoro Municipality, the findings may not be fully generalisable to other regions of Tanzania, particularly rural or more economically marginalised areas where agency banking dynamics may differ significantly. Future studies could adopt a comparative approach across multiple regions to capture a more nuanced and nationally representative picture. Second, the study relied on cross-sectional data, which captures outcomes at a single point in time. This limits the ability to assess long-term trends or causality in income changes and skill development. Longitudinal research tracking agents over an extended period would provide deeper insights into the sustainability and trajectory of these livelihood improvements. Additionally, while a mixed-methods approach was used, the qualitative component was limited in scale. Expanding the number and diversity of in-depth interviews or focus group discussions could enrich understanding of the contextual factors, such as gender, age, and prior business experience, that shape agents' experiences and outcomes.

Moreover, scholars could explore the gendered impact of agency banking, analysing whether male and female agents experience similar outcomes in terms of income growth, business expansion, and social recognition. Furthermore, studies could investigate the customer-side effects of agency banking, including changes in financial literacy, access to savings, and household financial behaviour in communities served by agents. Finally, future studies should consider evaluating the role of technology adoption and innovation in enhancing agent performance, such as the use of mobile apps, data analytics, and customer relationship management tools, to better understand how digital transformation can be leveraged to improve both service delivery and agent livelihoods.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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