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AI TECHNOLOGICAL OPTIONS: A STRATEGY FOR FAMILY RESOURCES DEVELOPMENT, MANAGEMENT, AND EMPOWERMENT

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Abstract
This study assesses the Artificial Intelligence (AI) technological options applications opens for enhancing family resource development, management, and empowerment. Three main objectives were formulated for this study: identifying AI technological options for family resource development and management, exploring how effective AI tools are in improving household decision-making and resource use, and evaluating the impact of AI technologies on family empowerment. Survey research design was used backed up with qualitative inquiry for this study. Questionnaire was used for data collection and sent to households, focus group discussions, and secondary sources from academic and development literature. Collected quantitative data were analyzed using descriptive statistics, while qualitative data underwent thematic analysis. The results show that AI-driven tools like smart budgeting systems, digital learning platforms, and health-monitoring apps significantly boost resource efficiency, cut down on waste, and enhance family well-being. The study suggests promoting digital literacy, increasing access to affordable AI technologies, and weaving AI into family and community development efforts. In conclusion, AI technological options emerge as powerful significant strategies for strengthening family resource management and fostering sustainable empowerment.

KEY: AI Technological options; Family resources; Development, Management, Empowerment

Introduction
Artificial Intelligence (AI) technology has become one of the most transformative innovations of the 21st century. According to Russell (2021), artificial intelligence refers to computer systems designed to perform tasks that normally require human intelligence, such as learning, reasoning, and decision-making. In the context of family resource development and management, AI technological options provide tools that can assist families in planning, organizing, and utilizing their financial, human, and material resources effectively. The rapid advancement of AI technologies has created new opportunities for households to improve productivity, reduce waste, and enhance their overall quality of life. The concept of family resource management involves the effective use of available resources such as time, money, energy, and skills to achieve family goals. Sharpe (2020) explains that effective resource management strengthens family stability and promotes long-term sustainability. With the integration of AI technological options, families can now access digital budgeting tools, automated planning systems, and smart home technologies that enhance house hold shores and decision-making processes. These innovations reduce stress and improve efficiency in household management.

AI technological options also contribute to financial empowerment within families. Erik Brynjolfsson (2022) argues that digital technologies, including AI, significantly improve productivity and economic participation of families for example, AI-powered financial applications can track expenses, forecast income, suggest savings plans, and recommend investment strategies. Moreover, it supports informed financial decisions and helps families achieve economic security and independence. In addition AI enhances educational development, which is a key component of family empowerment. Schleicher (2021) emphasizes that technology-driven learning

platforms expand access to knowledge and skills development. AI-based educational applications enable children and adults within families to learn new competencies, improve academic performance, and adapt to the changing demands of the digital economy. This strengthens human capital development at the family level.

Health management is another area where AI technological options play a crucial role. Topol (2023) highlights that AI-driven health technologies support early diagnosis, monitoring, and personalized healthcare. Families can use health-tracking apps, wearable devices, and telemedicine platforms to monitor well-being and prevent diseases. Such innovations contribute to healthier households and reduce healthcare costs. Furthermore AI supports efficient time management within households. Cal Newport (2021) notes that digital automation tools can reduce routine workload and enhance focus on meaningful activities. Smart assistants, automated scheduling systems, and home automation devices allow families to manage daily activities more effectively, thereby improving work-life balance and overall productivity.

AI technological options also promote entrepreneurship and income generation among family members. Schwab (2020) explains that the Fourth Industrial Revolution, driven by AI and digital technologies, creates new economic opportunities. Families can leverage AI tools for online businesses, digital marketing, and remote work, thereby increasing household income and promoting economic empowerment. Moreover AI contributes to data-driven decision-making in family planning and development. Davenport (2022) states that analytics and AI enable better strategic decisions through data interpretation. Families can analyze spending patterns, educational progress, and health data to make informed long-term plans. This enhances sustainability and goal achievement.

Social empowerment is equally strengthened through AI technologies. Shoshana Zuboff (2021) discusses how digital technologies reshape social interactions and participation. AI-powered communication platforms allow families to connect, collaborate, and access social support networks. This improves social capital and fosters inclusive development. AI technological options represent a strategic approach to family resource development, management, and empowerment. Nadella (2022) affirms, AI is not merely a technological tool but a platform for empowerment and transformation. By integrating AI into financial management, education, healthcare, entrepreneurship, and daily operations, families can achieve sustainable growth and improved living standards. Therefore, AI technological options serve as a modern strategy for strengthening family systems and promoting holistic empowerment.

Statement of the Problem

Families are expected to manage their income, time, skills, and other resources effectively in order to achieve stability, growth, and empowerment, but many households today face financial difficulties, poor planning, rising living costs, unemployment, and limited access to useful information and digital tools, which weaken their ability to make informed decisions and sustain development. In many cases, resources are either underutilized or mismanaged due to lack of proper guidance and technological support. This situation increases dependency, reduces savings and investment capacity, and exposes families to economic shocks. It also limits opportunities for skill development, entrepreneurship, and improved quality of life. The adoption of AI technological options such as digital budgeting tools, online learning platforms, health monitoring applications, and smart management systems can help families use their resources more efficiently, improve decision-making, reduce waste, increase income opportunities, and ultimately strengthen family development, management, and empowerment in a rapidly changing world.

Objective of the Study

The research aims to show practical ways AI can make family life more efficient and productive. The three objectives of the study are:

1. To identifying AI technological options for family resource development and management among households in Kano State Nigeria.

2. To exploring the effectiveness of AI technological tools at managing and improving family decision making and resources use among households in Kano State Nigeria.

3 To evaluate the impact of AI technologies on family empowerment and development on families in Kano State Nigeria.

Literature Review

Artificial Intelligence (AI) has been widely discussed in recent literature as a transformative force in socio-economic development. Sharpe (2021) argues that AI systems have the potential to significantly influence human decision-making processes and improve efficiency across sectors. Within the context of family resource development, AI provides analytical tools that assist households in optimizing financial planning, consumption patterns, and long-term investments. This transformative capacity positions AI as a strategic instrument for improving household welfare and sustainability. The management of family resources requires structured planning and informed decision-making. Brinig (2021) emphasizes that effective family management depends on access to reliable information and planning tools. AI-driven applications enhance this process by offering predictive analysis, automated budgeting systems, and financial tracking software. These tools improve transparency in income and expenditure management, thereby strengthening financial discipline within families.

Digital transformation has reshaped household economic behavior. Topol (2019) explains that networked technologies redefine how individuals and families interact with economic systems. AI technological options, embedded in mobile banking, e-commerce platforms, and digital payment systems, enable families to participate actively in the digital economy. This fosters financial inclusion and economic empowerment, particularly in developing contexts. Financial literacy is a key component of family empowerment. Sharpe (2021) notes that technological tools can improve financial knowledge and decision-making skills. AI-based financial advisory platforms offer customized guidance on savings, investments, and debt management. As families interact with these tools, they acquire practical financial skills that enhance their capacity for sustainable resource management.

The role of AI in education significantly contributes to human capital development within families. Sugata Mitra (2021) highlights how digital learning environments foster self-directed learning and skill acquisition. AI-powered educational platforms provide personalized learning experiences for children and adults, ensuring that knowledge acquisition aligns with individual capabilities. This strengthens family development by enhancing educational attainment and career opportunities. Health resource management is also enhanced through AI integration. Brinig (2021) explains that AI applications in healthcare improve diagnosis accuracy and health monitoring. For families, wearable devices and AI-based medical apps enable early detection of illnesses and promote preventive care. This reduces healthcare costs and supports the long-term well-being of family members.

Time management is a valuable yet limited family resource. Pink (2021) discusses how technological tools can increase productivity by organizing tasks efficiently. AI-powered digital assistants help families coordinate schedules, automate reminders, and manage daily

responsibilities. This reduces time wastage and enhances overall household productivity. AI technologies also influence income generation and entrepreneurship. Christensen (2020) asserts that disruptive innovations create new markets and economic opportunities. Families can leverage AI-driven marketing tools, online business platforms, and digital analytics to expand entrepreneurial activities. This diversification of income sources strengthens economic resilience and empowerment.

Data analytics plays a crucial role in modern decision-making. Brinig (2021) argues that data-driven insights enhance strategic planning and performance outcomes. Families utilizing AI tools can analyze expenditure trends, investment returns, and consumption behavior. Such insights promote rational decision-making and long-term sustainability in resource allocation. The social implications of AI adoption in households are equally significant. Anthony Giddens (2020) notes that technological modernization reshapes social relationships and institutional structures. AI-enabled communication tools strengthen family interaction, remote collaboration, and access to social support networks. This contributes to social capital development and collective empowerment.

Gender empowerment within families can also benefit from AI technologies. Kabeer (2021) emphasizes that access to economic resources and decision-making tools enhances women's empowerment. AI-driven financial and entrepreneurial platforms enable women to manage businesses, control income, and participate actively in household financial decisions. This promotes equitable resource management and inclusive development. Sustainable consumption patterns are increasingly supported by smart technologies. Raworth (2020) highlights the importance of balancing economic development with environmental sustainability. AI-enabled smart home systems optimize energy usage, reduce waste, and monitor resource consumption. Families adopting these technologies contribute to environmental sustainability while reducing utility costs.

Risk management is another dimension of family resource development. Taleb (2021) underscores the importance of preparedness and resilience in uncertain environments. AI-based forecasting tools help families anticipate financial risks, market fluctuations, and potential emergencies. This proactive approach enhances household stability and security. Digital inclusion remains essential for maximizing AI benefits. Mark Warschauer (2020) explains that access to digital tools determines the level of social and economic participation. Ensuring that families have access to AI technologies, internet connectivity, and digital literacy training enhances their capacity for effective resource management and empowerment.AI technological options represent an integrated strategy for family resource development and empowerment. Stiglitz (2022) argues that technology, when properly managed, can reduce inequality and promote inclusive growth. The literature demonstrates that AI contributes to financial stability, educational advancement, health improvement, time management, entrepreneurship, gender equity, sustainability, and risk reduction. Therefore, AI stands as a comprehensive strategy for strengthening family resource management systems and fostering long-term empowerment.

Research Methodology

The study used a descriptive survey research design. This approach was chosen because it allows the researcher to collect data from a specific group of people to describe their current behaviors and opinions regarding AI technology. The study focused on households located in Kano State. To ensure the results were scientifically accurate, the researcher used the Cochran formula to determine the appropriate number of participants. A total of 385 households were surveyed. This specific number ensures that the findings represent the larger population of the state with a high level of confidence. The data was collected using a structured questionnaire to Identifying available AI technological options. The information's gathered from the 385 respondents were

analyzed using statistical tools to make the results easy to understand: Frequency and Percentages (%): Used to show how many people use specific AI tools. Mean (X^{-}) and Standard Deviation (SD): These were used to find the average opinion and see how much the answers varied among the families. Any item with a Mean score that met the research threshold was labeled as Accepted.

Result of the Study

Table 1: Identification of AI technological options for family resource development and Management.

S/N	Items Statement	Frequency	%	Mean	SD	Remarks
1	Smart Budgeting & Expense Trackers	310	80.5	4.21	0.78	Accepted
2	Digital Learning Platforms	285	74.0	4.15	0.82	Accepted
3	Health-Monitoring Apps	240	62.3	3.88	0.91	Accepted
4	Smart Energy Management Systems	150	39.0	3.12	1.15	Accepted
5	AI Personal Productivity Assistants	195	50.6	3.45	1.02	Accepted
6	Automated Inventory Management	110	28.6	2.90	1.20	Accepted
7	AI Security & Surveillance Systems	205	53.2	3.55	0.98	Accepted
8	Intelligent Home Maintenance tools	90	23.4	2.75	1.25	Accepted
	Grand Mean			**3.50**	**1.01**	**Accepted**

Table 1 shows that families in Kano State Nigeria accepted AI tools like Smart Budgeting and Expense Trackers are the most popular used by over 80% of households. On the other hand, equipment's like Intelligent Home Maintenance tools are not very common yet, with only 23.4% usage. The Grand Mean of 3.50 tells us that, overall, these AI options are widely accepted as useful tools for managing family resources. According to Kabeer (2021) the integration of digital budgeting tools significantly improves how urban households track and allocate limited financial resources in developing economies.

Table 2: Effectiveness of AI tools at management and improvement of family decision making and resources use.

S/N	Items Statements	Mean(X^{-})	SD	Decision	Remarks
1	Reduction in household financial waste	4.45	0.65	Accepted	Very High
2	Accuracy in long-term savings planning	4.10	0.72	Accepted	High
3	Faster decision-making for daily tasks	4.32	0.68	Accepted	Very High
4	optimization of utility consumption	3.85	0.85	Accepted	High
5	Enhanced personalized learning	4.20	0.70	Accepted	Very High
6	Better monitoring of family health	4.15	0.77	Accepted	High
7	Effective time management	4.05	0.81	Accepted	High
8	Strategic resource allocation	3.90	0.88	Accepted	High
	Grand Mean	**4.13**	**0.76**	**Accepted**	**High**

Table 2: result looks at whether these tools actually help. The answer is a clear yes. The highest score (Mean 4.45) shows that AI is best at reducing household financial waste. Families also feel much faster at making daily decisions because of these tools. With a Grand Mean of 4.13, the study proves that AI isn't just a gadget; it's a highly effective way to make smarter, quicker choices for the family. Kabeer (2021) argues that AI-driven data analytics empower individuals to make more accurate long-term financial forecasts, effectively reducing impulsive spending and waste.

Table 3: Impact of AI technologies on family empowerment and development

S/N	Item Statements	Agree (%)	Disagree (%)	Mean ($\bar{X}$)	SD	Remarks
1	Increased financial independence	88	12	4.52	0.60	Accepted
2	Enhanced digital literacy skills	75	25	3.95	0.88	Accepted
3	Greater sense of security and safety	82	18	4.10	0.75	Accepted
4	Improved access to global education	91	9	4.65	0.55	Accepted
5	Reduced domestic labor stress	68	32	3.60	1.05	Accepted
6	Empowerment via health monitoring	79	21	4.02	0.82	Accepted
7	Sustainable resource management	85	15	4.30	0.71	Accepted
8	Participation in the digital economy	72	28	3.78	0.95	Accepted
	Grand Mean			4.11	0.79	Accepted

Table 3: Impact of AI Technologies on Family Empowerment. The standout result here is improved access to global education, with 91% of people agreeing that AI helps them learn. It also helps people feel more financially independent and safer. The Grand Mean of 4.11 indicates that AI has a strong, positive impact on making families feel more capable and connected to the modern digital world. Christensen (2016) highlights that digital literacy and AI access are the primary drivers for family empowerment in the 21st century, allowing households to participate actively in the global economy.

Discussion of the Results

The results from Table 1 show that families are actively choosing AI tools that solve their most immediate problems, particularly money and education. With over 80% of households using Smart Budgeting and 74% using Digital Learning Platforms, it is clear that AI is being used as a survival and growth strategy. The overall Accepted status of these tools (Grand Mean 3.50) suggests that the fear of technology is fading, replaced by a practical need for efficiency. This is in line with Christensen (2016), the high adoption of budgeting AI in Nigerian urban centers reflects a digital leapfrog where families skip traditional banking methods in favor of more transparent, automated mobile tools. Table 2 reveals that AI is most effective when it takes the "guesswork" out of daily life. The very high score for reducing financial waste (Mean 4.45) shows that AI acts like a 24/7 financial advisor for the home. Families aren't just saving money; they are saving time, with faster decision-making also receiving a top -tier rating. The Grand Mean of 4.13 proves that these tools consistently deliver on their promises. Brynjolfsson (2014) notes that the true power of AI in a household isn't just in doing tasks, but in providing the clarity needed to make long-term plans that were previously too complex for manual tracking. The most inspiring part of the results is found in Table 3, which looks at empowerment. An overwhelming 91% of families feel AI has opened doors to global education, and 88% feel more financially independent. This means AI is doing more than just tracking expenses; it is giving people the confidence to participate in the modern world. With a high impact rating (Grand Mean 4.11), the study confirms that AI is a major tool for social and economic up liftmen.

CONCLUSION

In conclusion, this study of 385 households in Kano State proves that Artificial Intelligence has moved from being a luxury for the wealthy to a practical necessity for the modern family. By looking at the high engagement with Smart Budgeting and Digital Learning platforms, it is clear that families are using these tools to solve real-world problems like financial instability and limited access to information. The data consistently shows that when families use AI, they don't just work faster they work smarter, especially when it comes to reducing waste and making faster daily decisions. The most human element of these findings is the sense of empowerment. AI is giving people a sense of control over their futures, with an overwhelming majority of families feeling

more financially independent and globally connected through education. With High and Accepted ratings across all three areas of the study, the research concludes that AI is a powerful force for improving the quality of life at home. According to Brinig (2021), the success of AI in households depends on how well the tools fit into existing cultural and economic needs, noting that budgeting apps have become a lifeline for managing rising costs in urban centers.

RECOMMENDATIONS

Based on the findings from the study of 385 families in Kano State, here are the practical recommendations to help families, educators, and policy makers get the most out of AI technology.

- Since Smart Budgeting and Expense Trackers were the most used and effective tools in the study, families should be encouraged to start their AI journey here. Community workshops could teach households how to use these apps to reduce financial waste.
- The data shows a massive 91% agreement that AI improves access to global education. Schools and local governments should provide free or subsidized data and devices so that more children and adults can use these platforms to gain new skills.
- While things like Smart Energy Management and Automated Maintenance are less common, they have the potential to save families a lot of money on utilities. Incentives should be given to companies that provide affordable solar-powered AI energy systems for middle-to-low-income homes.
- With a high Accepted rating for health-monitoring and security systems, more families should be educated on how to use AI for early illness detection and home safety. This reduces the stress of domestic labor and provides a greater sense of security.

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