

EMPLOYEE UNDERSTANDING OF ARTIFICIAL INTELLIGENCE: A PRELIMINARY STUDY IN INDONESIA FINANCIAL SECTOR INDUSTRY

Hayu Prabowo

Indonesia Banking School, Indonesia
hayu.prabowo@ibs.ac.id

Nuri Wulandari

Indonesia Banking School, Indonesia
nuri.w.h@ibs.ac.id

Siska Wulandari

Indonesia Banking School, Indonesia
siska@ibs.ac.id

Abstract

The emergence of artificial intelligence (AI) in the financial services industry is driven by increased demand for financial regulation, the need for profitability, and competition between companies. Despite the heightened importance of this new technology, there has been a gap in knowledge regarding the use of AI in financial services. This study aims to provide preliminary research to explore the level of understanding of middle level managers in the context of artificial intelligence usage in marketing activities. The sample is 11 managers from banking, fintech and other financial sectors. The findings provide guidance for organizations in terms of usage and knowledge of AI in the sector.

Keywords

artificial intelligence; marketing; knowledge management; financial industry; banking; fintech

JEL Classification

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Introduction

For thousands of years, we have tried to understand how we think and act. We are curious how our brain, made up of just a few materials, can perceive, understand, predict, and manipulate a far larger and more complex world. Over time this curiosity and the advancement of technology has enabled a flourishing study subject of Artificial Intelligence. Artificial intelligence (AI) is the use of digital technology to carry out operations that previously required human intelligence (Zhu et al., 2021). The field of artificial intelligence, or AI, is not only related to conceptual understanding, but also on building intelligent entities or agents or machines that can compute how to act effectively and safely in various situations (Russell and Norvig, 2021).

Nowadays almost all sectors employ AI to aid decision making and create solutions. In healthcare industry, AI is now increasingly important (Dicuonzo, et al, 2023). AI is used to reduce costs, improve clinical risk and help in administrative tasks. Other studies also find a huge potential of AI to be implemented in agricultural sector (Javaid et al, 2023). The emergence of artificial intelligence (AI) in the financial services industry is due to increased demand for financial regulation, the need for profitability, and competition among companies (Akyüz and Mavnacioğlu, 2021). Technology is advancing exponentially every second and without us realizing it, everything about us

can be found on the internet like friends, food preferences, to personal information, including our weaknesses and ways to exploit them, either individually or targeted groups of society (Wylie, 2018). To manage this information, an AI system is required that involves manipulating data on a large scale with many variations through machine learning to analyze, validate, and even facilitate our daily tasks. The role of artificial intelligence technology during the Covid-19 pandemic has sharpened due to the shift of some social and economic activities including education and religion into the virtual world. Data has become a new gold mine for those who can take advantage of this AI technology (Dahlan, 2018).

AI has been widely used, often invisibly, as it is embedded in our everyday equipment and as part of complex technological systems (Boddington, 2017). Given the exponential growth in computer power, the availability of big data from social media and the widespread use of billions of smart phones, and fast cellular networks, AI through machine learning has made significant analytical advances. This allows algorithms to take over many of our activities, including planning, speech, face recognition, and decision-making. AI has applications in many domains, including transportation, marketing, healthcare, finance and insurance, security and military, science, education, office work and personal assistance (e.g. Google Duplex), entertainment, arts (e.g. music search and composition), agriculture, and of course manufacturing.

AI technology not only impacts the lives of individuals, but also is about transformation in society and the economy (Coeckelbergh, 2020). The implementation of AI in industry has triggered acceleration in the fourth industrial revolution and fifth society, where the integration of physical, digital, and biological worlds occurs, especially in robotics development. AI affects how we interact with others; how we as individuals think, remember, reason and act. AI has implications for the distribution of income, wealth, and power; and the survival and development of many species, including our own. Therefore, AI has implications for business, the labor market; and who has access to technology.

Especially in a working environment, the arrival of AI can elicit rational and emotional attitudes from the employee (Zhu et al, 2021). It is crucial that AI can be accepted in a business's environment as the new standard, thus the understanding of this new technology will be instrumental for employees. Like previous implementations of enterprise systems, AI will inevitably face employee resistance, so getting them "on board" will be crucial (Zhu et al., 2021). From a handful of past literatures, one of the studies that try to understand the level of understanding of managers on AI concept was a study by Mogaji and Nguyen (2021). The reserach was to better understand bank managers' understanding of AI and the difficulties they face with using related technology. The data was collected through interviews with managers from developed and developing countries like the UK, Canada, Nigeria, and Vietnam. The results showed that the managers know about the benefits of AI and are trying to use it in their business, but they face some challenges. The research also includes a concept about how AI affects marketing for financial services, which includes how customers, banks, other relevant parties, and regulators are all connected. The article also suggested a conceptual framework for AI employment in financial services. The diagram as follows:

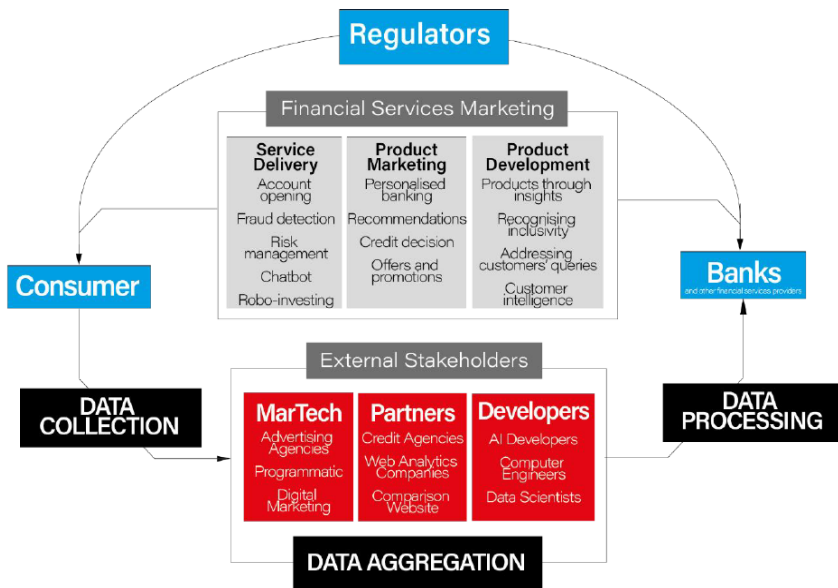


Figure 1. Conceptual framework of the use of AI in financial services marketing
Source: Mogaji and Nguyen (2021)

Despite the heightened importance of this new technology, there has been a gap in knowledge regarding the understanding of AI among employees (Malik et al, 2021). As many of the companies are still in early adoption phase of this technology, the understanding of response of employee towards this new development is still lacking (Zhu et al, 2021). It is also agreed that the arrival of AI can create stress for the employees (Malik et al, 2021; Zhu et al, 2021)

The current study aims to replicate the previous study in financial industry context and explore the understanding of AI, especially among the middle level management in financial service sector in Indonesia. The research questions are as follows:

- How can managers understand AI related to financial services in order to compete with their customers' needs?
- What is the adoption and experience of managers and consumers in using AI systems?

Therefore, the objectives of this study in general is to present the possible knowledge gap through the collection and analysis of semi-structured interviews and open ended questions from managers working in various financial services institutions. The study will serve only as preliminary study to confirm the questions for a larger study in the future. The scope of the study will be limited to knowledge on implementation of AI in marketing efforts of the company.

Methodology

The study in nature was exploratory study thus employed a qualitative study with semi-structured interviews and open-ended questions forms. This study is a replication study of Mogaji et al (2022) and only serves as a pilot study. The questions for the interviews were derived from previous literature. The analysis will use content analysis and a simple descriptive statistical analysis.

The study sampling method is nonprobability convenience sampling with unit analysis individuals in the financial sector. The criteria for respondents are the first one's that

hold managerial positions within the financial services sector. It is also preferred, although not a mandatory criterion, to have respondents that oversee finding, creating, executing, and integrating AI into their marketing and digital transformation strategies. Specifically, the target participants are middle managers, since the middle manager is the one that handles operational and convince top management level of the use of AI. The participants in this study consisted of managers from not just banks, but also individuals who work for Fintech and payment service companies.

The targeted numbers of participants start from 6-10 participants and will follow the rules to saturation point which refers to the point at which additional data collected from interviews or other sources are no longer yielding new or meaningful information. It is ideal if the sample is evaluated before any AI knowledge is acquired and after acquired some knowledge for comparison purposes nevertheless it is not the objective of the study.

Result and Discussion

The findings will be explained in three parts. First to understand the set of samples, the author will describe respondents' demographic profile. In addition, the question will also ask about their role position in the company and experience. Second is the question about understanding Artificial Intelligence in a work environment. The last part is a question on the effort on employing AI in their everyday work and the challenges that might occur.

Demographic Profile

The questions identify respondents' demographic profile with three questions about age, gender, and industry of occupation. In addition, it also asked about job's position and years of experience.

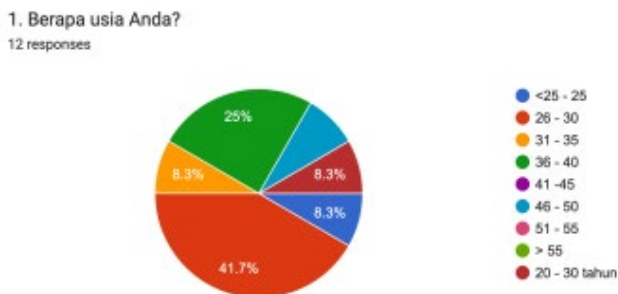


Diagram 1 Age of respondents (n=12)

Source: processed by Authors

Diagram 1 shows that of the total 12 respondents, majority were young adults between 26-30 years old (41.7%) followed by 36-40 years old (25%). All respondents were in productive working age. Gender wise, 66.7% of respondents were male (Diagram 2).

2. Jenis kelamin?
12 responses

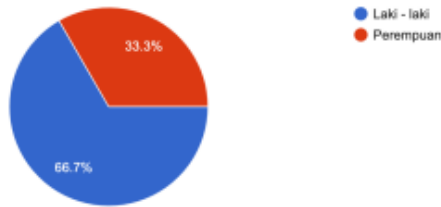


Diagram 2 Gender of respondents

Source: processed by Authors

All respondents working in the Financial Sector in various subsectors (Diagram 3). Half of the respondents are working in the banking sector (50%). The rest of respondents mentioned multifinance and others as their industry.

3. Jenis Industri Jasa Keuangan tempat Anda bekerja.
12 responses

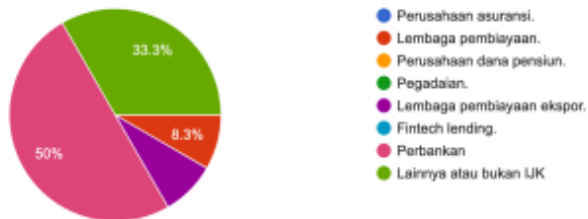


Diagram 3. Type of companies respondents work for

Source: processed by Authors

In terms of years of work experience, 50% of respondents answered 4-6 years, followed by 1-3 years (33.3%) and more than 10 years (16.7%). While the job position ranging from Vice President Level to staff level.

4. Berapa lama Anda bekerja di Perusahaan tersebut?
12 responses

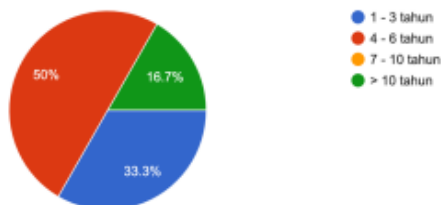


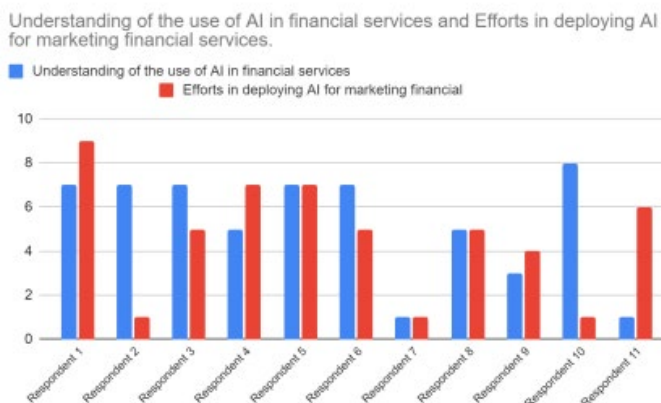
Diagram 4. Work experience of respondents

Source: processed by Authors

Understanding of Artificial Intelligence

The understanding of the use of Artificial Intelligence in the workplace was measured by a self-assessment question using a scale of 1 to 10. For this study, 1-3 scale translate to “very limited knowledge”, 4-6 implies “limited knowledge”, 7-8 for “good knowledge, and 9-10 “advanced knowledge”. The sample result an mean average of 5.27 out of 10 scale, indicating that the understanding of the use of AI in financial service is still “limited knowledge”. The score ranged from 1 to 7, implying that the understanding was highly varied between respondents/employees.

The second question was asking about the effort in which their company deployed AI for marketing in financial services. Again, the scale use is 1 to 10 (1-3 “beginner”, 4-6 for “intermediate” and 7-10 “advanced”). The result on the mean average is 4.64 implying that respondents’ company in the “intermediate” effort. This level implies a company that already aware of the use of AI but still in the beginning of using the technology. However, this also varies greatly within the sample set. The highest score was 9 for advanced level usage of AI in the company, but the lowest was 1 for beginner level.



Source: processed by Authors

Efforts of Deploying Artificial Intelligence

Specifically for the efforts of companies in deploying AI, the respondents were asked to elaborate on the answers. The researchers then categorized the answers toward three levels of deployment maturity, that is Beginner (level1), Intermediate (Level 2) or Advance (Level 3). Of all 11 respondents, 7 or 63.3% of the respondents’ company were in Beginner stage. While 3 companies were in the Intermediate stage. Only one company identified as Advanced stage.

Table 1 Efforts of AI Deployment

Theme/Factor	Efforts of AI Deployment	
	No of mention by respondents	Selected Quotes
Beginner (Level 1)	7	R2: " Just starting to discuss AI deployment for

Intermediate (Level 2)	3	R7: "Introduce AI to employees via socialization" R9: "Exploring to the consumer's needs " R4: "Using chatbot for customer service"
Advanced (Level 3)	1	R1: " Have a technology division in the company that facilitates various AI project in all unit"

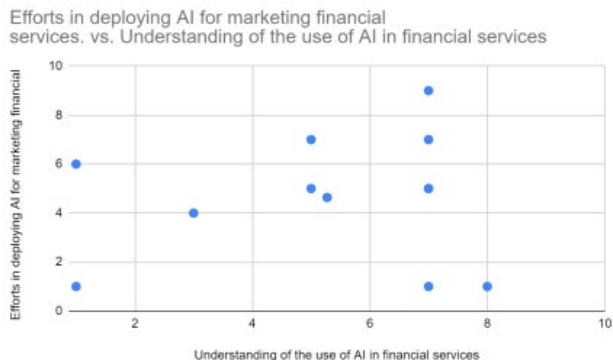
Challenges of Deploying Artificial Intelligence

The findings have confirmed at least four themes that emerge among discussions on the challenges of AI deployment. First is Mindset or Knowledge, it refers to lack of knowledge and data-based decision-making mindset in the companies. Second is supporting facilities and staff. This is aligned with previous findings that the ability to implement AI successfully depends on the availability of skilled personnel (Zhu et al., 2021). Third is the AI weaknesses itself, e.g lack of intuition for business decisions. Lastly the high investment cost is related to the implementation of the system.

Challenges of AI deployment		
Theme/Factor	No of mention	by respondents Selected Quotes
Mindset / Knowledge	5	R2: " The mindset (of deploying AI in work) has not formed yet (in the company). AI is considered just one of the tools for working not to assist in making decision. R3: " The level of understanding is still not distributed evenly towards digitalization"
Facility	2	R4: " (lack of) Supporting Facilities and Human Resource competency in implementing new technology"
AI weakness	2	R10: " (AI has) No intuition in judging the value of a business"
Cost	1	R1 : " High investment cost "

Job insecurity (12%), which refers to a situation where employees feel helpless and are constantly concerned about losing their jobs to those who are more amenable to technological interventions, was another important theme (Malik et al., 2021).

The study tries to map up different axes that might give an indication of the relationship between the efforts in deploying AI and the understanding of employee of the use of AI. The scatter diagram result is still indicating a positive relationship, suggesting if the understanding of employee is high, the efforts in deploying will also be high. However, due to the small numbers of respondents this only serves as inconclusive finding. The indication needs to be carefully examined with other statistical tools and a larger sample.



Conclusions

This study has contributed to the literature study in exploring the understanding of employees in Artificial Intelligence. Previous literature also has done this in the middle manager position (Mongaji and Nguyen, 2021), therefore this research gave a different context.

There are at least two important implications emerge from the study. First is to give increased knowledge on the use of AI to employees. Not only definition wise but also mindset of using data for decision making. Second, to give basic skills of analytics to the employees in order to help with the latter. To ensure the successful implementation of enterprise AI, managers must be able to discern their employees' attitudes toward AI, comprehend how those attitudes are likely to influence behaviors, and then put in place the necessary measures to retain and motivate employees (Zhu et al., 2021).

The limitation of this research is the number of samples and type of respondents is not as expected. The authors aimed for middle managers, however later the study decided to accommodate various levels of respondents' job positions. This variety of positions might provide different perspectives therefore the result should be interpreted with caution. Future research is suggested to give a clear distinction between levels of job position as it might affect the interaction with AI as well in work-related environments. Most importantly, as this is only a preliminary study, the next step needs to expand the study to provide validation of the findings. A model can be developed, and quantitative study can be conducted in a larger sample to provide confirmation of the findings.

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