

## A Conceptual Model to Study Consumers' Perception towards Intention to Adopt Artificial Intelligence in the Banking Sector

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### ABSTRACT

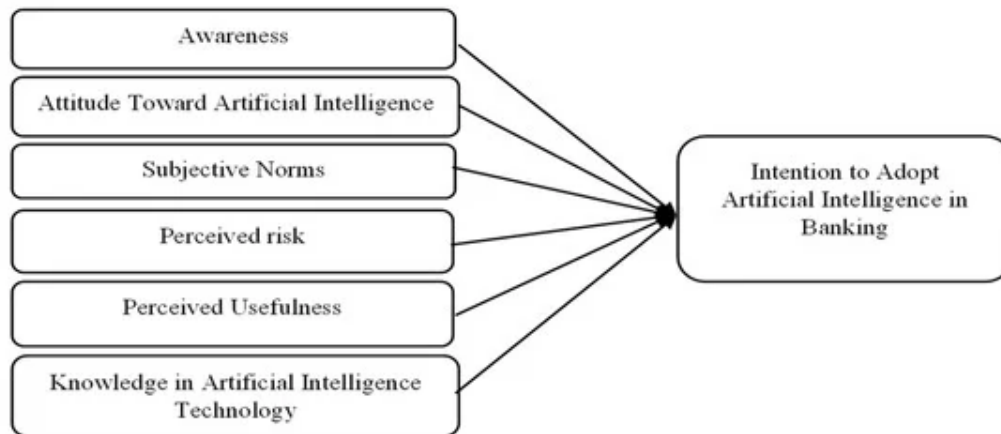
*This research paper examines the factors influencing consumers' intentions to adopt Artificial Intelligence (AI) within the banking sector. It investigates these intentions by applying the Theory of Planned Behavior (TPB) to assess how specific customer perspectives drive the adoption of AI-powered services. Adopting a positivist philosophy and a deductive, quantitative approach, the research utilizes a conceptual model to evaluate six independent variables: awareness, attitude, subjective norms, perceived risk, perceived usefulness, and knowledge. Data collection is conducted via a structured multi-item online survey administered to a random sample of banking customers. The methodology employs SPSS for descriptive and inferential analysis, specifically utilizing multiple regression to examine the impact of these variables on adoption intent and one-way ANOVA to identify potential differences across cultural backgrounds. Throughout the study, strict ethical standards are maintained, ensuring participant anonymity, informed consent, and voluntary participation. The findings aim to provide empirical evidence on the relationship between consumer perceptions and the digital transformation of banking services.*

**Keywords:** Artificial Intelligence (AI), Banking Sector, Theory of Planned Behavior (TPB), Consumer Perception, Adoption Intention.

### Introduction

Existing literature shows that scholars have used several theories and models such as the Technology Acceptance Model (TAM), diffusion of innovation theories, stimulus-organism-response (SOR) model, and the theory of planned behavior (TPB) model to evaluate consumers acceptance and adoption of various technologies (Belanche et al., 2019; Noreen et al., 2023). Based on the dynamic nature of the banking industry, the adoption of new technologies is largely focused on consumer preferences. Accordingly, a research study on AI in the banking sector may adopt the theory of planned behavior to assess the effect of customers' perspectives on the adoption of AI-powered banking services.

Conceptualized in the 80s, the theory of planned behavior was intended to explain and predict individuals' intention to engage in specific behaviors at a given time and place. Notably, the TPB is grounded on individuals' behavioral intent that is influenced by the attitude that the likelihood of a specific behavior will have the expected outcome and subjective evaluation of its risks and benefits (LaMorte, 2022). Specifically, the theory posits that customers' perceptions and behavioral tendencies towards the adoption of technology powered banking services is based on six main factors: awareness, attitude, subjective norms, perceived risk, perceived usefulness, and knowledge (Noreen et al., 2023). Based on the following theoretical foundation, a research study on AI in the banking sector may propose the conceptual model, including six independent variables and one dependent variable, as depicted in Figure below



**Figure: Conceptual Model**

### Research Philosophy

In any study, researchers rely on various philosophical views that guide their beliefs and philosophical standing in various ideas and truths. In this light, a research philosophy is grounded on an individual's position on specific theories and the explanations sourced from the theories. Kankam (2019) suggests that researchers must select the most suitable philosophical paradigm that supports their research questions and ensure their studies can be explored with trust and credibility. As each research is conducted based on specific and different assumptions, selecting an appropriate research paradigm is critical in ensuring research validity. While several philosophical paradigms exist, researchers may also consider the epistemology philosophy. Epistemology is considered the second branch of philosophy and can be described as the 'study of knowledge'. From a social science perspective, epistemology deals with various aspects of the validity, scope, and methods utilized to acquire knowledge (Moon & Blackman, 2017). Consequently, studies under the epistemology paradigm thus examine the grounds of specific knowledge claims, how knowledge can be acquired, and how the transferability of knowledge can be assessed.

As a philosophical approach, positivism is based on the view that factual knowledge can be acquired through observation. As such, studies grounded in positivism focus on the objective collection and interpretation of data (Dudovskiy, 2022). As such researchers adopting the positivist approach must act as objective analysts and distance themselves from applying any personal values in conducting their research. The positivism approach depends heavily on quantifiable observations that inspire hypothesis testing and statistical analysis (Dudovskiy, 2022). In this light, positivist studies adopt a deductive approach as the researchers' findings need to be based solely on facts. A research study on AI in the banking sector may mainly focus on examining the relationship between customers' perceptions of AI technologies and their intention to adopt AI-powered banking services, the positivist approach was the most suitable philosophical paradigm to explore the topic as it enables the formulation of knowledge based on empirical evidence gained from large data sets.

### Research Approach

In scientific and social science studies, researchers rely on two main approaches: deductive and inductive to examine various phenomena or issues. Inductive research is described as a research approach in which researchers gather and analyze data to formulate theories, concepts, or hypotheses based on specific trends or patterns observable in the data. Accordingly, inductive studies apply the bottom-up approach, where researchers start by identifying specific observations and then proceed to more general theories. In this light, the inductive approach is mostly used in exploratory research and on new topics yet to be examined. Contrastingly, the deductive research approach adopts a top-down approach, where researchers start by examining theories, developing hypotheses and generalizations, and finally testing the hypotheses through observations or data collection. Deductive studies focus on confirming a specific theory or testing a well-known hypotheses (Dudovskiy, 2022). A deductive approach selected for a study may be in line with the positivist research philosophy identified in the section above. Furthermore, the deductive approach would allow a researcher to test and confirm the well-known hypotheses developed from the literature and based on statistically analyzed data.

### **Research Strategy**

A research strategy is considered a ladder that assists researchers in carrying out their studies. By definition, a research strategy refers to how researchers propose to answer their research questions and the process of implementing their methodologies. Furthermore, the research strategy can be described as the plan used by researchers to search for and assess information (Dudovskiy, 2022). Accordingly, a research strategy typically involves multiple steps including the analysis of the primary concepts of a topic, definition of key words, search for appropriate information, and data collection and interpretation. Typically, researchers identify four main research strategies: quantitative, qualitative, case study, and action research, that can be applied in various studies depending on their objectives. Having selected a positivism philosophical paradigm and a deductive approach, a quantitative research strategy may be selected as it may be suitable for knowledge formulation from data collection and statistical analysis. Furthermore, a quantitative strategy would allow a study to empirically explore the relationship between customers' preferences and their intention to adopt AI-powered banking services.

The quantitative research strategy involves quantitative methods of data collection and data analysis. Concerning data collection, the quantitative strategy involves the utilization of quantitative surveys to gather information from specific samples in the general population. With increased digitalization and the emergence of a variety of digital platforms and SNSs, distributing surveys for data collection has become easier, faster, and cheaper, as they can be administered online. As described by various scholars, the quantitative research strategy provides researchers with a controlled way to test and examine hypotheses credibly and to verify their findings based on their philosophical standing (Dudovskiy, 2022). For example, a study aiming to understand the causes and impact of social phenomenon, the quantitative research strategy may be suitable as it would allow for the collection of reliable data and the use of statistical analysis to identify relevant outcomes.

### **Data Collection and Measurement of Variables**

Having selected a quantitative research strategy, data collection may be based on a quantitative survey design. Specifically, a structured questionnaire survey may be created using Google Forms and may be used to gather data on the impact of customers' perception on their intention to adopt AI-powered banking services. The survey may adopt a multi-item approach in which multiple items may be used to measure each construct to ensure the validity and reliability of the study. Given the differing nature of questions, there could be different types of survey questions, including dichotomous questions, questions based on the levels of measurement and contingency questions. A combination of dichotomous questions and questions based on the levels of measurement (nominal, ratio, and ordinal) may be used in different sections of the survey.

Demographic information such as age, gender, education, and cultural background may be collected in the first part of the survey. The collection of such demographic information allows researchers to conduct descriptive analysis to fully gain an understanding of any relevant trends or patterns within the dataset. The second section of the survey may focus on the measurement of consumer perspectives. The section measured five main dimensions of consumer perspectives, including perceived risk, perceived usefulness, knowledge, subjective norms, and attitude. The following constructs may be included in the survey based on past research from Noreen et al. (2023) and relevant items selected and adapted to fit the context of the research topic. Specifically, perceived risk of AI-powered banking services may be measured using 7-items such as "utilizing AI-powered banking services would be risky and add great uncertainty to my banking operations" and "signing up for AI-powered banking services will lead to social loss by negatively affecting how others think of me" among others. The items adapted to measure perceived risk were inspired by past research from Featherman and Pavlou (2003), Safari et al. (2020) and Noreen et al. (2023) and may adapted to fit the needs of the study.

To measure the second dimension of customer preferences (perceived usefulness), a total of four items based on the study by Safari et al. (2020) and Noreen et al. (2023) may be selected and adapted to fit the context of the study. Similarly, the dimensions of attitude, knowledge and awareness may each be measured using 4 items inspired by Safari et al. (2020) and Noreen et al. (2023). Finally, the dimension of subjective norms may be measured using 6 items inspired by Noreen et al (2023). Each of the items used to measure the different dimensions of customer preferences may be based on a 5-point Likert scale ranging from 1-strongly agree to 5-strongly disagree. The final section of the survey may measure the consumers' intention to adopt AI-powered banking services, which may

constitute as a dependent variable. Specifically, items selected from Noreen et al (2023) and Safari et al. (2020) may be adapted and used to measure the intention to adopt AI-powered banking services. To ensure consistency in the measurement of the study's variables, a 5-point Likert scale may be applied in this section as well.

### **Sampling**

Owing to the nature of studies examining entire populations that necessitate significant time, access, and financial capability, researchers rely on specific samples to efficiently conduct their research. A research sample is described as a smaller set of data selected from a larger population using a pre-defined selection method. Based on the main objectives of the study, a sample under investigation may include banking customers in accordance with the geographic scope of the study. To identify the right respondents for the study, a random sampling technique may be used as it can increase the probability of data being representative of the general population. Furthermore, random sampling is suitable for studies adopting the positivism paradigm and deductive approach.

### **Data Analysis**

In quantitative research, data analysis is critical as it aids gain insight into the trends and patterns within the sample and in making inferences that can be used to answer the research questions. Typically, data analysis is categorized into descriptive and inferential analysis. Following the collection of data, the researcher may conduct descriptive and inferential analysis using SPSS or any other suitable software. Specifically, descriptive analysis may be conducted both numerically and graphically by calculating the measures of central tendencies and generating suitable bar charts. In respect to inferential analysis, a multiple regression analysis and one-way ANOVA analysis may be conducted using SPSS. The multiple regression analysis may allow a researcher to examine the impact of customer perceptions on their intention to adopt AI-powered banking services. In this line, the study may adopt six independent variables (perceived risk, perceived usefulness, knowledge, awareness, attitude and sub-objective norms) and one dependent variable (intention to adopt AI-powered banking services). Furthermore, factor analysis may be conducted to combine the six independent variables into 1 variable measuring the overall customer perception. A second single regression analysis may then be conducted to examine the direct impact customers' overall perceptions on their intention to adopt AI-powered banking services. In similar fashion, a one-way Anova may be conducted in SPSS to understand if there is any significant differences in customers' intention to adopt AI-powered banking services between individuals from Western and Eastern cultures or across different cultures.

### **Ethical Considerations**

In scientific research, ethical considerations revolve around the concern of a researcher's honesty, accuracy, and competency during the research process. In quantitative research, scholars have identified five main ethical standards: beneficence, do no harm, integrity, consent, anonymity and confidentiality, and justice that should guide researchers and ensure all ethical norms are met during a study (Saunders et a., 2016). Furthermore, the voluntary participation of study participants has been established as an ethical practice in scientific research. In this line, researchers must ensure to provide respondents with the option to withdraw from their studies at any moment without any negative consequences.

A research study may consider various ethical considerations such as confidentiality, privacy, consent and self-determination. First to ensure anonymity and confidentiality, the online survey administered to participants need not collect any personal information such as email addresses or IPs that could be used to identify any of the respondents. By not collecting the participants' personal information, confidentiality and anonymity may be maintained as none of the responses could be traced or matched to any single respondent. Further, the study may ensure that each research participant provided consent to participate in the study by informing each respondent that by agreeing to complete the survey they would be automatically providing consent to the researcher. This process allowed participants to self-determine if they would like to participate in the study or not. Apart from the ethical considerations linked to data collection and storage, researchers must also consider the ethical considerations in reporting and analyzing. Consequently, the data collected for the current study may be analyzed in accordance with the accuracy. Furthermore, the research studies may adhered to the standards of transparency, accuracy, precision, and comprehensiveness in the reporting of the research findings.

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