

Impact of Generative AI on Consumer Trust and Purchase Intention in E-Commerce: Evidence from Coimbatore District.

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Abstract

Generative Artificial Intelligence (Gen AI) has been advancing quickly and seeing broad uptake, and this has reshaped online retail by making tailored item suggestions possible, supporting AI-driven chat helpers, streamlining service responses, and producing smartly generated content. Together, these developments have improved digital purchasing by strengthening shopper interaction, boosting how smoothly operations run, and elevating the standard of customized offerings. Yet alongside these gains, the extensive deployment of Gen AI has prompted worries about openness, protection of personal data, correctness of details, dependability, and responsible application. These issues can shape how much buyers rely on AI-supported online stores and, as a result, sway what they plan to purchase. For this reason, clarifying how Generative AI affects consumer confidence and buying intent is now a growing priority for e-commerce firms that aim to build trust and maintain enduring expansion.

Even though e-commerce platforms are increasingly incorporating Generative Artificial Intelligence, little is known about how different AI features impact customer trust and purchase propensity. While previous studies have examined how AI can improve customer experiences and streamline operations, there hasn't been much thorough examination of how elements unique to generative AI—such as personalization, transparency, accuracy, dependability, and



data privacy—combine to influence consumer trust. By examining how these fundamental characteristics of generative AI impact trust, which in turn influences consumers' purchase decisions, this study seeks to close that gap. The findings are expected to provide significant direction for online retailers, policy regulators, and AI developers in developing moral, reliable, and user-focused AI solutions that promote long-term consumer engagement and sustainable commercial success.

Research Gap

Most previous studies have focused on conventional Artificial Intelligence (AI) applications in e-commerce, such as recommendation systems, chatbots, and automated customer support, with limited attention to the impact of Generative Artificial Intelligence (Gen AI) on consumer behaviour. In particular, there is insufficient research on how Gen AI influences consumer trust and purchase intention. Moreover, few empirical studies have employed Structural Equation Modeling (SEM) to examine the mediating role of consumer trust. This research gap is especially evident in India, particularly in Coimbatore District, where evidence remains limited despite the increasing adoption of Gen AI in e-commerce. Addressing this gap will enhance understanding of consumer behaviour and support informed business and policy decisions.

Objective

This research seeks to assess how Generative AI shapes shopper confidence and willingness to buy in online retail. It focuses on the ways tailoring by AI, openness, correctness, and viewed utility affect user trust, and on how that trust then influences intent to purchase. It further examines whether consumer trust serves as an intermediary within these connections.

Methodology

A quantitative approach is used in this research, relying on a cross-sectional survey targeting online shoppers who have previously used e-commerce sites enhanced by AI. Information will be gathered via a structured questionnaire that applies a five-point Likert response format. SEM will be conducted with SmartPLS or AMOS to validate the measurement model, examine the proposed links, and determine whether consumer trust serves as a mediator.

Key Findings (Expected)

The research is projected to demonstrate that tailored AI, openness, precision, and the sense that it is beneficial each raise shoppers' confidence in online retail sites. It is further expected that this confidence will notably boost willingness to buy and will serve as the connecting link between generative AI attributes and buying choices. The results are also predicted to single out openness and customization as the most powerful forces shaping shopper trust.

Practical Implications

Results from this research will assist online retail firms, online marketing professionals, and AI builders in grasping what shapes shopper trust and buying intent. These takeaways may guide the creation of clear, dependable, and tailored AI tools, allowing companies to boost customer satisfaction, reinforce buyer confidence, and secure lasting progress within the online market.

Original Contribution

This research strengthens prior scholarship by proposing a conceptual model that connects essential Generative AI attributes to shopper trust and buying intent within online retail. It extends the use of the Technology Acceptance Model and Trust Theory by examining how customer trust operates as a mediator, using Structural Equation Modeling to test the relationships. In addition, it offers data-backed findings from a developing-market setting, adding meaningful theoretical and managerial understanding of consumer behaviour in AI-supported digital commerce.

1. Introduction

Background

Generative Artificial Intelligence (Gen AI) has progressed at an extraordinary pace, reshaping e-commerce by enabling companies to provide shopping experiences that are more customized, quicker, and more engaging. Unlike traditional AI, which mostly interprets and assesses existing data, Gen AI can generate natural-sounding language, images, product descriptions, personalized recommendations, and conversational responses. This leads to greater customer

engagement, smoother operations, and more confident decision-making. As its use keeps growing across online retail, merchants can automate service interactions, create audience-specific promotional material, make it easier to find items, and provide immediate help, which strengthens the complete digital shopping experience.

One of the most important applications of Generative Artificial Intelligence (Gen AI) in the e-commerce world is AI-based chatbots and virtual shopping assistants. With advanced conversational AI, consumers can ask product questions, get product information, get tailored recommendations, explore other alternatives and get speedy customer service. By this method, these intelligent platforms facilitate the purchase process, enhance customer satisfaction and help businesses reduce operational costs. Furthermore, Generative AI provides the ability to generate product descriptions, marketing copy, customized promotional messages and ads designed for specific audiences, giving companies the tools to improve their online marketing efforts and drive engagement and sales results.

Another significant applications of Generative Artificial Intelligence (Gen AI) in e-commerce is the creation of personalized recommendation systems. To generate personalized product recommendations, these tools analyze consumers' browsing behavior, their past purchases, their stated preferences, and their demographic data. Generative AI can enhance consumer engagement, increase perceived value and simplify the buying experience when appropriate recommendations are made. Such tailored interactions improve customer satisfaction, drive repeat purchases and boost brand loyalty. Therefore, Generative AI has become a vital strategic resource for e-commerce companies to improve customer satisfaction and retain a competitive advantage.

Online retail's fast rise has sped up the spread of Generative Artificial Intelligence (Gen AI) throughout the e-commerce sector. Broader internet reach, more frequent smartphone use, trustworthy online payment options, and streamlined delivery systems have fueled the growth of web-based retailing. With shoppers showing a stronger preference for buying through digital channels, companies are putting money into AI-driven tools to improve the customer journey, boost day-to-day performance, and provide tailored offerings. According to industry analyses, worldwide e-commerce keeps growing at a steady pace, and sizable increases are anticipated in spending tied to AI solutions, underscoring their growing role in shaping the next phase of digital trade.

As Generative Artificial Intelligence (Gen AI) becomes more widely used in online retail, it is increasingly vital to grasp how it affects shoppers' trust and their intent to buy. By exploring these links, companies can design AI tools that are clear, dependable, and centered on customers, strengthening user assurance and improving shopping experiences. This research examines how Generative AI shapes consumer trust and purchase intention, applying Structural Equation Modeling (SEM) to evaluate connections among core AI features, consumer trust, and shoppers' online buying behavior.

2. Problem Statement

By introducing Generative Artificial Intelligence (Gen AI), online retail has been reshaped through tailored buying journeys, smart product suggestions, streamlined customer assistance, and machine-created material. Even with these improvements, issues around openness, data protection, dependability, and the trustworthiness of AI-produced details still affect how shoppers view it. When these worries arise, they can weaken shopper confidence, and that confidence is crucial in guiding intention to buy online. While more firms are turning to AI tools to improve the customer experience, solid real-world findings about how well they strengthen consumer trust and stimulate purchase intention are still scarce. For that reason, clarifying the ways Generative AI affects consumer behaviour matters for scholarship and for business use.

3. Research Gap

Earlier work has largely emphasized conventional AI uses in online retail, yet how Generative AI shapes customer trust and buying intent is still not well examined. Prior literature likewise offers sparse support for consumer trust acting as a mediator and does not include broad investigations within emerging markets like India.

The major research gaps identified are:

- Research on how Generative AI affects e-commerce remains scarce.
- Only a small number of studies consider consumer trust as a mediating factor.
- AI-driven personalization, openness, correctness, and perceived value are seldom

combined in a single framework.

- Empirical findings from India are lacking, with Coimbatore District especially underrepresented.

4. Research Objectives

This research seeks to investigate how Generative Artificial Intelligence (Gen AI) affects consumer trust and buying intention within e-commerce.

Specific objectives include:

- The study will assess how personalization driven by AI shapes consumer trust.
- It will evaluate how AI transparency, precision, and perceived value affect consumer trust.
- It will identify how consumer trust impacts purchase intention.
- It will explore whether consumer trust acts as a mediator linking Gen AI features to purchase intention.

5. Literature Review

5.1 Generative Artificial Intelligence

Generative Artificial Intelligence (Gen AI) describes AI technologies that can produce new material, including written content, visuals, video media, and dialogue-based replies. Within e-commerce, Gen AI sees broad adoption for tailored item suggestions, customer service driven by AI, automatically generated product copy, the creation of promotional materials, and digital assistants for shopping. Through these uses, businesses boost shopper involvement, raise operational effectiveness, and provide a more customized experience when buying online.

5.2 Consumer Trust

Consumer trust describes the belief shoppers place in an online commerce site to deliver services that are dependable, safe, and open. When shopping settings use AI, trust becomes crucial since buyers depend on machine-made suggestions and system-driven exchanges. Greater trust lowers perceived uncertainty, strengthens shopper assurance, and supports a favorable impact on intent to buy online.

5.3 Purchase Intention

Purchase intention describes how ready or likely a consumer is to buy goods or services using a digital platform. It represents the chance of completing a later purchase that arises from one's perceptions, attitudes, and prior experiences. Elements including shopper confidence, how useful the platform seems, the level of service provided, tailored features, and overall satisfaction each raise purchase intention and promote purchasing through online channels.

5.4 AI Personalization

AI personalization is the application of AI that delivers tailored item suggestions by drawing on shoppers' browsing patterns, stated likes, and buying habits. When experiences are customized, customers tend to feel more satisfied, suggested items fit better, interaction levels rise, and shopping becomes easier, which in turn supports greater trust and willingness to buy.

5.5 AI Transparency

AI transparency describes how well customers grasp the ways Generative Artificial Intelligence (Gen AI) tools gather information, produce suggestions, and reach choices. When AI is handled transparently, people better comprehend what the system does, feel less unsure, and trust digital services more. Consequently, increasing openness builds buyer trust and tends to raise willingness to purchase in online shopping settings.

5.6 AI Accuracy

In the context of Generative Artificial Intelligence (Gen AI), accuracy means how well these systems deliver information, suggestions, and replies that are correct, pertinent, and dependable. When AI produces more accurate results, decisions tend to be better, mistakes decline, and users feel more satisfied. As accuracy rises, shoppers' confidence grows, trust in online retail sites increases, and consumers become more inclined to buy.

6. Theoretical Framework

This research is based on three interconnected theoretical stances that together explain how consumers embrace generative AI in the context of e-commerce.



- **Technology Acceptance Model (TAM):**

According to this model, a person's decision to adopt a technological innovation is primarily based on two key perceptions: the degree to which the technology is thought to be easy to use (perceived ease of use) and the degree to which it is perceived as beneficial (perceived usefulness). When it comes to generative AI in online retail, users are more likely to embrace AI-driven tools if they believe they are both intuitive in design and effective in enhancing their shopping experience.

- **Trust Theory:**

This theory highlights how important customer trust is in digital settings. It claims that when users are confident about the technology's dependability, data security protocols, operational transparency, and adherence to ethical standards, they are more likely to interact with AI systems. Sustained interaction with AI-enhanced e-commerce solutions is based on this kind of trust.

- **The Stimulus–Organism–Response (S–O–R):**

Framework describes behavior as an internal cognitive and emotional state-mediated reaction to external stimuli. The features and interface design of generative AI serve as external stimuli in this situation. These characteristics influence consumers' internal psychological responses, particularly their sense of trust, which in turn influence behavioral intentions, like choosing to finish a purchase on an online marketplace with AI integration.

7. Research Hypotheses

H1: AI's personalization features greatly boost customer confidence.

H2: Consumer trust in AI systems is positively impacted by increased transparency.

H3: Higher levels of customer trust are associated with AI technologies' accuracy.

H4: Consumers' trust in AI rises when they see it as beneficial.

H5: Stronger purchase intentions are a result of increased consumer trust.

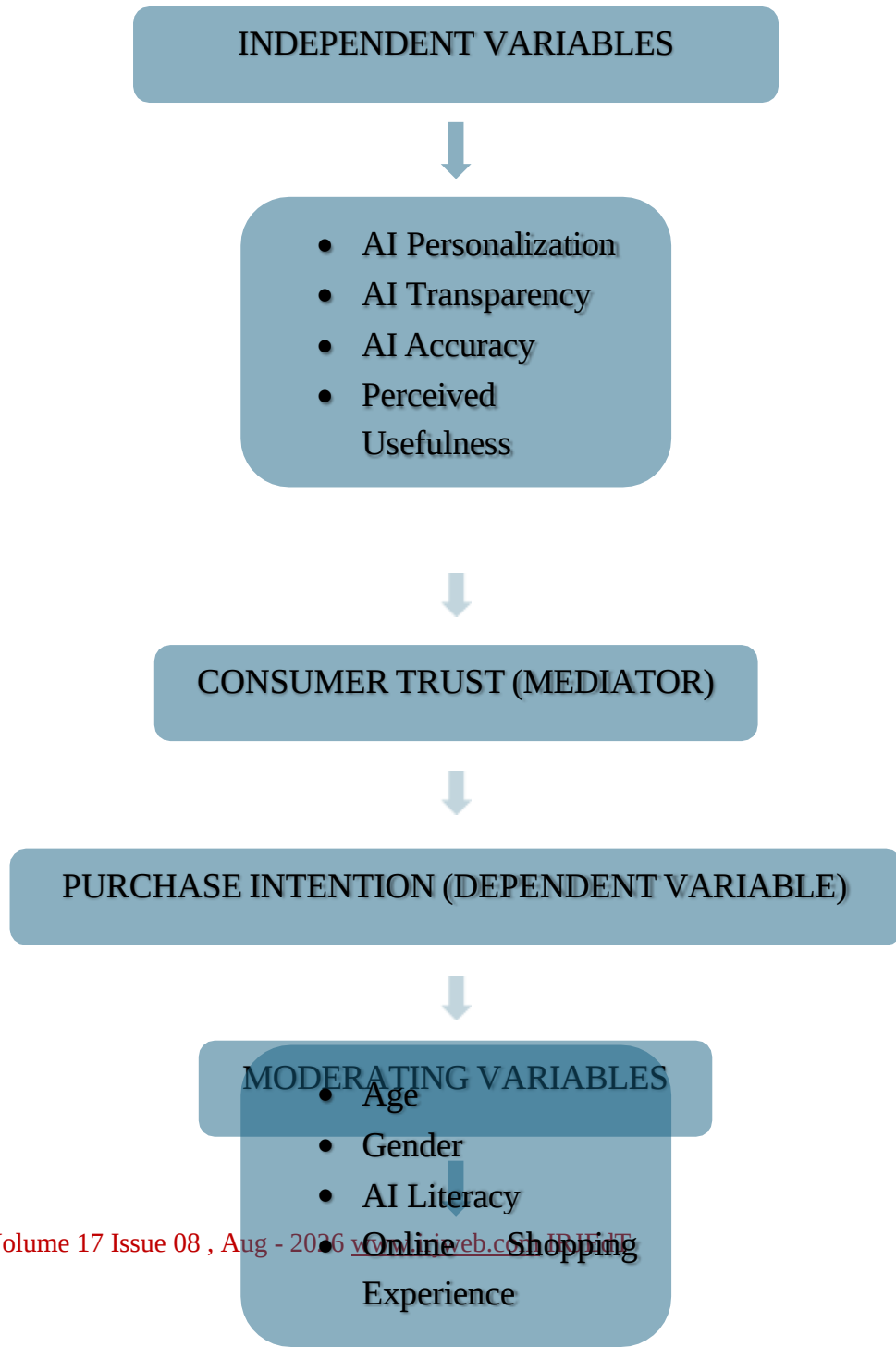
H6: Customer trust acts as a mediator between AI personalization and purchase intention.

H7: The relationship between AI transparency and purchase intention is mediated by consumer trust.

H8: Consumer trust facilitates the relationship between AI accuracy and consumers' purchase intentions.

H9: Through the mediating function of customer trust, perceived usefulness indirectly affects purchase intention.

8. Conceptual Framework



9. Research Methodology

9.1 Research Design

This study uses a cross-sectional design and a quantitative methodology to examine how the characteristics of Generative Artificial Intelligence (Gen AI), consumer trust, and purchase intentions interact in the context of e-commerce. Because it enables the numerical measurement and statistical assessment of the proposed relationships among variables, the quantitative approach is a good fit for this study. Data is collected from participants at a single point in time using a cross-sectional design, which facilitates an effective evaluation of current consumer attitudes and behavioral inclinations regarding AI-integrated e-commerce platforms.

9.2 Sampling Technique

Convenience sampling is the method used in this study, and participants are chosen based on their availability and willingness to participate in the survey. Purposive sampling, which focuses only on people who have previously utilized AI-powered features in e-commerce platforms, is an alternative.

9.3 Sample Size

Structural Equation Modeling (SEM) is best performed with a sample size of 400–600 participants

9.4 Data Collection Methods:

A structured online survey was used to collect primary data for this study. Established measurement items from previous studies will be included in the survey instrument, which will be customized to assess the constructs described in the conceptual model. A five-point Likert-type scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree," will be used to record participant responses, allowing participants to indicate how much they agree with each item

9.5 Data Analysis Techniques

To evaluate the suggested research framework, the collected data will be analyzed using appropriate statistical techniques. First, descriptive statistics will be used to provide a broad

overview of the dataset and summarize participant demographic profiles. Cronbach's Alpha and Composite Reliability (CR) will be used to assess the measurement instruments' internal consistency.

- **Average Variance Extracted (AVE)** will be used to determine Convergent Validity, and established benchmarks like the Fornell–Larcker Criterion and the Heterotrait–Monotrait (HTMT) Ratio will be used to verify Discriminant Validity. Confirmatory Factor Analysis (CFA) will be used when necessary to verify the measurement model's fit, particularly when covariance-based Structural Equation Modeling (SEM) is involved.
- **Structural Equation Modeling (SEM)** will be used to investigate the proposed relationships between constructs. Additionally, the Bootstrapping method, which provides accurate estimates of indirect effects and their significance levels, will be used to analyze the mediating role of Consumer Trust in the relationship between Generative AI characteristics and Purchase Intention.

9.6 Software Used

The following software tools will be used for the statistical evaluation:

- **IBM SPSS Statistics**, which is used for reliability assessments, data screening, and the generation of descriptive statistics.
- **SmartPLS 4** (or **AMOS**, based on the selected structural equation modeling approach), used to test hypotheses, evaluate the measurement model, evaluate the structural model, and carry out mediation analysis.

10. Expected Findings

The goal of the study is to demonstrate how consumer trust in AI-powered e-commerce platforms is greatly increased by personalization, transparency, accuracy, and perceived utility. Additionally, it is anticipated that greater purchase intention will result from increased consumer trust. Furthermore, it is anticipated that consumer trust will act as a mediating factor

between the attributes of generative AI and the probability of purchase, highlighting the crucial role that dependable and transparent AI systems play in influencing consumers' online purchasing habits.

11. Practical Implications

The results of this study will provide e-commerce businesses with vital advice on how to effectively incorporate generative AI into their operations. By utilizing the results, businesses can improve the clarity of their AI systems, improve the accuracy of product recommendations, and provide more individualized shopping experiences—all of which will ultimately boost customer confidence. The study will also promote the adoption of ethically sound AI frameworks, allowing businesses to create policies that protect data privacy, guarantee equity, uphold accountability, increase customer satisfaction and loyalty, and produce better sales results.

12. Theoretical Contribution

This research advances the current understanding in the following ways:

- Adding variables unique to generative AI that influence consumer behavior to the **Technology Acceptance Model (TAM)**.
- Combining the **Stimulus–Organism–Response (S–O–R)** model with Trust Theory to provide a comprehensive understanding of how customers respond to AI-powered e-commerce settings.
- Examining how consumer trust functions as a mediator in the relationship between generative AI features and purchase intentions.
- Presenting empirical data from a developing market where there is still little academic research on generative AI in e-commerce.
- Putting forth a cohesive conceptual framework that can direct upcoming research on consumer decision-making, digital commerce dynamics, and AI-based retail systems.
- Offering concrete proof of how generative AI features affect customer confidence and purchase intent in e-commerce platforms with AI capabilities.
- Aiding AI developers and e-commerce companies in creating reliable, customer-focused AI apps that improve the whole online shopping experience.

- Building a basis for further empirical research by employing Structural Equation Modeling (SEM) to validate the suggested conceptual model in the context of digital commerce and generative artificial intelligence.

13. Limitations and Future Research

Limitations

The study has a number of limitations that should be carefully taken into account when interpreting the findings. The research's cross-sectional design makes it impossible to establish cause-and-effect relationships because it only offers a snapshot of consumer perceptions at one particular point in time. Dependence on self-administered survey responses raises the possibility of biases, such as inaccurate self-reporting or subjective interpretations. Furthermore, the results' applicability to different cultural or geographical contexts is limited by the focus on participants from a single country. Consumer opinions and purchasing habits are likely to change over time due to the rapid advancements in generative AI, which may have an impact on the study's conclusions' long-term applicability.

Future Research

- A longitudinal approach could be used in future studies to monitor how consumer trust and purchase intentions change over time.
- Cross-national research carried out in various cultural contexts would improve the results' applicability and scope.
- Scholars may investigate how generative AI affects specific sectors like education, fashion, healthcare, and finance.
- Variables like AI transparency, perceived risks, ethical considerations, and customer loyalty could be incorporated to enhance the theoretical framework.
- Future research could also examine the moderating effects of variables like age, personality traits, digital proficiency, and prior AI interactions on customer responses.

14. Conclusion

Personalized shopping experiences, intelligent product recommendations, automated customer support, and efficient content creation are all made possible by Generative Artificial

Intelligence (Gen AI), which is transforming the e-commerce industry. Even though these developments greatly increase user engagement and operational efficacy, concerns about accuracy, transparency, data privacy, and system dependability continue to be major obstacles that undermine consumer trust in AI-driven platforms. Therefore, understanding how consumer trust influences interactions with Gen AI technologies is essential to their successful integration into online retail settings.

In order to investigate how fundamental characteristics of generative AI—more especially, AI-driven personalization, transparency, accuracy, and perceived utility—affect customer trust and purchase propensity, this study presents an integrative framework. The study creates a structured model for examining customer reactions to AI-enhanced e-commerce platforms by fusing the Technology Acceptance Model (TAM), Trust Theory, and the Stimulus–Organism–Response (S–O–R) paradigm. The theoretical hypotheses and suggested research design seek to provide insightful information about how generative AI affects online purchasing habits.

Through a deeper understanding of Gen AI adoption within online commerce, the study is expected to advance both scholarly knowledge and practical applications. Its findings may help e-commerce companies develop transparent, reliable, and user-centered AI systems, which will ultimately boost customer confidence and influence purchasing decisions. Additionally, the study is positioned to offer a solid foundation for further research into AI-powered retail tactics and changing digital consumer dynamics.

References :

- Davis, F. D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology*. MIS Quarterly, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). *User acceptance of information technology: Toward a unified view*. MIS Quarterly, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- Gefen, D., Karahanna, E., & Straub, D. W. (2003). *Trust and TAM in online shopping: An integrated model*. MIS Quarterly, 27(1), 51–90. <https://doi.org/10.2307/30036519>

- Pavlou, P. A. (2003). *Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model*. International Journal of Electronic Commerce, 7(3), 101–134.
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. MIT Press.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). *An integrative model of organizational trust*. Academy of Management Review, 20(3), 709–734.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). *Developing and validating trust measures for e-commerce: An integrative typology*. Information Systems Research, 13(3), 334–359.