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# BIITM

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## RESEARCH PAPERS



Consumer Online Buying Behaviour-An Exploratory Factor Analysis Approach with special reference to Odisha.

**Deepti Ranjan Sabat | Chinmaya Kumar Dash | Manas Ranjan Sabat**

A Comprehensive Study on Navigating the Innovation Landscape for Women Entrepreneurs - Opportunities, Challenges, and Empowerment with special reference to Cuttack city in Odisha.

**Sai Smita Das | Sandhya Darshan Dash**

Customer Experience in Digital Banking: A Bibliometric Analysis

**Sagarika Mohanty | Lingam Naveen**

Exploring Risk Aversion: A Bibliometric Analysis of Trends and Research

**Shahni Singh | Lopamudra Mishra**

Digital Evolution: A Critical Analysis of Challenges and Opportunities in Enhancing E-Logistics for Supply Chains

**Rupali Mohapatra | Jnanaranjan Pradhan | Bhumi Kumari Jaiswal | Mrutunjaya Mishra**

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The **BIITM Business Review** provides an academic forum for encouragement, compilation and dissemination of research on various aspects of management and business practices. It includes original empirical research as well as theoretical and conceptual works related to the field of management. It also publishes case studies, critical evaluation of existing business models and theories, and reviews of the latest books relevant to the corporate world. The articles / papers featured in this issue of BIITM Business Review have been meticulously curated from the esteemed pool of submissions presented at the ICMESG'24 (International Conference on Managerial Excellence & Sustainable Growth: IT & Operational Issues) held at BIITM, Bhubaneswar on 17<sup>th</sup> February 2024. The conference convening committee and editorial committee have contributed significantly to the selection of papers that encapsulate cutting-edge research and insights into the realms of managerial excellence and sustainable growth.

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# BIITM

## *Vision:*

To achieve excellence in management education, as a nationally acclaimed Business School for developing leaders, who can contribute meaningfully to the society.

## *Mission:*

**M1:** To provide excellent academic ambience and adequate exposure to the business world, in order to develop successful business leader.

**M2:** To consistently endeavor to achieve holistic development of the students in terms of knowledge, skill and attitude.

**M3:** To Provide supportive ecosystem for developing innovative mindset and encouraging entrepreneurship.

**M4:** To inculcate professional values, ethics and concern for environmental sustainability and society at large.



## Executive Director's Message

“Research is seeing what everybody else has seen and thinking what nobody else has thought.”- Albert Szent-Györgyi

At BIITM, we take profound pride in embodying this idea in our practices, consistently striving to equip our students with the knowledge and skills essential for navigating the ever-evolving landscape of management. Our institution has forged a distinctive reputation in the realm of management education, cultivating a cadre of competitive managers attuned to the exigencies of the dynamic industry milieu. Central to this ethos is the pivotal role of research in augmenting the learning experience. Here at BIITM, we are privileged to foster an environment where students are not merely confined within the boundaries of classrooms and textbooks but are encouraged to delve deeper into the realms of inquiry and exploration.

Designed as a platform for both students and faculty to push the boundaries of knowledge, BIITM Business Review serves as a catalyst for intellectual exploration and advancement. Tailored for management practitioners, researchers, and academics alike, this journal rigorously engages with contemporary practices, concepts, and ideas in the management domain, with a steadfast focus on delivering actionable managerial insights.

The articles and papers featured in this journal aspire to catalyze transformative change within the field of management, empowering managers to make informed decisions and navigate complex challenges with acumen and foresight. Through our collective efforts, we endeavor to create a ripple effect, empirically shaping the landscape of management and fostering a community of leaders equipped with the power of to drive meaningful changes in their professional domains.

I cherish the hope that this issue of the journal will be another milestone in the institute's contribution to the advancement of knowledge in the field of management.



**Mr. Pratap Balabantaray**  
**Executive Director**

## Principal's Message

It is with immense pleasure that I introduce to you this issue of the BIITM Business Review, peer-reviewed bi-annual journal, our mission is to serve as a beacon for groundbreaking research across various domains of management, thereby fulfilling the Institute's vision of fostering intellectual excellence.

The BIITM Business Review stands at the forefront of the new frontier of research, acting as a catalyst for bridging the gap between academia and the corporate world through the dissemination of high-quality, research-based articles. In doing so, we endeavor to cultivate a vibrant culture of inquiry and exploration among both our esteemed authors and the students of BIITM.

I extend my heartfelt gratitude to the distinguished members of our newly constituted Board of Reviewers for their invaluable contribution. Their guidance and expertise will undoubtedly propel us toward greater heights of achievement in the field of research.

Featuring five meticulously crafted research articles spanning a diverse array of topics, from empirically researched finance articles to conceptual review articles on facility management, this edition promises to captivate and inspire our readers.

To our esteemed reviewers, authors, and readers, I express my deepest appreciation for their unwavering support and patronage over the years. It is their dedication and enthusiasm that drive us forward, and we look forward to their continued partnership as we embark on this journey toward excellence.

  
**Prof. (Dr.) Mihir Ranjan Nayak**  
**Principal**



## From the Chief Editor's Desk

**Dear Esteemed Readers, Contributors, and Partners,**

As the Chief Editor of the BIITM Business Review, I am pleased to welcome you to this latest *issue, filled with cutting-edge research, insightful perspectives, and thought-provoking analyses* from the world of management and business studies.

Our journal continues to strive for excellence, serving as a bridge between academia and practice, and promoting interdisciplinary research that challenges conventional thinking while driving innovation in the field. With contributions from esteemed academicians, industry professionals, and emerging scholars, we aim to create a platform where diverse ideas flourish, fostering both intellectual growth and practical solutions to the challenges faced by businesses today.

In this issue, we could accommodate a variety of topics, from Consumer Online Buying Behavior, to Navigating the Innovation Landscape for Women Entrepreneurs, Exploring Risk Aversion; Enhancing E-Logistics for Supply Chain; Customer Experience in Digital Banking: Each paper reflects the depth of thought and rigorous research that our authors bring to the table. We are excited to provide a space for these ideas to inspire conversations, collaborations, and real-world applications.

I would like to extend my heartfelt gratitude to our peer reviewers, editorial board, and contributors for their unwavering commitment to maintaining the high standards of academic rigor. We also deeply appreciate the support of our readers, whose engagement fuels our mission to continue advancing management scholarship.

As we look toward the future, we remain committed to offering a forum for the exploration of ground breaking research that shapes the future of management practice and education. We hope that the insights shared in this issue inspire you to reflect, collaborate, and innovate.

Thank you for your continued support of the BIITM, Business Review.

Warm regards,



**Prof. (Dr.) Chinmaya Kumar Dash**  
Chief Editor, BIITM Business Review.

## Editor's Message

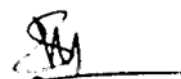
We are excited to share the latest edition of the BIITM Business Review. This issue offers a rich collection of insights into the dynamic and ever-changing business landscape.

It features a wide range of research papers from various fields, contributed by a talented group of authors. Additionally, we are pleased to include exceptional papers presented at the prestigious International Conference on Managerial Excellence & Sustainable Growth: IT & Operational Issues (ICMESG'24), a collaborative initiative between BIITM and the ORSI Bhubaneswar Chapter, Odisha.

We would like to express our sincere gratitude to all the authors, as well as to the members of the Conference Conveners Committee, Editorial Committee, and Printing & Publishing Committee, for their unwavering dedication in bringing this issue to fruition.

Our heartfelt thanks also go to the distinguished scholars and authors whose contributions have significantly enriched the academic dialogue in our journal. We deeply appreciate the time and expertise of the reviewers, whose efforts ensure the high quality and integrity of the papers we publish.

Lastly, we extend our sincere appreciation to the academic community for its ongoing support of our esteemed journal.



**Dr. Sasmita Mohapatra**  
**Editor**  
**BIITM Business Review**



## CONTENTS

RESEARCH PAPERS	PAGE NO.
Consumer Online Buying Behaviour-An Exploratory Factor Analysis Approach with special reference to Odisha.	9-24
<i>Deepti Ranjan Sabat , Chinmaya Kumar Dash, Manas Ranjan Sabat</i>	
A Comprehensive Study on Navigating the Innovation Landscape for Women Entrepreneurs - Opportunities, Challenges, and Empowerment with special reference to Cuttack city in Odisha.	25-29
<i>Sai Smita Das, Sandhya Darshan Dash</i>	
Customer Experience in Digital Banking: A Bibliometric Analysis	31-40
<i>Sagarika Mohanty Lingam Naveen</i>	
Exploring Risk Aversion: A Bibliometric Analysis of Trends and Research	41-53
<i>Shahni Singh Lopamudra Mishra</i>	
Digital Evolution: A Critical Analysis of Challenges and Opportunities in Enhancing E-Logistics for Supply Chains	54-67
<i>Rupali Mohapatra, Jnanaranjan Pradhan, Bhumi Kumari Jaiswal, Mrutunjaya Mishra</i>	

## Consumer Online Buying Behaviour-An Exploratory Factor Analysis Approach with special reference to Odisha.

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### Abstract:

Several things affect how customers view Internet shops. Perceived usefulness and enjoyment are positively impacted by convenience, visual appeal, social influence, and vendor innovation, which influence impulse purchase behavior. Online merchants' corporate social responsibility, mediated by word-of-mouth and brand identity, positively correlates with consumers' purchase intentions. Consumer perceptions of e-retailers are significantly shaped by price, product quality, brand reputation, and website design, among other variables. Consumer views of internet businesses' ethics strongly impact reputation, contentment, and trust, which in turn influences the likelihood that customers will make another purchase. Online reviews play a vital role in guiding consumer behaviour, enhancing shopping willingness, and improving consumer perception, positively correlating with various dimensions of consumer perception.

**Key Words:** *Buying Intention, Consumer Satisfaction, Exploratory Factor Analysis (EFA) and Digital Marketing, E-tailing.*

### Introduction:

In the digital transformation era, the online retail industry has witnessed a paradigm shift, reshaping how consumers perceive and interact with electronic goods. E-commerce platforms have completely changed the way people shop by putting a wide range of options, accessibility, and convenience at their fingertips. However, as the online marketplace becomes increasingly crowded and competitive, understanding the intricate factors that influence consumer perceptions becomes paramount for retailers seeking to gain a strategic advantage.

The proliferation of online shopping has not only transformed the consumer decision-making process but has also introduced new dimensions that shape consumer attitudes

and behaviours. Factors such as website design, product information, pricing strategies, delivery options, and customer service have emerged as critical determinants of consumer perceptions. Additionally, the perceived trustworthiness, security, and privacy measures implemented by online retailers play a pivotal role in shaping consumer confidence and loyalty.

Amidst this rapidly evolving landscape, it becomes imperative for online retailers to delve deeper into the underlying factors that shape consumer perceptions of electronic goods. By gaining a comprehensive understanding of these factors, retailers can tailor their strategies to meet the ever-changing demands and preferences of their target audience.

Exploratory factor analysis (EFA) offers a powerful statistical technique to unravel the complex interplay among various factors influencing consumer perceptions. This multivariate analytical approach allows researchers to identify the underlying latent variables or dimensions that collectively contribute to the formation of consumer perceptions. By extracting these latent factors, online retailers can gain valuable insights into the relative importance and impact of each factor, enabling them to prioritize their efforts and allocate resources effectively.

Furthermore, EFA permits the exploration of potential relationships and interdependencies among the identified factors, providing a holistic perspective on the intricate web of influences shaping consumer perceptions. This deeper understanding can guide online retailers in crafting targeted marketing campaigns, optimizing their product offerings, and enhancing the overall customer experience.

Through Exploratory factor analysis (EFA) investigation, researchers and practitioners aim to uncover the critical factors that drive consumer perceptions of online retailers' electronic goods, ultimately empowering businesses to make data-driven decisions and stay ahead in the highly competitive online retail landscape.

### **Literature Review:**

Elizabeth et.al (2014). "The authors were created to measure consumer attitudes towards online shopping in developing countries, particularly in the Peruvian market, and evaluated five variables present in the online purchase process, quality of web design, risk when making a purchase, customer service, security, and satisfaction, with a total of twenty items using Likert scale".

Veronika et.al. (2022) using exploratory factor analysis (EFA), examined the association between young consumers' online buying activity and the perceived reputation of an e-shop in the age of digitalization. Uncertainty surrounding purchases and the requirement for online businesses to be trusted. - The success and profitability of websites are positively impacted by reputation management. Robert et.al (2022) using an experimental methodology and a research agenda, conducted an online survey of 189 consumers to undertake an empirical assessment of consumer perceptions regarding programmatic advertising (PA). Customer perceptions of programmatic advertising (PA) and the store are favourably correlated. Attitudes towards PA are strongly correlated with perceived ad relevancy. Muluken et.al (2022) conducted a comprehensive analysis of the factors influencing online customer behaviour. The study found several significant variables that have an impact on online customer behaviour and examined factors influencing online shopping habits through the use of a systematic review approach. The study found that key elements influencing the behaviour of online shoppers, such as trust, buying intention, and demographics.

Anupriya et.al (2021) validate the conceptual model that outlines the factors influencing Tier 2 consumers' attitudes towards online purchasing and the interactions between the constructs in the three Tier 2 Indian cities. Attitude is determined by customer inventiveness, brand loyalty, and technology preparedness. A favourable correlation exists between the purchasing intention and the attitude towards internet buying. The study makes use of survey-based data from three Indian Tier 2 cities. - The study evaluates psychometric qualities using a variety of statistical methods.

Jingfeng at. al (2021) Demonstrate that “the influencing factors of various dimensions in online reviews are positively correlated with consumer perception. A technical acceptance model and an experimental hypothetical model of emotional expression in online reviews on consumer perception were developed by the authors.”

Van et al. (2020) through brand identification and word-of-mouth, create a new model to connect online retailers' CSR with consumer purchase intention. This model was then evaluated and confirmed by surveying 239 customers of a significant Chinese online retailer online. Consumer purchase intention is positively impacted by online retailers' CSR and this relationship is mediated by brand identity and word-of-mouth.

Claudia et.al (2021) “examines the primary factors influencing satisfaction when purchasing clothes online using focus groups and a questionnaire-based survey. It was discovered that the following factors are important in determining a positive experience in the e-retailing market: a good deal (savings), product expectations, customer service, and website reputation.”

Youssef et al. (2021) present, an integrated model in which the moderating influence of gender is evaluated using the multi group analysis, and the effects of relative advantage and electronic word of mouth on attitudes towards online purchasing are found to be mediated by trust.

Ashok. (2021) analyses the potential gender difference in identifying elements affecting male/female buying behaviour and discovering factors affecting Indian customers' attitudes towards online shopping,.

Wang et al. (2018) “investigated the association between six perceived risk variables (financial, product, security, time, social, and psychological) and customers' intentions to make online purchases.

Zhou et al. (2016) examined the relationship between two key consumer attributes—gender and a significant situational variable—shopping motive to see how the consumer's perspective affects the linear relationships between benefits/sacrifice and perceived value.

Ling et al (2013). “An instrument of five key dimensions to measure the convenience of online shopping was developed and validated by the authors by analysing data obtained via a Web-based questionnaire survey. Convenience has been identified as one of the primary motivations underlying customer inclinations to adopt online shopping by the authors.”

According to Long-Chuan et.al (2013), Customers are more likely to remain loyal to online retailers if they maintain shopping environments where transactions are safe, secure, and

assured. The higher the consumers' perception of positive, the more likely they are to make purchases from the same online seller.

Van et.al (2018) “In this article, the links between consumer perceptions of web design, reliability, privacy, and customer service and their consequences on purchase intention were examined by the authors using adoption theory and the technological acceptance model.”

Ling et.al (2016) “, the authors look into how customers perceive deceptive internet reviews and how this affects their decision to make a purchase later on. Specifically, they look at consumers' knowledge, skepticism, and detection of these deceptive practices.”

Hyun-Hwa (2012) “the impact of online reviews on consumer attitudes and usage patterns in connection to individual traits, such as consumer vulnerability to interpersonal influence and confidence in the information process, was investigated by the authors.”

Yam et.al (2011) finds the association between website satisfaction and loyalty to be strongly supported by the influence of consumers' judgments of the ethics of online retailers on these variables.

Robert (2016) “The factors that could potentially affect web customers' willingness to shop online with an online retailer were identified and analyzed using a structural equation model. These factors, which included quality of service, inertia to change, economic value, stress reduction, enjoyment of doing business, comfort level with the website, and aesthetic appeal, were examined.”

### **Theoretical Background:**

To launch additional research, this study examined the body of existing literature in the context of online shopping ethics. It uses concepts from the Social Exchange Theory and the Social Contract Theory to explain why consumers view moral behaviour as desirable and why disclosing personal information to others is a necessary step in building social connections. “According to G. Homans' Social Exchange Theory from (1958)”, user behavior results from social exchanges in which two parties produce value when costs are greater than benefits. Blau (1964) extended the research and emphasized that maintaining an ethical relationship with the service provider requires treating clients properly. According to this notion, “Acting morally can be seen as an investment in justice, which enhances the retailer's reputation with customers, promotes repeat business, and aids in their recommendation of the business to friends and family.” (Román and Cuestas, 2008; Gilly and Wolfinbarger, 2003) Customers would develop a sense of fairness in the retail setting if they think the ethical e-tailer treats them fairly.

According to the social contract idea, users provide personal information as part of an implicit social contract whereby parties are bound by rules that control their activity. This

idea has influenced decision-making in the fields of marketing and business ethics (Donaldson, 1982, 1989, Goolsby & Hunt, 1992). Furthermore, the Social Contracts Theory was applied by Reidenbach and Robin (1990) and Culnan (1995) in the development of the multidimensional ethics scale and the privacy issues related to user

activity, respectively. Before entering into a transactional relationship in the context of online shopping, customers look for and carefully consider certain ethical characteristics such as privacy, security, and reliability.

### Research Methodology:

An organised set of questions was used to gather the study's primary data. The study's sample size included one hundred respondents from the Ganjam District. With great care, the gathered data was examined, tabulated, and analysed using basic statistical methods such as percentages, the Chi-Square test, and factor analysis through the SPSS25.

### Objectives Of the Study:

- To analyse Consumer online buying behaviour using the Factor Analysis Approach
- To Investigate Exploratory Factor Analysis of online goods

### Analysis: Demographic Factor

Variables		No of Respondents	%
Gender	Male	46	46
	Female	54	54
	Total	100	100
Age	Less than 25	34	34
	26-50	45	45
	51-above	21	21
	Total	100	100
Marital status	Single	36	36
	Married	64	64
	Total	100	100
Earning status	Young and Dependent	26	26
	Young & Independent	30	30
	Family with kid at home	42	42
	Retired person	02	02
Qualification	U. G	56	56
	P. G	44	44
	Total	100	100
Income	Less than 1lacs	2	2
	1-3lacs	5	5
	3-5lacs	20	20
	Above 5lacs	73	73
	Total	100	100

Table 1 above indicates that 54% of respondents are female, most of them falling between the ages of 26 and 50. Sixty-four percent of those surveyed were married. 42% of responders are mostly from families with children living at home. A majority of 56% of those surveyed are U.G. qualified. The majority of respondents—73 percent—earned more than five lacs annually.

Purchasing Behaviour of Consumers:

**Table 2 Respondents towards product purchase through the Internet**

Product Purchase through online	Variables	No of Respondents	%
	Mobiles	38	38
	Electronic Goods	26	26
	Apparels	18	18
	Furniture	12	12
	Grocery	04	04
	Others	02	02
	Total	100	100

Table, 2 above shows that the majority of the respondents purchased mobiles online.

**Table 3 Respondent behaviour:**

Visiting Online Store	Variable	Respondents Number	%
	1-2	6	6
	3-5	10	10
	6-10	38	38
	10 times more	46	46
	Total	100	100

This table shows that mostly 46% of the respondents visit the online store more than 10 times.



**Table 4. Respondent behaviour:**

	<b>Variable</b>	<b>Respondents Number</b>	<b>%</b>
Buying the product through an online store.	Once in 15 days	70	70
	Once in a month	12	12
	Once in a two-month	10	10
	Once in a year	08	08
	Total	100	100

Table 4 mentions that 70% of the respondents buying the products through online stores.

**Table 5 Respondents buying behaviour:**

	<b>Variables</b>	<b>Respondents Number</b>	<b>%</b>
The total value of purchase online in a Year.	< Rs 5000	45	45
	5001-15000	22	22
	15001-50,000	18	18
	50001 above	15	15
	<b>Total</b>	<b>100</b>	<b>100</b>

Table 5 shows that 45% of the respondents buy their products through online store and spend more than Rs 5000 in a year.

**Table 6 Satisfaction Level.**

<b>Satisfaction Level</b>	<b>Highly Satisfied</b>	<b>Satisfied</b>	<b>Neutral</b>	<b>Dissatisfied</b>	<b>Highly Dissatisfied</b>
Web Site link	25	65	5	3	2
Product selection	24	64	4	5	3
Card overcharge	21	72	3	2	2
Delivery	25	55	14	3	3
Website message	18	76	2	3	1

Sixty-six percent of respondents said they were happy that the website has relevant links that allow customers to access as much information as possible sixty-four % are happy with the selection of products; seventy-two percent are happy that online retailers do not overcharge credit or debit cards; fifty-six percent are happy that the products are delivered correctly; and seventy-six percent are happy that the website can send and receive messages quickly.

### Hypothesis Framed: -

H<sub>0</sub>: There is no association between gender and level of satisfaction towards website links.

H<sub>1</sub>: There is an association between gender and level of satisfaction towards website links.

Table 7 Association between gender and satisfaction level towards website link.

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.600 <sup>a</sup>	4	.809
Likelihood Ratio	2.268	4	.687
Linear-by-Linear Association	.014	1	.907
N of Valid Cases	100		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is .72.

Given that all p-values are much higher than the conventional significance level of 0.05, the Chi-Square tests (Pearson, Likelihood Ratio, and Linear-by-Linear relationship)

collectively suggest that there is no meaningful relationship between the categorical variables under study. However, the caution regarding the expected counts should be taken into consideration, as it may influence the reliability of the test results.

H<sub>0</sub>: There is no relation between gender and level of satisfaction towards Product Selection.

H<sub>1</sub>: There is a relation between gender and level of satisfaction towards Product Selection.

**Table 8 relation between gender and level of satisfaction towards product selection.**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.890 <sup>a</sup>	4	.421
Likelihood Ratio	6.183	4	.186
Linear-by-Linear Association	2.891	1	.089
N of Valid Cases	100		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 1.20.

“To determine if there is a significant correlation between two category variables, apply the Pearson Chi-Square test. The Chi-Square statistic in this instance has four degrees of freedom and is 3.890. Asymptotic Significance, or p-value, is 0.421. We are not able to reject the null hypothesis because the p-value is higher than 0.05. This suggests that the factors under investigation do not significantly correlate with one another”

H0: no Relation between gender and Satisfaction Level towards Delivery Products.

H1: Relation between gender and Satisfaction Level towards Delivery Products.

**Table 9 Relation between gender and Satisfaction Level towards delivery of the product.**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.847 <sup>a</sup>	4	.303
Likelihood Ratio	7.332	4	.119
Linear-by-Linear Association	4.279	1	.039
N of Valid Cases	100		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 1.20.

To determine if there is a significant correlation between two category variables, apply the Pearson Chi-Square test. With four degrees of freedom, the Chi-Square statistic in this instance is 4.847. Asymptotic Significance, or p-value, is 0.303. We are not able to reject the null hypothesis because the p-value is higher than 0.05. This suggests that the factors under investigation do not significantly correlate with one another.

H0: There is no association between gender and level of satisfaction towards Website messages.

H1: There is Association between gender and level of satisfaction towards Website message.

Table 10 Association between gender and level of satisfaction towards website messages.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.171 <sup>a</sup>	4	.704
Likelihood Ratio	2.234	4	.693
Linear-by-Linear Association	.973	1	.324
N of Valid Cases	100		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.68.

To determine if there is a significant correlation between two category variables, apply the Pearson Chi-Square test. The Chi-Square statistic, in this instance, has four degrees of freedom and is 2.171. Asymptotic Significance, or p-value, is 0.704. “We are not able to reject the null hypothesis because the p-value is higher than 0.05. This suggests that the factors under investigation do not significantly correlate with one another.

### Hypothesis Framed:

H<sub>0</sub>: No association between Qualification and satisfaction level towards website link.

H<sub>1</sub>: association between Qualification and satisfaction level towards website link.

Table 11 Association between Qualification and satisfaction level towards website link.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.302 <sup>a</sup>	4	.054
Likelihood Ratio	10.424	4	.034
Linear-by-Linear Association	1.780	1	.182
N of Valid Cases	100		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.29.

To determine if there is a significant correlation between two category variables, apply the Pearson Chi-Square test. The Chi-Square statistic in this instance is 9.302 with four degrees of freedom. Asymptotic Significance, or p-value, is 0.054. Even though the p-value is extremely near to being significant, we are unable to reject the null hypothesis at the 0.05 level because it is somewhat over the standard significance level of 0.05.

H<sub>0</sub>: No Relation between Qualification and satisfaction level towards Product Selection.

H1: Relation between Qualification and satisfaction level towards Product Selection.

**Table 12 Relation between Qualification and satisfaction level towards product selection.**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.473 <sup>a</sup>	4	.649
Likelihood Ratio	2.515	4	.642
Linear-by-Linear Association	.047	1	.829
N of Valid Cases	100		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 2.15.

To determine if there is a significant correlation between two category variables, the Pearson Chi-Square test is applied. The Chi-Square statistic, in this instance, is 2.473 with

four degrees of freedom. The Asymptotic Significance, or p-value, is 0.649. The null hypothesis is not rejected because the p-value is higher than 0.05. This suggests that the factors under investigation are not significantly correlated with one another.

H0: There is no relation between Qualification and level of satisfaction towards Delivery of products.

H1: There is a relation between Qualification and level of satisfaction towards Delivery of products.

**Table 13 Relation between Qualification and level of satisfaction towards correct delivery of the product.**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.494 <sup>a</sup>	4	.479
Likelihood Ratio	3.517	4	.475
Linear-by-Linear Association	.260	1	.610
N of Valid Cases	100		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 2.15.

The person chi-square test is applied to determine if there is a significant correlation between two category variables. The Chi-Square statistic, in this instance, is 3.494 with four degrees of freedom. The Asymptotic Significance, or p-value, is 0.479. The null hypothesis is not rejected because the p-value is higher than 0.05. This suggests that the factors under investigation are not significantly correlated with each other.

H<sub>0</sub>: No association between Qualification and level of satisfaction towards Website message.

H<sub>1</sub>: Association between Qualification and level of satisfaction towards Website message.

Table 14 Association between Qualification and level of satisfaction towards website messages.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.669 <sup>a</sup>	4	.955
Likelihood Ratio	.669	4	.955
Linear-by-Linear Association	.351	1	.554
N of Valid Cases	100		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 3.01.

To determine if there is a significant correlation between two category variables, the Pearson Chi-Square test has been applied. The Chi-Square statistic in this instance has four degrees of freedom and is 0.669. Asymptotic Significance, or p-value, is 0.955. Given that the p-value is significantly higher than 0.05, the null hypothesis cannot be rejected. This suggests that the factors under investigation do not significantly correlate with one another.

### Factor Analysis:

Descriptive Statistics			
	Mean	Std. Deviation	Analysis N
Safetysecurity	3.9700	.96875	100
Ease_of_use	3.7200	.99575	100
Reliability	3.3900	1.16250	100
Offers_made_bythe_business	2.4900	1.18488	100
Information_gathering	3.6300	1.10696	100
Variety_of_option	3.7600	1.06477	100
Simple_method_payment	3.4500	1.09521	100
Prompt_delivery_of_Goods_and_services	3.7400	.92791	100

The variables "Safety and Security," "Ease of Use," "Information Gathering," "Variety of Options," and "Prompt Delivery of Goods and Services" have relatively high mean ratings, indicating positive perceptions in these areas. "Reliability," "Simple Method of Payment," and especially "Offers Made by the Business" have lower mean ratings, suggesting these areas may need improvement. The standard deviations for most variables indicate moderate

variability in responses, with "Reliability" and "Offers Made by the Business" showing slightly higher variability, suggesting diverse opinions among respondents.

#### KMO and Bartlett's test:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.890
Approx. Chi-Square		425.163
Bartlett's Test of Sphericity	df	28
	Sig.	.000

The factor analysis technique was employed by the researcher to uncover both significant and smaller numbers of components since the respondents were asked to provide eight observed variables linked to customer satisfaction. The data was analysed using the varimax rotation approach as the main component analysis extraction method.

Communalities		
	Initial	Extraction
Safetysecurity	1.000	.576
Ease_of_use	1.000	.659
Reliability	1.000	.666
Offers_made_bythe_business	1.000	.233
Information_gathering	1.000	.660
Variety_of_option	1.000	.733
Simple_method_payment	1.000	.552
Prompt_delivery_of_Goods_and_services	1.000	.642

Extraction Method: Principal Component Analysis.

The communalities after extraction show how well the PCA model explains each variable. Higher values indicate that the component(s) extracted from PCA explain a large portion of the variance in that variable. variables with higher extraction values are better represented by the principal components derived from the PCA. For example, "Variety of options" with a communalities value of 0.733 is highly explained by the components, whereas "Offers made by the business" with a value of 0.233 is less explained.



**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.722	59.025	59.025	4.722	59.025	59.025
2	.907	11.332	70.357			
3	.594	7.430	77.787			
4	.539	6.734	84.521			
5	.406	5.071	89.592			
6	.312	3.897	93.489			
7	.285	3.562	97.051			
8	.236	2.949	100.000			

Extraction Method: Principal Component Analysis.

The "Total Variance Explained" table provides insights into how much variance in the data is explained by each principal component extracted during the Principal Component Analysis (PCA). The first principal component alone explains 59.025% of the total variance. The remaining components each explain progressively less variance, with none having an eigenvalue greater than 1, suggesting they may not be as significant.

#### Component Matrix<sup>a</sup>

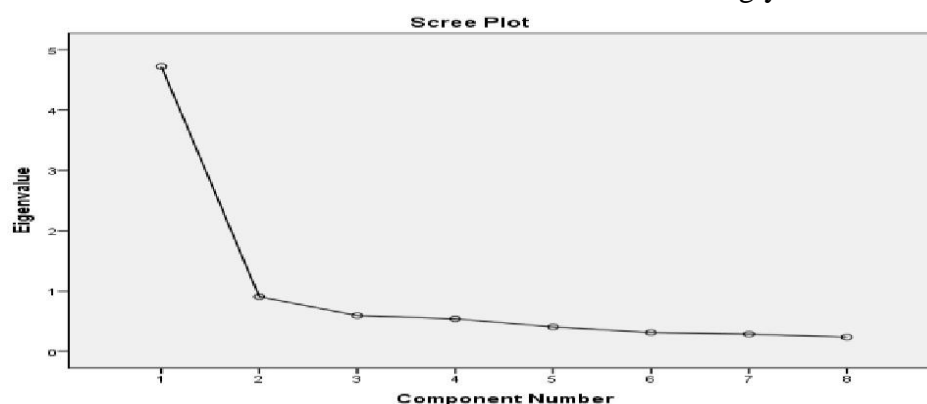
	Component
	1
Safetysecurity	.759
Ease_of_use	.812
Reliability	.816
Offers_made_bythe_business	.482
Information_gathering	.812
Variety_of_option	.856
Simple_method_payment	.743
Prompt_delivery_of_Goods_and_services	.801

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

The Component Matrix provides the loadings of each variable on the extracted principal component. Since only one component is extracted in this case, it shows how much each variable contributes to this component. These loadings can be interpreted similarly to correlation coefficients, indicating the strength and direction of the relationship between each variable and the principal component. The first principal component, which explains 59.025% of the variance, is highly influenced by variables such as Variety of options, Reliability, Ease of use, Information gathering, Prompt delivery of Goods and services,

Safety and security, and Simple method of payment. These variables are closely related and form the core aspect that the principal component captures. Offers made by the business, with a loading of 0.482, is moderately represented by the principal component, indicating that it is somewhat related but not as strongly as the other variables.



### Conclusion:

The majority of respondents spent more than ten times as much as rupees 5,000 on mobile purchases made online. Significant factors for customer satisfaction with online purchasing behavior for consumer items were found by factor analysis. Customers' purchasing decisions are mostly influenced by simple payment methods, prompt product and service delivery, a large selection, company promotions, and information collecting. This study demonstrated that there is no statistically significant difference between genders when it comes to satisfaction levels with online information, product selection, and proper product delivery.

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## **A Comprehensive Study on Navigating the Innovation Landscape for Women Entrepreneurs - Opportunities, Challenges, and Empowerment with special reference to Cuttack city in Odisha.**

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### **Abstract**

Women entrepreneurs play a crucial and impactful role in various aspects of society, economy, and business. Recognizing and fostering the importance of women entrepreneurs is vital for promoting economic growth, innovation, and social progress. This paper delves into the multifaceted realm of women entrepreneurs in the dynamic landscape of innovation. Recognizing the transformative potential of innovation, this study aims to shed light on the unique opportunities and challenges faced by women entrepreneurs and explore pathways to empowerment within the innovation ecosystem of Cuttack city in Odisha. This study contributes to the ongoing dialogue on gender equality in entrepreneurship and innovation. By offering a comprehensive analysis of both challenges and opportunities, the paper aims to inform stakeholders, policymakers, and entrepreneurs alike. Ultimately, it advocates for a more inclusive, diverse, and empowering innovation landscape that breaks down barriers and propels women entrepreneurs toward unprecedented success.

***Keywords: Women entrepreneurs, Innovation Landscape, Opportunities, Challenges, Empowerment, Gender Equality, Entrepreneurial Ecosystem.***

### **Introduction:**

Women have been assigned the dual responsibility of becoming a home maker as well as an entrepreneur. Coming out of completing the household activities, beholding the world of business domain, making an identity in the society to survive in the business industry, opportunities, challenges and empowerment play an important role. Empowerment lies at the core of fostering a conducive environment for women entrepreneurs. In the dynamic landscape of entrepreneurship, women have emerged as powerful catalysts of innovation, contributing significantly to economic growth and societal development. The role of women in entrepreneurship has gained significant attention as they continue to break barriers and contribute substantially to economic growth and innovation. Women entrepreneurs, despite facing unique obstacles, have demonstrated remarkable resilience and creativity in carving out their space in the business world.

The city of Cuttack, situated in the heart of Odisha, with its rich cultural heritage and emerging economic prospects, provides a compelling backdrop for this study, as it encapsulates the rich blend of tradition and modernity, creating a unique environment for entrepreneurial endeavors. This paper embarks on a comprehensive study focused on navigating the innovation landscape for women entrepreneurs in Cuttack, Odisha. Recognizing the pivotal role played by women in fostering innovation, this research aims to delve into the opportunities, challenges, and empowerment mechanisms that shape their entrepreneurial journey within the specific socio-economic context of Cuttack. Comprehending the need for a nuanced understanding of the challenges and opportunities faced by women entrepreneurs, this study delves into the specific context of Cuttack, Odisha. By examining the innovation landscape, we seek to uncover the factors that facilitate or hinder women entrepreneurs in Cuttack and, consequently, contribute to the broader discourse on gender-inclusive economic development.

### **Importance of the study:**

The role of women entrepreneurs in Cuttack, like in any other region, is vital for the local economy, social dynamics, and overall community development. Women entrepreneurs in Cuttack contribute significantly to the local economy by establishing and running businesses, thereby creating job opportunities and fostering economic growth. Their ventures may span various sectors, from traditional businesses to innovative startups, adding diversity to the local business landscape. Cuttack, with its rich cultural heritage, benefits from women entrepreneurs who have engaged in businesses that preserve and promote local arts, crafts, and traditional practices. These entrepreneurs play a crucial role in maintaining and showcasing the unique cultural identity of Cuttack.

Women entrepreneurs in Cuttack engaged in traditional industries like handloom, handicrafts, and local artistry, bringing innovation and modernization to age-old practices. Their ability to infuse contemporary elements into traditional businesses can enhance market competitiveness. Women entrepreneurs often take an active role in community development initiatives, investing in local projects, and participating in philanthropy that benefits the residents of Cuttack. Through their businesses, they have contributed to the overall well-being and growth of the community. Women entrepreneurs in Cuttack serve as inspirational figures, challenging traditional gender roles and empowering other women to pursue entrepreneurial endeavors. Their success stories contribute to changing societal perceptions about the capabilities of women in business.

Women entrepreneurs in Cuttack lead businesses that focus on sustainable and eco-friendly practices, contributing to environmental conservation and responsible business conduct. Their ventures sets an example for responsible entrepreneurship within the community. Women entrepreneurs often engage in networking and collaboration, creating a supportive ecosystem that encourages the exchange of ideas and resources. Such collaborative efforts can lead to the development of a robust entrepreneurial community in Cuttack.

### Objectives of the study

This study aims to identify and analyze the existing opportunities available to women entrepreneurs in Cuttack, exploring sectors where innovation thrives and providing insights into the entrepreneurial ecosystem. Simultaneously, it will address the challenges faced by women in business, ranging from cultural and societal norms to institutional barriers, offering a nuanced understanding of the impediments that hinder their full participation in

the entrepreneurial landscape. Through an examination of existing empowerment initiatives, both formal and informal, the paper aims to evaluate their effectiveness and propose recommendations for enhancing support systems. By shedding light on successful empowerment strategies, the research endeavors to inspire policy changes and community-driven efforts that further empower women entrepreneurs in Cuttack.

### Review of Literature.

Numerous research projects have been undertaken in different areas of entrepreneurship in India, especially about women entrepreneurship. A good number of research studies are available on the various aspects of women's entrepreneurship in India. A few relevant studies are reviewed below.

Candida G Brush and Saarah Y Cooper(2012) in their research paper “ Female Entrepreneurship and economic development” stated that women-owned businesses are one of the fastest-growing entrepreneurial populations in the world.

Mdanabayam, & Kurian (2012) in their research paper “Women Entrepreneurship in Micro, Small and Medium Enterprises (MSME) in Chennai City” the researcher had tried to identify the industrial profile, the motivating factors of women entrepreneurs and contributing factors to the success and to analyze the relationship between industries related factors and success of entrepreneurs.

Jagero (2011) in his research article “Challenges Facing Women Micro- Entrepreneurs in Dar Es Salaam, Tanzania” stated that he enquired about the challenges faced by women micro-entrepreneurs in Ilala Municipal Dar es Salaam, the treatment of micro-entrepreneurs by the municipal officials in Ilala, Dar es Salaam. Results indicate that major challenges faced by women micro-entrepreneurs are lack of financial aid, poor infrastructure, lack of business premises, and decline in businesses.

Gopinathan Rashmi (2010) in her thesis “Impact of Women Entrepreneurship Development on Families: A Study of Women Run Micro-enterprises in Selected Districts of Maharashtra” examined the interdependence of women entrepreneurs and their families. The findings of the study noticed that rural areas especially the interiors of Maharashtra are a potential area for bringing about entrepreneurship development. It was seen during the study that each geographic region has its natural resource availability which is not being utilized to its optimum capacity due to unawareness of the locals. Most of the women in the interiors of Maharashtra especially in the low-income group are also a part of the self-help group, but still, there are areas of improvement.



**Research Gap.**

Numerous studies have been conducted in different areas of women's entrepreneurship. After a review of related literature, it was found that a few studies were conducted to study the motivational factors influencing women to become entrepreneurs in urban Odisha. Only a few studies specifically focused on the challenges, opportunities, and empowerment of women entrepreneurs in Cuttack, Odisha. Cuttack City is rich in all types of resources. There is enough scope for entrepreneurial growth in this city because of its people and healthy business environment. The present study was undertaken to fill the existing research gap.

**Objectives of the Study.**

The specific objectives of the study are as follows.

- To Investigate and catalog the various opportunities available for women entrepreneurs in Cuttack, across different industries and sectors.
- To examine how women entrepreneurs contribute to innovation and creativity, and assess the impact of their ventures on the broader entrepreneurial ecosystem

**Research Methodology.**

We carried out qualitative research has been done for this article. The data for this study has been collected from Secondary sources like existing literature, research papers, reports, and articles related to women entrepreneurship, innovation ecosystems, and empowerment initiatives, with a focus on the context of Cuttack, Odisha.

**Findings.**

The findings of our study on navigating the innovation landscape for women entrepreneurs in Cuttack, Odisha were:

- Identification of sectors or industries where women entrepreneurs have a significant presence or potential for growth.
- Recognition of emerging market trends and opportunities that women entrepreneurs can capitalize on.
- Assessment of government policies and programs that support women-led businesses and innovation initiatives.
- Limited access to financial resources, including funding, loans, and investment capital.
- Societal and cultural barriers that hinder women's participation in entrepreneurship, such as gender stereotypes and family responsibilities.
- Lack of access to training, mentorship, and networking opportunities for women entrepreneurs.
- Regulatory and bureaucratic hurdles that disproportionately affect women-owned businesses.
- Identification of key empowerment initiatives and programs that have been successful in supporting women entrepreneurs.

- Analysis of the role of education and skill development in empowering women to start and grow businesses.

Overall, the findings of the study are likely to provide valuable insights into the unique opportunities, challenges, and empowerment needs of women entrepreneurs in Cuttack, Odisha, and serve as a foundation for future interventions and initiatives aimed at promoting gender equity and economic empowerment.

## Conclusions

Based on our study conducted on navigating the innovation landscape for women entrepreneurs in Cuttack, Odisha, several key conclusions can be drawn:

1. The study likely revealed various opportunities for women entrepreneurs in Cuttack, Odisha, indicating that the region has potential for female-led innovation and business ventures.
2. The research probably highlighted significant challenges faced by women entrepreneurs in Cuttack, which could include limited access to funding, societal barriers, lack of support networks, and gender biases.
3. There is a need for empowerment initiatives tailored to the specific needs of women entrepreneurs in Cuttack. These initiatives could include mentorship programs, access to resources and training, networking opportunities, and policy advocacy aimed at creating a more conducive environment for female entrepreneurship.
4. The study might emphasize the importance of community engagement and collaboration among various stakeholders, including government bodies, non-profit organizations, educational institutions, and the private sector, to support and promote women entrepreneurship in Cuttack.
5. Based on the findings, the study suggests specific policy recommendations at the local, regional, or national levels to address the challenges and create an enabling environment for women entrepreneurs in Cuttack, Odisha.

In summary, the comprehensive study on navigating the innovation landscape for women entrepreneurs in Cuttack, Odisha, likely sheds light on both the opportunities and challenges faced by women in entrepreneurship and emphasizes the importance of empowerment, community engagement, and policy interventions to foster a more inclusive and supportive ecosystem for female-led innovation and business ventures.

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## Customer Experience in Digital Banking: A Bibliometric Analysis

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### Abstract

The advent of digital technologies has brought about a significant transformation in the banking sector's landscape in recent times. In the digital age, the client experience has become paramount in banking operations. It encompasses all of a customer's digital engagements with a bank, such as utilizing a mobile app, shopping online, and getting in touch with customer service. The purpose of this study is to demonstrate how digital banking affects consumers' perceptions of service quality and to develop a framework for classifying the essential elements of digital banking that have an impact on a bank's bottom lines. This work aims to give multiple research streams about digital banking and conduct a bibliometric analysis of the digital banking service. In addition, the study offers potential research issues for future investigations into the relevant fields. The SCOPUS database is utilized in this study, and 423 publications (data from 2014 to 2023), are taken into consideration for the bibliometric analysis through the use of co-authorship, co-citation, and keyword analyses. The findings of this study may be useful to scholars, academicians and bankers.

**Keywords:** *E-banking, Customer experience, Digital banking, Customer satisfaction, Bank performance, Internet banking*

### 1. Introduction

A key component of contemporary banking services is the online banking experience for customers (Mohanty, 2021). One of the initiatives to revolutionize the banking industry is e-banking. It is one of the services that banks offer to their customers so they can use electronic devices such as laptops, computers, and cell phones to do all of their banking activities online (Yoon, 2010). The merging of traditional financial services with the Internet gave rise to e-banking (Galletta et al., 2022). Electronic banking emerged as a result of the financial sector's use of electronic technologies. Financial institutions have moved more and more towards digital platforms as a result of technological advancements in order to better serve their clients' changing demands and preferences (Mohanty et al., 2023; Carlsson et al., 2017). Providing a seamless and fulfilling customer experience is crucial in today's digital world. Automated teller machines (ATMs),

chatbots, smartphone apps, online banking, and more are all included in the broad category of e-banking services (Mohanty et al., 2023; Nugroho and Hamsal, 2021). Banks must place a high priority on a number of essential components, including user-friendly interfaces, strong security measures, tailored interactions, and attentive customer service, to guarantee that consumers have a productive and enjoyable experience (Yoon, 2010).

The following research questions are dealt with in this study:

1. What is the current tendency of research publications on digital banking?
2. Which documents and publications influence digital banking research the most?
3. Which countries and researchers promote the topic of digital banking most frequently?
4. What are the main topics and search terms in the field of digital banking?
5. What fields of study will be investigated in the future related to digital banking?

According to the research questions, the paper's goal is to examine current developments in the digital banking experience and provide information on publications and authors who have received the most citations. In addition, the goal is to analyze the topics and keywords that will be emphasized in the sphere of digital banking and to solve the problems and obstacles.

The following sections compose the article. A brief overview of customer experience on digital banking that highlights its evolutionary stages is provided in section 1. The research questions and research objectives are also highlighted in the Introduction. Section 2 indicates the research methodology. Analysis and findings are highlighted in section 3. Section 4 showcases the findings and discussion, and Section 5 is the last section of the paper, presenting the conclusion, limitations, future scope, and recommendations.

## **2. Research Methodology**

This study used bibliometric analysis based on research on digital banking published between 2014 to 2023. For the study, after necessary filtration, 423 papers were gathered using the Scopus database. The articles published in the fields of digital banking and customer experiences are the primary focus of the bibliometric review. The visualization network, which is helpful to identify research areas of interest and improvement patterns, has been introduced in this publication using Vosviewer (Wang et al. 2020; Chen and Liu 2020).

### 3. Analysis and Results

#### 3.1. Analysis of no. of documents published from 2014 to 2023:

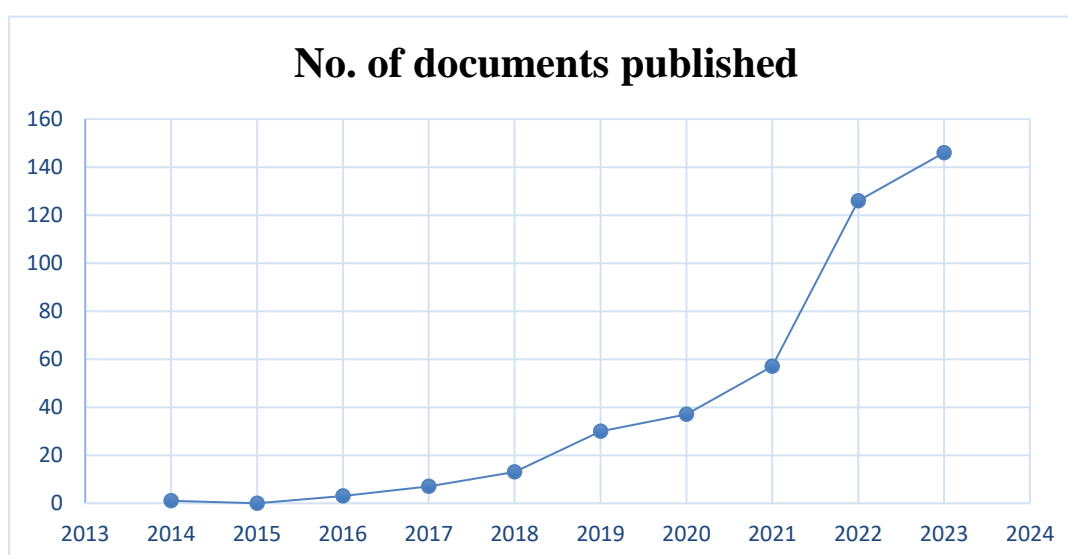


Figure 1: No. of published documents

In fig. 1, the data extracted from the SCOPUS database which is showed the trend of publications in the study period. As per the trend, it is clear that the highest number of papers were published in 2023 which accounted for 146 papers, followed by 2022 and 2021 which registered 126 and 57 papers respectively. This trend reflected that the publication regarding customer experience in digital banking has increased year on year from 2013 to 2023.

#### 3.2. Analysis of different kinds of documents published in the study period:

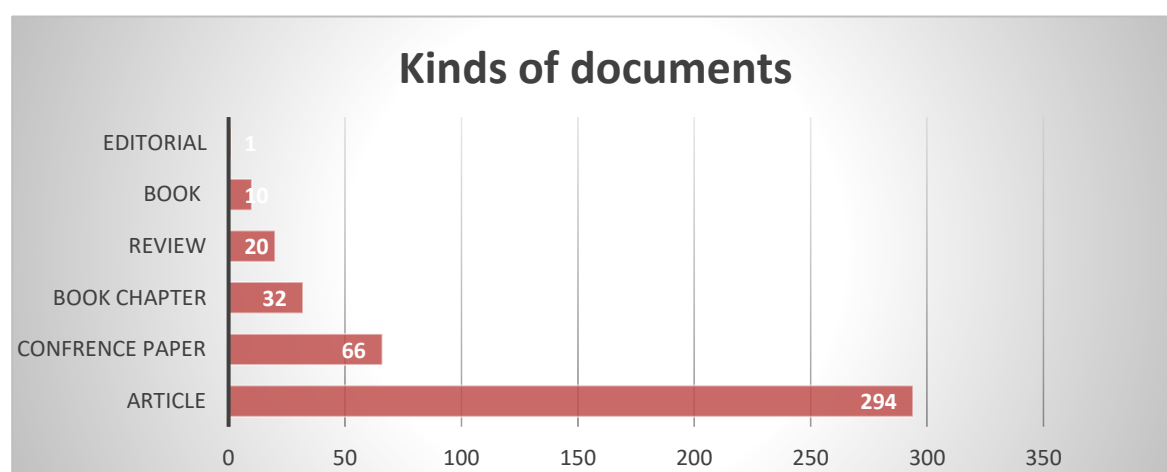


Figure 2: Types of documents published

The data regarding six types of documents are shown in Figure 2. We have found about 423 publications addressing digital banking in relation to customer experience from SCOPUS records. It shows that 294 articles, or 69.0% of all records, are the most common type of publication. Conference papers, on the other hand, account for 16% of all records and comprise 32 book chapters and 20 review papers, respectively. Ten books and one editorial comprised 2.36% and 0.23%, respectively, of the total publications. In this discipline, articles are a common choice for study.

**3.3. Table 1 below showcases the most influential and highly cited articles with their authors and sources of publications.**

Title	Authors	Source	Year	Citation
Digital banking, customer experience and bank financial performance: UK customers' perceptions	Mbama, C.I. Ezepue, P.O.	International Journal of Bank Marketing, 36(2), pp. 230–255	2018	112
Impact of website attributes on customer engagement in banking: a solicitation of stimulus-organism-response theory	Islam, J.U., Shahid, S., Rasool, A., Khan, I., Rather, R.A.	International Journal of Bank Marketing, 38(6), pp. 1279–1303	2020	106
Enhancing the value co-creation process: artificial intelligence and mobile banking service platforms	Manser Payne, E.H., Peltier, J., Barger, V.A.	Journal of Research in Interactive Marketing, 15(1), pp. 68–85	2021	94
Customer engagement in the digital age: a review and research agenda	Rasool, A.; Shah, F.A., Islam, J.U.	Current Opinion in Psychology, 36, pp. 96–100	2020	61
Are we ready for the challenge of banks 4.0? designing a roadmap for	Mehdiabadi, A., Tabatabeinasab, M., Spulbar, C. Yazdi, A.K.	International Journal of Financial Studies, 8(2), pp. 1–28, 32	2020	47



banking systems in industry 4.0	Birau, R.			
Mobile banking adoption: a systematic review	Souiden, N., Ladhari, R., Chaouali, W.	International Journal of Bank Marketing, 39(2), pp. 214–241	2021	42
Building customer loyalty in digital banking: A study of bank staff's perspectives on the challenges of digital CRM and loyal	Larsson, A., Viitaoja, Y.	International Journal of Bank Marketing, 35(6), pp. 858–877	2017	42
Adoption of digital banking channels in an emerging economy: exploring the role of in-branch efforts	Kaur, S.J., Ali, L., Hassan, M.K., Al-Emran, M.	Journal of Financial Services Marketing, 26(2), pp. 107–121	2021	37
Digital banking, customer experience and financial performance: UK bank managers' perceptions	Mbama, C.I., Ezepue, P., Alboul, L., Beer, M.	Journal of Research in Interactive Marketing, 12(4), pp. 432–451	2018	37
Examining consumer experience in using m-banking apps: A study of its antecedents and outcomes	Shahid, S., Islam, J.U., Malik, S., Hasan, U.	Journal of Retailing and Consumer Services, 65, 102870	2022	36

Table 1: Details of the most highly cited articles on digital banking

### 3.4. Keywords analysis

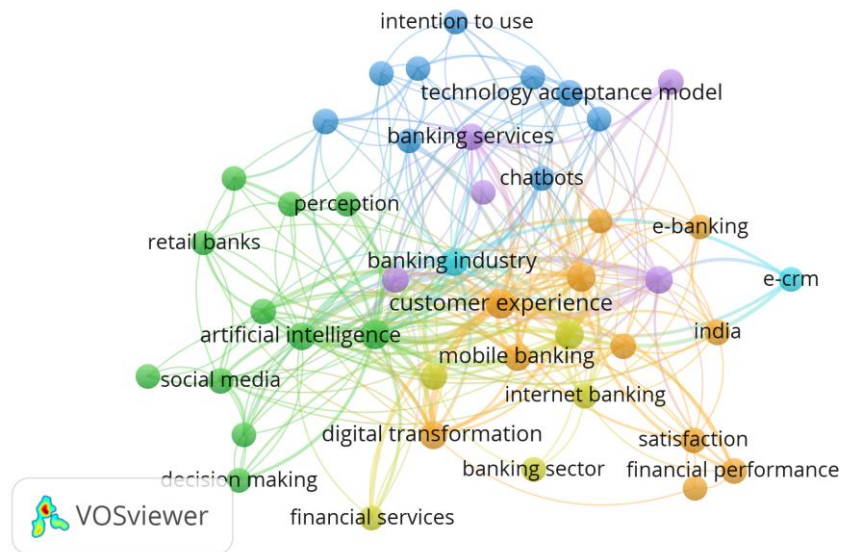


Figure 3: Author's keywords

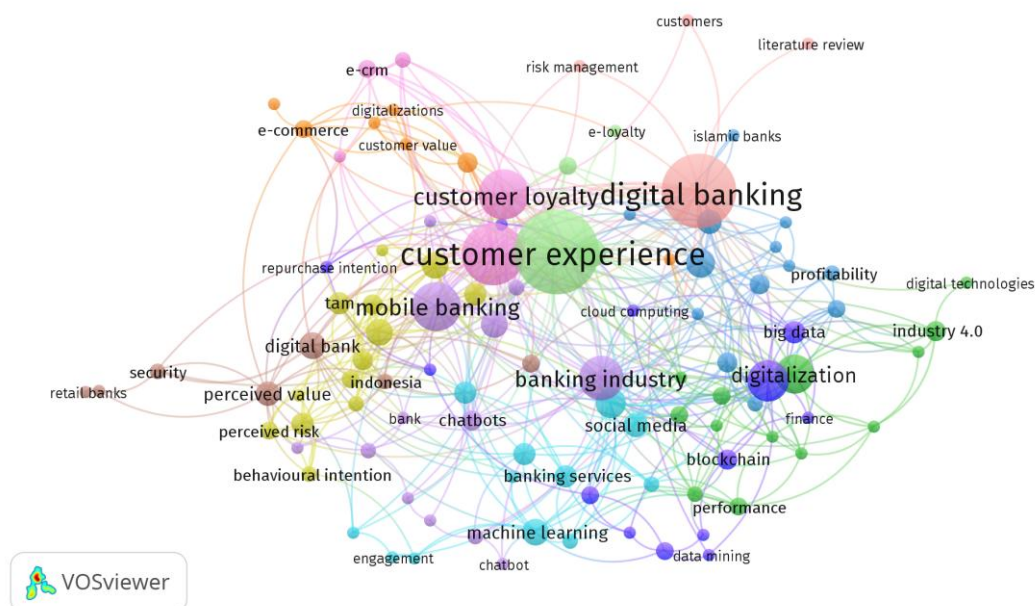


Figure 4: All keywords

Figures 3 and 4 provide a visual representation of the co-occurrence of all terms and the authors' keywords. The author's keywords from Figure 3 analysis showed that the terms "e-loyalty," "chatbot," and "customer value" had the lowest occurrences, while "customer experience," "mobile banking," and "internet banking" had the most occurrences. However, all keyword network analysis is also displayed in Figure 4, where the terms "digital

banking," "customer experience," "digitalization," "banking industry," and "mobile banking" were found to have the highest frequency of occurrences, while the terms "sustainability," "e-CRM," and "consumption behavior" had the lowest frequency. Moreover, important information that can be used to teach the fundamentals of digital banking use was found through an analysis of keywords.

### 3.5. Country-wise network analysis

Country	Documents	Citations	Total link strength
India	86	609	25
Indonesia	44	233	6
Saudi Arabia	27	347	23
Malaysia	22	85	15
Australia	18	170	8
United States	18	463	8
Iran	17	251	7
United Kingdom	17	356	11
Viet Nam	16	56	7
Germany	15	70	11

Table 2: Co-authorship of country

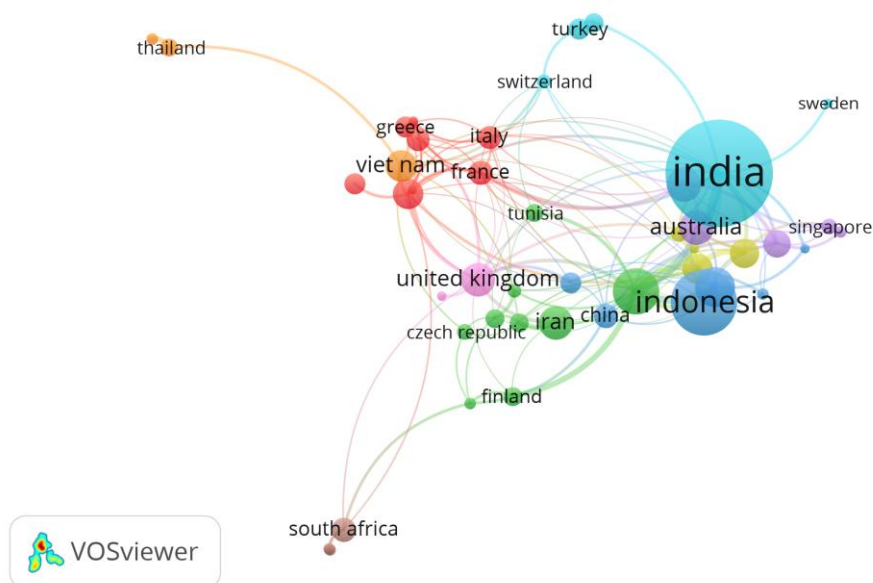


Figure 5: Country-wise network analysis

As shown in table 2, India registered the highest number of articles published at 86 publications. In addition, the second top number of articles were published by Indonesia followed by Saudi Arabia. Each of the six clusters includes countries that conduct research in a particular field or subfield of digital banking.

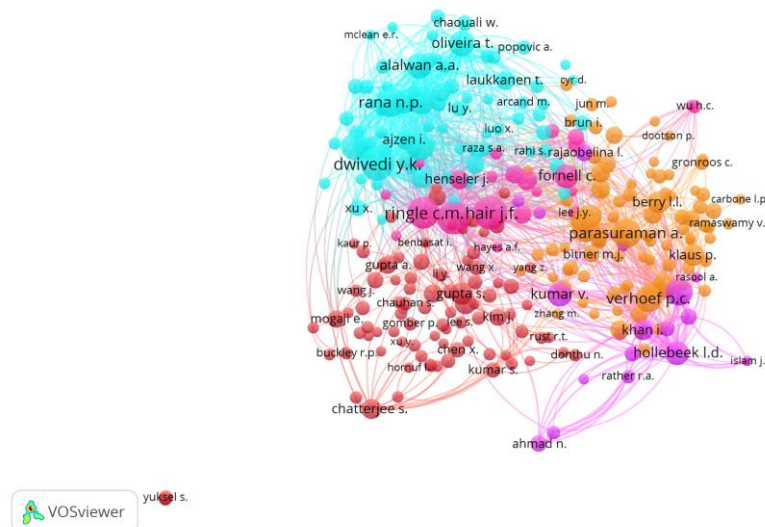
According to VOSviewer, the stronger the link between two countries, the closer they are to one another (Pesta et al., 2018; Nugroho and Hamsal, 2021). Stronger ties and similarities between the two nations are shown by thicker lines (Sindhu and Bharti, 2021). In our study, India had a strong connection with the 25 countries followed by Saudi Arabia and Malaysia which had 23 and 15 connections with other countries respectively. However, it was found that countries like Belgium, Bulgaria, Colombia, and Hungary had no connection with other countries.

### 3.6. Analysis on the basis of authors:

The top ten most productive Co-citation authors are included in Table 3 along with their connections.

Author	Citations	Total link strength
Hair J.F.	191	9896
Dwivedi Y.K.	188	12236
Sarstedt M.	178	9023
Ringle C.M.	170	8743
Rana N.P.	150	9644
Parasuraman A.	144	7059
Davis F.D.	141	6648
Karjaluoto H.	134	6953
Venkatesh V.	134	6872
Mbama C.I.	129	4707
Verhoef P.C.	125	6097
Rahman Z.	123	7402
Oliveira T.	114	6836
Alalwan A.A.	104	7171
Fornell C.	103	5413

**Table 3: Co-citation of authors**



**Figure 6: Co-citation of author's network analysis**

A co-citation network of writers is created when an author from two publications cites them in a third document (Baber and Fanea-Ivanovici, 2022; Ellegaard and Wallin, 2015). The most important co-citations in a study can be found using the 'cited authors' level of analysis (Galletta et al. 2022). The numerical information confirming this analysis can be found in Table 3.

Figure 6 illustrates the five main groups that were determined according to our own observations. Both cluster 1 (red) and, cluster 2 (orange) comprised 89 items each, cluster 3 (sky blue) consisted of 76 items, cluster 4 (pink) and cluster 5 (purple) comprised 22 items and 18 items, respectively. In addition, the top 2 cited authors of each cluster are listed below. Red cluster (Top authors: Gupta; Wang), orange cluster (Top authors:

Parasuraman; Mbama), sky blue cluster (Top authors: Ajzen; Dwivedi), pink cluster (Top authors: Sarstedt; Hair), and purple cluster (Top authors: Verhoef; Hollebeek).

#### 4. Findings and Discussions

As mentioned in the introduction, we undertook this study with five research questions. With regard to the first research question, our findings indicated that the research on digital banking has clearly increased during the study period. This considerable increase suggests that academic interest in the field of digital financial services is expanding. Attracted by the revolutionary possibilities of digital technologies, scholars have increasingly focused their investigations on the changing face of banking in the digital era.

To address our second research question, the most influenced papers with their indicators are displayed in Table 1. As per the highest citations, "Digital banking, customer experience, and bank financial performance: UK customers' perceptions" and "Impact of website attributes on customer engagement in banking: a solicitation of stimulus-organism-response theory" were identified as the most popular articles have been published in International Journal of Bank Marketing in the year of 2018 and 2020 respectively.

The finding regarding the third research question is that India leads as the most popular country according to the analysis of Table 2 and Figure 5. Additionally, from the co-citation analysis in Table 3 and Figure 6, the highest trending cited articles were published by Hair J.F.; Dwivedi Y.K. and Sarstedt M. which accounted for 198, 188, and 178 respectively.

Additionally, in addressing the fourth and fifth research questions, the result of keyword analysis suggested that, "customer experience," "mobile banking," "internet banking" and "customer satisfaction" were the most popular keywords, whereas the keywords such as "sustainability," "Chatbot", "e-CRM," and "consumption behavior" related to digital banking adoption were less frequently used.

## 5. Conclusions

Research on digital innovation in banking have been quite popular. As a basic component of digitization, the banking sector has been driven to enable technology-driven banking services, which raises new client needs. The present study is based on bibliometric analysis of e-banking with respect to customer experience. It is clear from the results of the bibliometric analysis that e-banking encompasses broader areas. Additionally, a faster trend in publication on this subject has been seen, with India holding a notable position in the publication of the top-referenced documents. In addition, the paper as a whole will provide relevant information for further research in this area.

While using the current bibliometric analysis technique, we did not use any additional databases; instead, we only used the published documents in the Scopus database. Furthermore, it limited its scope to the examination of digital resources, collections, and e-books through the application of the bibliometric analysis technique applied to published documents indexed in Scopus during the study period. In addition, the study has been limited to the extent of a few parameters of network analysis. Future studies could be done

by considering other network analyses like bibliometric coupling, co-citation, and co-occurrence of other parameters.

A bank's success in online banking is largely dependent on its customers' experience. While unfavorable encounters can drive away clients, favorable ones can increase client retention and loyalty. To satisfy consumer expectations and keep a competitive edge in the world of digital banking, banks must constantly enhance and modify their online banking offerings. One of the numerous aspects of contemporary banking services is the online banking experience for customers. Banks need to concentrate on user-friendly interfaces, strict security measures, personalization, quick customer service, transparency, ease, and feedback-driven improvement if they want to succeed in this digital environment. Banks may improve their competitiveness in the financial sector by giving priority to these factors and ensuring that their customers have a positive, efficient, and satisfying e-banking experience.

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## Exploring Risk Aversion: A Bibliometric Analysis of Trends and Research

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### Abstract:

Risk aversion is an essential concept that transcends most fields, such as economics, psychology, finance, and decision theory. This is a tendency of any individual, institution, or system to seek stability and to avoid risks by reducing exposure to uncertain or adverse outcomes. This has many implications for processes of decision-making, investment strategies, policy formulation, and behavioral economics. From the earlier times, the subject of risk aversion developed into many theoretical, empirical, and applied dimensions.

This growth of scholarly research on risk aversion, however, emphasizes the significance and complexity of this phenomenon. With advanced bibliometric tools now available, it is possible to analyze vast volumes of academic literature in a systematic manner and thus determine trends, influential works, and emerging areas of inquiry. The analysis of publication outputs, citation networks, and collaborations will thus present patterns in the field of research into risk aversion.

This study aims to provide an all-inclusive bibliometric analysis of the academic literature on risk aversion focusing on scholarly publication catalogued in the Scopus database. Through a review of key publications, prolific authors, impactful journals, and dominant themes, we try to map the intellectual landscape and highlight areas of high research activity and potential gaps. Such insights from this analysis aim to be helpful to scholars and to policymakers and practitioners within navigating the vast body of literature on risk aversion to identify future research possibilities.

**Keywords:** Risk Aversion, Bibliometric Analysis, Biblioshiny

### 1. Introduction:

The deviation from expected is termed as risk (Aren & Koten, 2019), this deviation can be either a positive or negative aspect. Risk-taking is the willingness to take a risk by focusing the positive aspects of deviation. Whereas risk aversion is the reluctance to accept risk by considering the negative deviation of the risk (Aren & Hamamci, 2023).

Risk aversion is to the tendency to avoid risk. The risk behavior of investors is highly associated with investors' investment intentions (Diaz & Esparcia, 2019). Risk aversion has a negative impact on the behavioural intention of the investors (Dinc & Aren, 2017).

This study aims to find the answers for the following questions:

- a) What is the current tendency of research publications on risk aversion?
- b) How the literature on the risk aversion evolved over time?
- c) Who are the most cited authors in the field of risk aversion?
- d) What are the most geographical contributions on the research on risk aversion?

Based on the above research questions, the aim of the paper is to analyse the current developments in the literature of risk aversion. This study aims to provide an all-inclusive bibliometric analysis of the academic literature on risk aversion focusing on scholarly publication catalogued in the Scopus database. Through a review of key publications, prolific authors, impactful journals, and dominant themes, we try to map the intellectual landscape and highlight areas of high research activity and potential gaps

The study is composed of the following sections. Section 2 discuss the review of the literature. This section is an overview of the existing research on risk aversion. It explores key theories, definitions, and perspectives from prior studies. The review identifies prominent authors, influential works, and significant themes in the field, as well as gaps in the literature that justify the need for the current bibliometric analysis.

Section 3 is about the research methodology. This section indicates the approach used to conduct the bibliometric analysis. It outlines the data sources (e.g., Scopus) the inclusion criteria for selecting research articles. Moreover, it specifies the bibliometric tools and techniques employed, such as citation analysis, co-authorship analysis, keyword analysis etc.

Next section indicates the results of the bibliometric analysis. It includes visualizations such as citation networks, keyword clusters, and publication trends over time. Key findings about the most influential authors, journals, and geographic contributions are also discussed.

This conclusion section highlights the key insights of the bibliometric study. The conclusion summarises the s contributions to understanding the evolution and scope of research on risk aversion. The next section addresses the constraints and limitations.

## **2. Literature review:**

The expected utility theory developed by von Neumann and Morgenstern in 1947 has provided the mathematical framework to analyze decision-making under uncertainty. Arrow in 1971 and Pratt in 1964 further developed this concept through measures of absolute and relative risk aversion, as the fundamental tools in modern risk analysis (Weber et al., 2002). Kahneman & Tversky, (1979) discussed psychological perspectives of risk aversion. They postulated that risk attitudes among individuals vary with respect to gains or losses. Falk et al., 2018 in his Global Preference Survey has studied the variation of

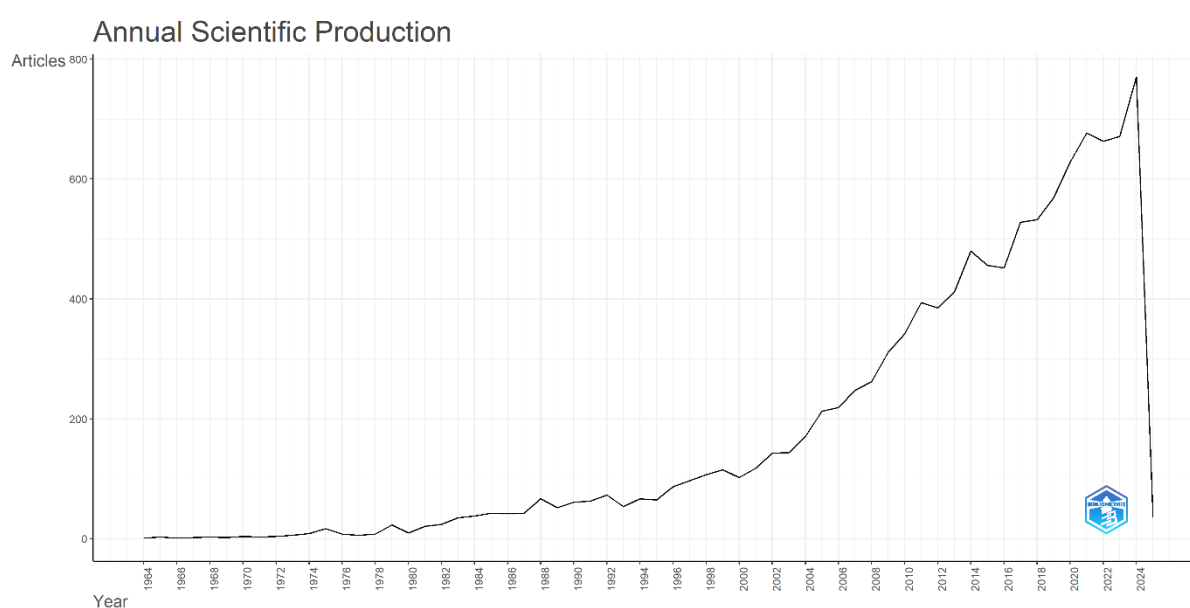
economic preferences around the world. They have verified the risk preferences across 76 countries. Gender differences in risk aversion have also been studied (Charness & Gneezy, 2012). Cochrane's (2001) has researched asset pricing that links risk aversion and market behavior.

Bibliometric studies have explored the financial applications of risk aversion concepts increased following the financial crisis of 2008 (Chen & Wang, 2019). Bibliometric analysis also depicted different trends in methodology to study the risk aversions. Harrison & Rutström (2008) were of the view that there had been a shift from being purely theoretical to experimentalism. Further, neuroeconomics introduced new methodological settings that brought together traditional models of economics with neuroscientific depth (Camerer et al., 2005). Wang et al. (2020) noted that there is a rising trend of integration of research in behavioral economics with computational methods. However, the greatest uses of risk aversion theory are environmental risk and climate change (Stern, 2014).

### 3. Research Methodology

The methodology of this study centered on a comprehensive bibliometric analysis to examine research trends in risk aversion literature. The study primarily drew data from the Scopus database, utilizing VOSviewer as the main bibliometric tool for data processing and visualization. The analytical framework encompassed multiple dimensions, including publication trends analysis from 1960 to 2024, citation analysis to measure research impact, geographic distribution of research contributions, author productivity assessment, source analysis through Bradford's Law, and keyword analysis to identify dominant research themes and emerging areas.

### 4. Analysis:

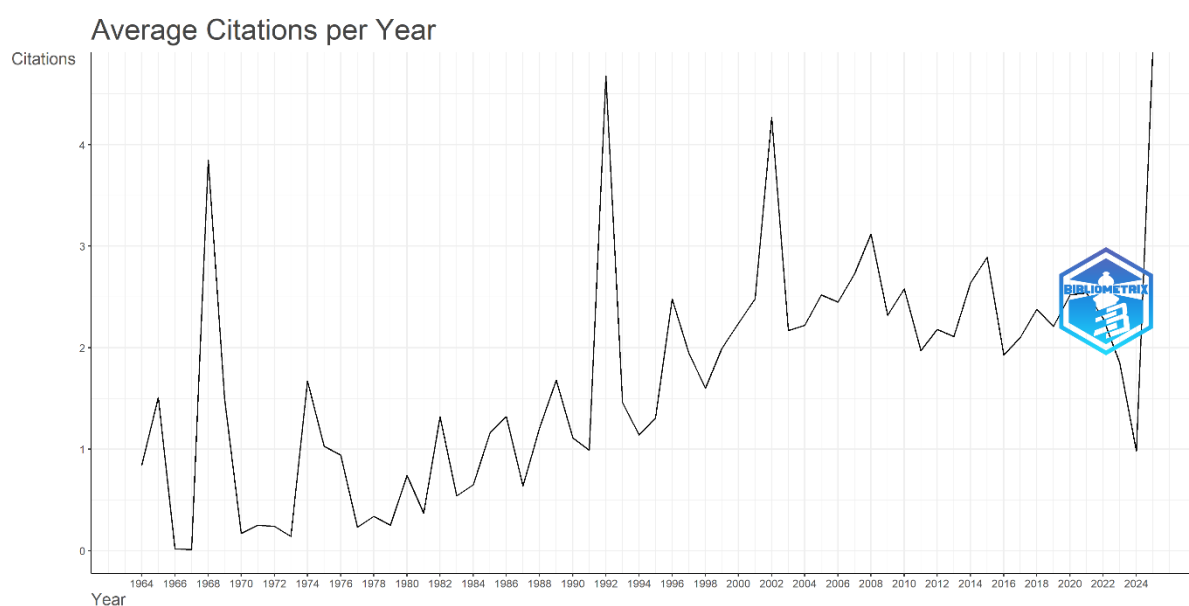


*Figure 1: Annual Scientific Production*

Figure 1 above illustrates the annual number of published articles over time, displaying notable trends. Between 1960 and 1990, growth in scientific output was steady but relatively modest, suggesting a period of consistent but slow-paced research activity. From 1990 to 2000, the rate of publication began to rise more noticeably, probably due to improvements in methodologies and funding.

A significant shift occurred after 2000, with scientific production accelerating rapidly. This exponential growth, peaking around 2022, may be attributed to the emergence of digital platforms that enable faster dissemination of research, increased global collaboration, and heightened interest in emerging fields like biotechnology, artificial intelligence, and environmental science. However, the graph also reveals a sharp decline in 2023-2024. This abrupt drop might result from incomplete data for recent years, as publication records often take time to be fully compiled. Alternatively, global disruptions such as economic challenges, pandemics, or geopolitical conflicts may have impacted research and publication activities.

Overall, the graph shows that there is a strong upward trend in scientific output over the decades, which reflects growing interest in knowledge creation and innovation globally. However, the sharp drop at the end calls for further investigation of its cause and proper interpretation of the data.



*Figure 2: Average Citations per year*

Figure 2 shows the trend in the average number of citations received by published articles over time. From 1964 to the late 1970s, the graph shows significant fluctuations, with notable peaks followed by sharp declines. These early variations could reflect the influence of a few highly cited articles in a relatively small body of scientific literature during that period.

Since the 1980s, the graph has shown a steadier increase with periodic spikes. These spikes could be attributed to the release of highly impactful studies or reviews that gained a lot of

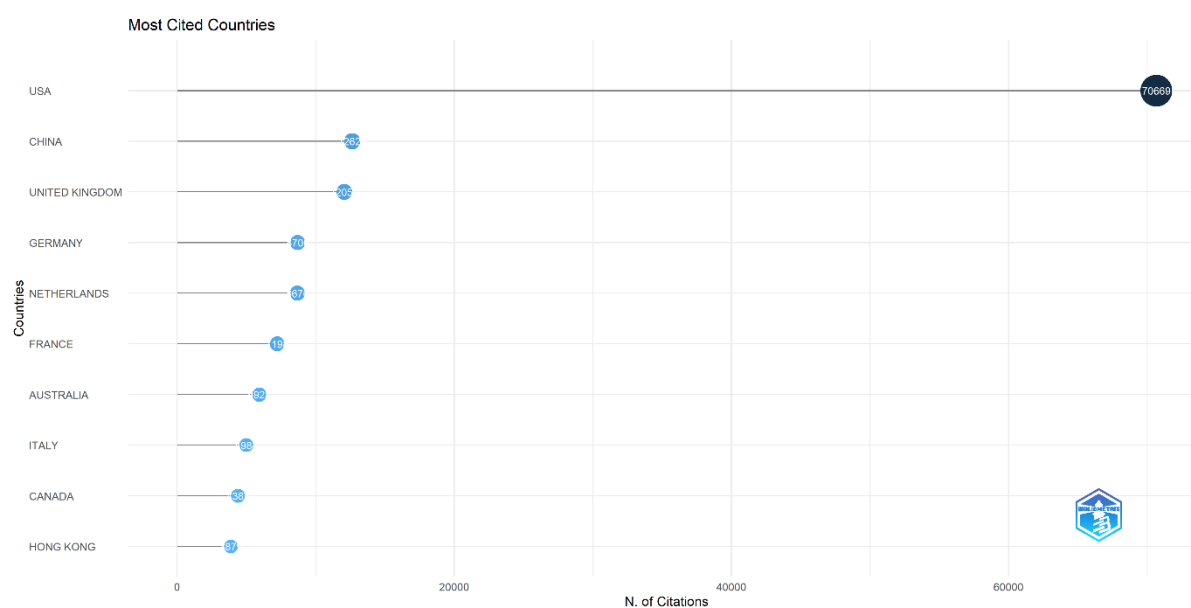


in line with Bradford's principle that a small group of sources accounts for a large portion of the significant literature in any given field.

After the initial steep drop, the curve transitions into a more gradual decline, forming what's often called the "plateau" region. This middle zone represents journals that are moderately productive in the field, publishing fewer articles than the core sources but still making meaningful contributions. The long tail that extends toward the right of the graph represents a large number of sources that each produce very few articles, eventually approaching zero.

This distribution pattern effectively validates Bradford's Law, which states that journals in a field can be divided into three groups: a core group of highly productive journals, a middle zone of moderately productive journals, and a larger group of journals with declining productivity. The logarithmic scale on the x-axis helps visualize this relationship clearly, showing how the number of sources increases exponentially as productivity decreases.

From a practical point of view, this visualization is very useful for librarians, researchers, and information scientists as it helps identify the most important sources in a field, optimize resource allocation, and understand the concentration of scholarly literature. It suggests that to cover a significant portion of important literature in a field, one needs to focus on a relatively small number of core sources while being aware that some relevant information might be scattered across many less productive sources.



*Figure 4: Most cited Countries*

Figure 4 shows a distinct hierarchy of academic citations among countries, and the USA is seen to be dominantly leading in the same. The USA leads with a huge margin of approximately 70,000 citations, which is three times more than its nearest competitor China. This significant lead shows the influence and contribution of the USA to global academic research and scholarly output.

China and the United Kingdom then follow as the second and third most cited countries respectively, with about 20,000 citations each. This ranking represents their serious

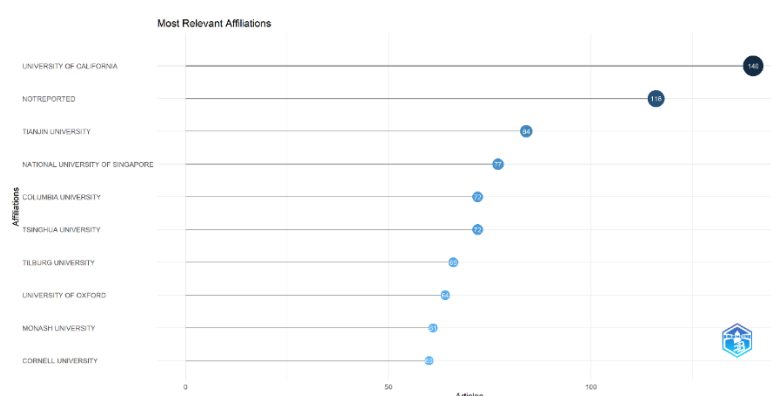


investment in research and development, as well as their rapidly increasing influence in the academic world. The relatively similar numbers between these two countries point to being competitive peers in terms of research impact.

Germany and the Netherlands complete the top five, with citation counts a bit lower than China and the UK but still impressive. Their strong showing reflects the healthy research environment in Western Europe and these countries' continued importance of these countries in global academic discourse. France and Australia come next, showing their solid presence among international research communities.

Italy, Canada, and Hong Kong are at the lower end of the top 10. They all have citation counts less than 15,000. Although their counts are smaller compared to the top nations, their presence on this list is still a significant achievement and influence in the research world. Hong Kong's appearance is also noteworthy as it is the only city-state or special administrative region on the list competing against whole nations.

Overall, the distributional pattern indicates a sharp descent from the US to the second tier, consisting of China and the UK, and subsequently a less sharp decline among other countries. This pattern supports the existence of a pyramidal structure in academic influence worldwide, with only one leading giant, just a few strong secondary members, and a larger secondary base of important but weaker research communities.

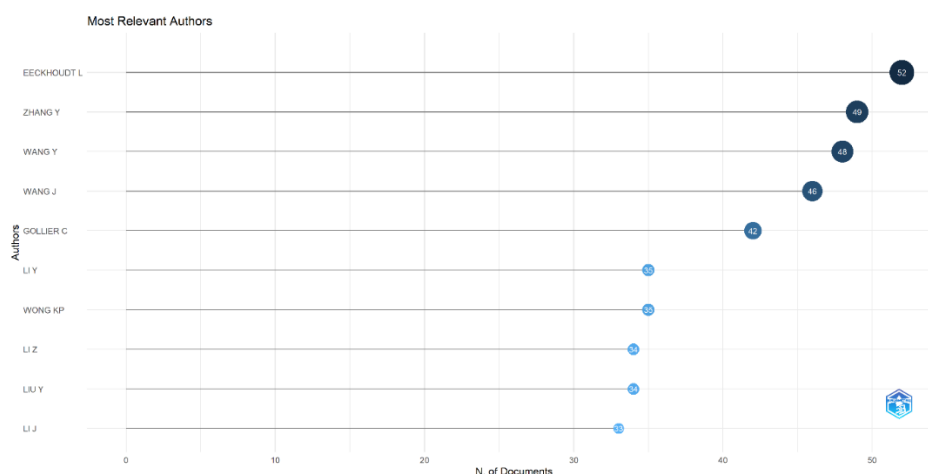


*Figure 5: Most relevant Affiliations*

Coming to the distribution pattern among the universities Figure 5 shows that The University of California leads the ranks with nearly 140 articles, thereby establishing its immense research output and academic influence in the discipline. This vast lead over other institutions points out that the university has a strong commitment towards research and stands at the pinnacle of being an academic power house. The second place is held by "NOTREPORTED" with about 114 articles, which further points out a huge number of publications where institutional affiliations were not correctly documented or even deliberately concealed. Down the ranks, Tianjin University comes in as a third most productive institution with a good 80 articles representing the presence of research from China. The National University of Singapore, Columbia University, and Tsinghua University, respectively, produce 70-75 articles, bringing in Asian institutions across multiple positions to reflect the growing clout of Asian academic institutes in global research.

The bottom half of the top 10 is comprised of Tilburg University and the University of Oxford, each with about 60 articles. Monash University and Cornell University close the list, each chipping in with about 50 articles. This distribution suggests a balanced mix of institutions from various continents - North America, Europe, Asia, and Oceania - indicating that academic research in this field is indeed global.

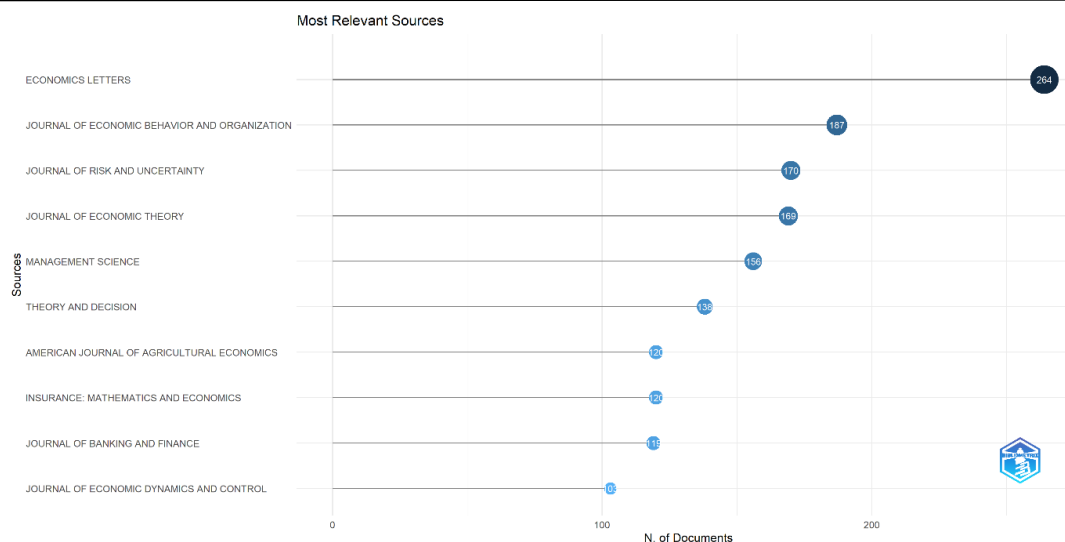
The overall pattern of distribution is relatively smooth, with a gradual decrease in article counts from top to bottom, unlike some academic metrics that show more dramatic differences between top and lower-ranked institutions. This would suggest a fairly competitive research landscape where multiple institutions are contributing significantly to the field, rather than it being dominated by just one or two institutions.



*Figure 6: Most Relevant Authors*

Figure 6 presenting author wise contributions. The figure shows Eeckhoudt L at the top with almost 52 documents, making them the most productive in this field. Then come Zhang Y and Wang Y with 49 and 48 documents, respectively, showing that they are highly productive research authors. The minimal difference among the top three authors means there is an ongoing competitive and active research environment at the highest level. Wang J has 46 documents, and Gollier C has about 42 documents. This close clustering of document counts between the top five authors shows a group of highly active researchers who have maintained consistent publication outputs. The presence of multiple authors with surnames common in Chinese (Zhang, Wang, Li) suggests significant contributions from Chinese researchers in this field. The second half of the top 10 published around 35 documents per person, with Li Y and Wong KP being productive. Li Z and Liu Y have also produced some 33 documents each, and the last person included in the list is Li J, who has approximately 32 documents. This shows a relatively gradual decline in productivity rather than a sharp drop-off in the difference between the highest and lowest number of documents in the top 10 list from 52 to 32.

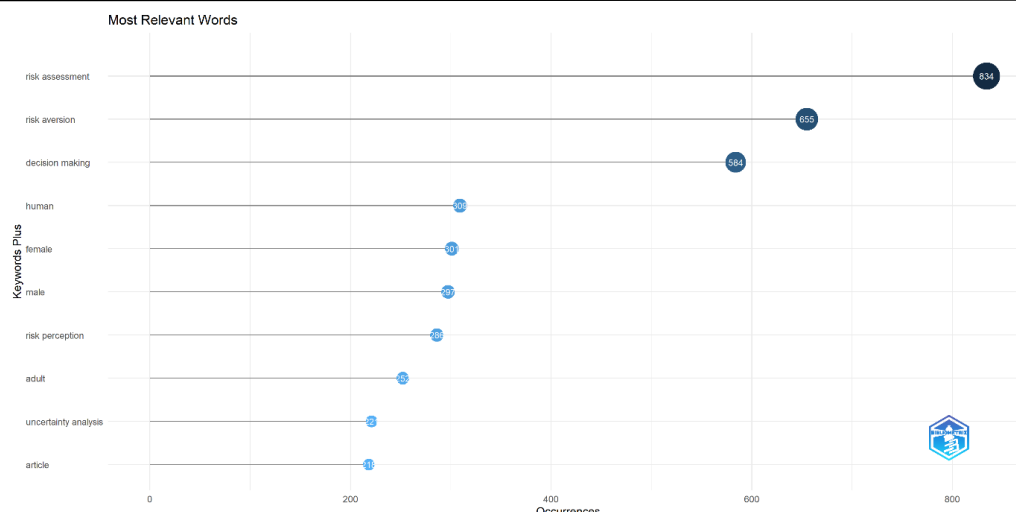
The distribution of document counts across the authors has been fairly linear, which infers a healthy competitive environment wherein multiple researchers are seriously working towards this field rather than being dominated by one single, highly productive author. Again, the same pattern also indicates to a mature research field, which is continuously supported by a number of established scholars that keep producing work.



*Figure 7: Most Relevant Sources*

Figure 7 shows Economics Letters stands out as the dominant publication source with approximately 264 documents, significantly ahead of its peers. This substantial lead suggests that Economics Letters serves as a primary outlet for research in this field, possibly due to its focus on concise, high-impact economic research communications and its rapid publication process. The Journal of Economic Behavior and Organization and the Journal of Risk and Uncertainty follow as the second and third most productive sources, with around 170 and 160 documents respectively. These numbers reflect their significant role in publishing research related to economic behavior and risk analysis. The Journal of Economic Theory and Management Science round out the top five, each publishing approximately 150 documents, demonstrating their substantial contribution to theoretical and management-focused research in the field.

Theory and Decision occupies the middle range with about 125 documents, followed by the American Journal of Agricultural Economics and Insurance: Mathematics and Economics, each publishing around 100 documents. This middle tier of journals shows the interdisciplinary nature of the field, spanning pure economics, agricultural economics, and mathematical approaches to insurance and risk. The Journal of Banking and Finance and the Journal of Economic Dynamics and Control complete the top 10, with approximately 80 and 70 documents respectively. While these journals have fewer publications in the field, their presence in the top 10 indicates the relevance of financial economics and dynamic economic modeling to the research area. The overall distribution shows a clear tiered structure: a leading journal, a cluster of high-volume publishers, and a gradual tapering of publication volumes. This pattern suggests a well-developed field with established publication venues, where certain journals have carved out specialized niches while maintaining significant publication volumes.



*Figure 8: Most Relevant words*

The Figure 8 shows that "risk assessment" is the most frequent term with around 834 occurrences, closely followed by "risk aversion" with almost 655 occurrences. The dominance of two terms in the frequency table implies that the literature intensively focuses on evaluating and understanding risk-related behaviors as well as methodologies. The large lead over these terms suggests that a great deal of importance goes to the theoretical and applied frameworks of the field itself. "Decision making" is the third most frequently occurring term with about 550 instances, which reflects a very strong link between risk analysis and decision-making processes in the literature. There is a clear gap between these top three terms and the rest of the keywords, which indicates that these concepts are the core focus of research in this field. The middle range of the frequency distribution contains demographic descriptors such as "human," "female," and "male," which all occur roughly 300 times. This pattern indicates strong emphasis on human subjects and gender-based analysis in the research. The similar frequency of gender-related terms further suggests balanced attention to gender considerations in the studies. The lower part of the top 10 includes "risk perception," "adult," "uncertainty analysis," and "article," each appearing around 200-250 times. These terms reflect the methodological aspects of the research, with particular attention to how risks are perceived and analyzed, especially among adult populations. The presence of "uncertainty analysis" in the frequently used terms underscores the field's concern with managing and understanding uncertainty in various contexts. This distribution of terms thus describes a field that is heavily focused on the aspects of risk assessment and decision-making, with strong consideration to human factors and demographic variables, yet strong in methodological and analytical frameworks.



Figure 9: Word Cloud

The word cloud visualization displayed in Figure 9 above seems to be centered on the important themes of risk assessment and decision-making in different contexts. In the visualization, the most prominent terms seem to be "risk assessment," "risk aversion," and "decision-making," which might be suggesting that these are the center concepts being examined. The cloud reveals several important interconnected themes. Firstly, there is a heavy business and economic focus as indicated by terms such as "commerce," "sales," "investments," and "costs." This suggests the analysis might be particularly relevant to contexts involving business decision-making. Second, there is the human element represented through terms such as "human," "male," "female," and "adult," suggesting that the study likely examines how different demographic groups approach risk and decision-making. The presence of technical words like "numerical model," "stochastic systems," and "probability" suggests the analysis of risk is taken in a quantitative or mathematical approach. Terms such as "theoretical study" and "optimization" further support that it pertains to an academic or research-based application. Some other terms, such as "climate change" and "supply chains," represent environmental and modern issues, implying that the paper accounts for current global issues. "Uncertainty analysis" and "risk management" point to the paper's relevance to real-world applications and strategies in dealing with uncertain factors in decision-making. The word cloud represents a wide variety of terms, indicating that risk assessment and decision making are under the observation of various lenses, ranging from theoretical framework to practical application, as well as from individual behavior to organizational strategy. A multifaceted approach therefore reflects the complexity of assessing risk in modern contexts wherein decisions must account for a great deal of factors such as human behavior, economic consideration, and systemic uncertainties.

## 5. Conclusion

The study's findings reveal significant insights into the evolution and current state of risk aversion research. Economics Letters stands as the primary publication venue with 264 documents, underlining its crucial role in disseminating risk aversion research. The field demonstrates strong interdisciplinary characteristics, incorporating elements from economics, psychology, finance, and decision theory, as evidenced by diverse keyword patterns. Additionally, the research shows balanced distribution across demographic variables, with similar attention given to gender-based analyses.

## 6. Limitations

The exclusive use of the Scopus database may have excluded relevant publications indexed elsewhere, potentially limiting the analysis's comprehensiveness. Sharp fluctuations in recent years (2023-2024) may not accurately reflect research trends due to publication lag and incomplete data indexing. The analysis may favor English-language publications, potentially underrepresenting contributions from non-English speaking regions. The use of raw citation counts might not fully capture the qualitative impact of research, as citations can be influenced by factors beyond research quality. The interdisciplinary nature of risk aversion research may have resulted in some relevant publications being missed due to varying classification systems across different fields. These limitations suggest opportunities for future research to employ more comprehensive databases, alternative metrics, and refined methodological approaches to better understand the evolution of risk aversion research.

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## Digital Evolution: A Critical Analysis of Challenges and Opportunities in Enhancing E-Logistics for Supply Chains

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### ABSTRACT

As global industries embrace digital transformation, supply chains are at the forefront of this evolution, transitioning towards efficient E-Logistics systems. This paper conducts a comprehensive analysis, delving into the critical challenges faced and the myriad opportunities available in the realm of digital E-Logistics for supply chains. The investigation navigates through the intricacies of technological advancements, examining the hurdles that organizations encounter while implementing digital solutions. Moreover, it sheds light on the opportunities that arise from embracing this digital evolution. The paper critically evaluates strategies and solutions to enhance E-Logistics, aiming to provide valuable insights for organizations seeking to optimize their supply chain management in the digital age. This research contributes to the understanding of the transformative journey toward digital excellence in supply chain logistics.

**Keywords:** *E-Logistics, Supply chain management, Challenges and Opportunities, Digital Evolution*

### 1. INTRODUCTION

E-logistics, short for electronic logistics, refers to the process of managing and coordinating the flow of goods, information, and funds using electronic means such as computers, the internet, and other digital technologies. It encompasses various activities within the supply chain, including procurement, transportation, warehousing, distribution, and delivery, all of which are facilitated and optimized through electronic systems and communication channels. Digital evolution refers to the process of continuous change and development of digital technologies, systems, and practices over time. It encompasses the ongoing transformation and advancement of digital tools, methods, and strategies, driven by technological innovations and changing user needs. Digital evolution in e-logistics refers to the transformation and advancement of logistics processes through digital technologies. This evolution has significantly impacted the efficiency, transparency, and effectiveness of logistics operations.

E-logistics leverages technology to streamline operations, increase efficiency, enhance visibility, and reduce costs associated with traditional logistics processes. Key components of e-logistics include electronic data interchange (EDI), inventory management systems, transportation management systems (TMS), warehouse management systems (WMS), and tracking and tracing technologies. By digitizing and automating logistical processes, e-logistics enables organizations to respond more rapidly to changing market demands, improve customer service, minimize errors, and achieve greater overall competitiveness in today's global marketplace.

### **1.1 IMPORTANCE OF E-LOGISTICS**

E-logistics enables the automation and optimization of various logistical processes, such as order processing, inventory management, transportation scheduling, and warehouse operations. This leads to increased efficiency and productivity throughout the supply chain. Electronic systems provide real-time visibility into inventory levels, shipment statuses, and other critical logistics data. This visibility allows supply chain stakeholders to make informed decisions, anticipate potential disruptions, and proactively address issues before they escalate. E-logistics platforms enhance the customer experience by offering features such as real-time tracking, accurate delivery estimates, and flexible delivery options. Customers expect transparency and convenience when shopping online, and digital solutions can help businesses meet these expectations, leading to higher satisfaction and loyalty. Digital technologies enable e-logistics providers to scale their operations more easily to accommodate growing demand. Cloud-based systems can handle increased volumes of orders and shipments without the need for significant infrastructure investments, allowing companies to expand their reach and serve more customers efficiently. By streamlining operations, minimizing manual interventions, and optimizing resource utilization, e-logistics helps reduce costs associated with inventory holding, transportation, warehousing, and order fulfilment. Additionally, improved efficiency and visibility can lead to lower inventory carrying costs and reduced stockouts. E-logistics contributes to enhanced customer satisfaction by improving order accuracy, reducing delivery times, and providing greater visibility into the status of orders and shipments. Satisfied customers are more likely to remain loyal and repeat their purchases, thereby driving revenue and profitability.

### **1.2 EVOLUTION OF LOGISTICS**

The evolution and rise of digital technologies have significantly transformed the logistics industry, leading to the emergence of digital evolution methods. The evolution and rise of logistics have been integral to the advancement of global commerce and supply chain management. Over the years, logistics has transformed from a basic transportation and storage function to a sophisticated, technology-driven discipline. The evolution can be traced back to the industrial revolution when the need for efficient movement of goods became apparent. As industries expanded, so did the complexity of logistics, leading to the development of organized transportation systems and distribution networks.

In the late 20th century, the advent of information technology further revolutionized logistics, enabling real-time tracking, inventory management, and streamlined communication across the supply chain. The rise of e-commerce in the 21st century has accelerated the evolution of logistics, demanding faster and more flexible solutions to meet the growing demands of online retail. Today, artificial intelligence, automation, and data analytics play a crucial role in optimizing logistics processes, ensuring timely delivery, reducing costs, and enhancing overall efficiency.

The evolution and rise of logistics reflect a continuous adaptation to technological advancements and changing market dynamics, underscoring its pivotal role in the modern interconnected global economy. The logistics industry has historically been quick to adopt new technologies to improve efficiency and reduce costs. Early innovations, such as barcode scanning and electronic data interchange (EDI), laid the foundation for digitalization in logistics.

Further, the development and implementation of warehouse management systems revolutionized how warehouses are managed and operated. Warehouse Management Systems (WMS) software optimizes inventory storage, picking, packing, and shipping processes, leading to improved efficiency and accuracy in warehouse operations. Automation and robotics technologies are increasingly being deployed in logistics operations, especially in warehouses and distribution centres. Automated guided vehicles (AGVs), robotic arms, and automated sorting systems improve efficiency, accuracy, and throughput in logistics processes. AI and ML technologies are being applied to various aspects of logistics, including demand forecasting, inventory optimization, predictive maintenance, and route planning. These technologies enable logistics companies to make data-driven decisions and continuously improve their operations.

### **1.3 GAP IN UNDERSTANDING CHALLENGES AND OPPORTUNITIES IN DIGITAL EVOLUTION FOR E-LOGISTICS**

#### **1.3.1 CHALLENGES: -**

Ensuring the quality and consistency of data across various systems and platforms can be challenging. Integrating data from disparate sources and formats requires robust data management practices and may involve overcoming technical barriers. With the increasing reliance on digital systems and the exchange of sensitive information, cybersecurity threats become a significant concern. Protecting data integrity, confidentiality, and availability is crucial to maintaining trust and mitigating risks.

The rapid pace of technological innovation in e-logistics introduces complexity, especially for organizations with limited technical expertise or resources. Keeping up with the latest technologies and determining which solutions best fit specific business needs can be daunting. Deploying digital evolution solutions often requires significant upfront investments in technology infrastructure, software licenses, and staff training. The cost of implementation and maintenance may pose challenges for small and medium-sized logistics providers.

### 1.3.2 OPPORTUNITIES

Digital evolution enables real-time tracking and monitoring of shipments, inventory levels, and logistics processes. Improved visibility enhances decision-making, fosters

collaboration among supply chain partners, and enhances customer service. Automation, optimization, and predictive analytics capabilities provided by digital evolution solutions improve operational efficiency in e-logistics.

Digital evolution makes it possible for logistics companies to offer personalized, responsive, and transparent services to customers. Enhanced communication, accurate order tracking, and flexible delivery options contribute to an exceptional customer experience. Digital evolution fosters innovation in e-logistics by enabling the development of novel solutions and business models. Technologies such as IoT, AI, blockchain, and robotics open up new opportunities for differentiation and competitive advantage. Digital evolution harnesses the power of data analytics to derive actionable insights from vast amounts of data. Data-driven decision-making enables logistics companies to optimize routes, inventory levels, and resource allocation, leading to better business outcomes.

### 1.4. IMPACT OF DIGITAL EVOLUTION ON E- LOGISTICS

- I. It is an interesting proposition to: Investigate how digital evolution tools and technologies enhance efficiency across different stages of the logistics process, such as order processing, inventory management, transportation, and warehousing.
- II. Analyse quantitative metrics such as lead times, order accuracy, and resource utilization to quantify the efficiency gains achieved through digital evolution.
- III. Examine the cost implications of implementing digital evolution solutions in e-logistics.

One significant contribution is the advent of advanced tracking and tracing systems, enabled by technologies like RFID (Radio-Frequency Identification) and GPS (Global Positioning System). These technologies allow for precise monitoring of shipments, providing real-time data on the location and condition of goods. This increased visibility helps in minimizing delays, reducing losses, and enhancing overall supply chain reliability.

Automation, optimization, and data-driven decision-making contribute to cost savings in areas such as inventory holding, transportation, labour, and overhead expenses. Moreover, cloud computing and data analytics have revolutionized decision-making processes in e-logistics. Companies can now leverage vast amounts of data to optimize routes, forecast demand, and manage inventory efficiently. Predictive analytics helps in anticipating potential issues, enabling proactive problem-solving and preventing disruptions in the supply chain. E-logistics has also been greatly influenced by the rise of e-commerce platforms. The digital evolution has facilitated seamless integration between online marketplaces, retailers, and logistics providers. This integration has resulted in more responsive and customer-centric logistics solutions, including features like real-time tracking, flexible delivery options, and enhanced customer communication. Automation

and robotics have further impacted e-logistics by improving warehouse efficiency and order fulfilment. Automated sorting systems, robotic pickers, and autonomous vehicles contribute to faster and more accurate order processing, reducing human error and operational costs. Digital evolution enhances the agility and resilience of e-logistics operations. Investigate how digital technologies enable rapid adaptation to changing market conditions, demand fluctuations, and supply chain disruptions. Examine case studies and examples of organizations that have effectively leveraged digital evolution to mitigate risks and maintain business continuity. In addition, the digital evolution has given rise to innovative delivery solutions, such as drones and autonomous vehicles. These technologies have the potential to revolutionize last-mile delivery, making it more efficient, cost-effective, and environmentally sustainable. Overall, the digital evolution in e-logistics has not only optimized existing processes but has also paved the way for novel solutions and business models. Embracing digital technologies is now crucial for staying competitive in the dynamic landscape of logistics, ensuring speed, accuracy, and adaptability in meeting the ever-growing demands of modern commerce.

#### **1.4.1 CHALLENGES IN DIGITAL EVOLUTION**

In e-logistics, a vast amount of sensitive data is generated and exchanged among various stakeholders, including customer information, shipment details, and financial transactions. Compliance with data protection regulations such as GDPR (General Data Protection Regulation) and CCPA (California Consumer Privacy Act) adds complexity and potential legal liabilities. The digital evolution, while promising numerous benefits and advancements, is accompanied by a set of challenges that organizations must navigate.

Cybersecurity concerns loom large as increased reliance on digital platforms exposes businesses to potential data breaches, ransomware attacks, and other cyber threats. Safeguarding sensitive information and ensuring the integrity of digital systems become critical imperatives in this landscape.

Additionally, the rapid pace of technological change poses a challenge in terms of keeping up with the latest advancements and integrating new technologies seamlessly. The digital divide, both within and between nations, represents another challenge, as disparities in access to technology and digital skills can exacerbate social and economic inequalities. Privacy issues arise with the collection and utilization of vast amounts of personal data, leading to debates about ethical practices and the need for robust regulations. Furthermore, the potential job displacement due to automation and artificial intelligence introduces socio-economic challenges, necessitating a careful balance between technological progress and its impact on the workforce. Overall, addressing these challenges is crucial to realizing the full potential of the digital evolution while mitigating its associated risks.

Integrating new digital evolution tools with existing systems can be challenging, requiring significant time, resources, and technical expertise. Legacy systems may lack standardized interfaces and APIs (Application Programming Interfaces), making seamless integration more difficult and prone to errors.

Implementing digital evolution initiatives often requires organizational change and shifts in workflow processes. Resistance to change from employees, managers, and other stakeholders can impede the adoption and success of digital evolution projects.

The upfront costs associated with implementing digital evolution solutions, including software licenses, hardware infrastructure, and training expenses, can be substantial. For small and medium-sized logistics companies with limited budgets, these high initial costs may serve as a barrier to adoption. ROI (Return on Investment) realization may take time, and financial uncertainties may deter organizations from committing to digital evolution investments.

#### **1.4.2 OPPORTUNITIES IN DIGITAL EVOLUTION**

Digital evolution enables real-time tracking and monitoring of shipments, inventory levels, and logistics processes. Enhanced visibility into the supply chain allows stakeholders to quickly identify and address issues such as delays, disruptions, and inventory shortages. Real-time tracking improves decision-making, reduces lead times, and enhances customer service by providing accurate and up-to-date information on shipment statuses and delivery ETAs (Estimated Time of Arrival).

Digital evolution leverages predictive analytics models to forecast future demand based on historical data, market trends, and external factors. Accurate demand forecasting enables logistics companies to optimize inventory levels, minimize stockouts, and reduce excess inventory holding costs. Predictive analytics also helps anticipate changes in customer demand, allowing organizations to adjust supply chain operations proactively and allocate resources more effectively.

Automation plays a crucial role in streamlining logistics processes and improving operational efficiency. Digital evolution solutions automate routine tasks such as order processing, inventory replenishment, and shipment scheduling, reducing manual errors and freeing up human resources for more strategic activities. Automation of processes leads to faster order fulfilment, shorter lead times, and lower operational costs, contributing to overall supply chain efficiency and competitiveness. The digital evolution has ushered in a myriad of opportunities across various industries, reshaping the way businesses operate and create value. One significant opportunity lies in data-driven decision-making, where organizations can harness the power of big data and analytics to gain actionable insights. This enables businesses to optimize operations, enhance customer experiences, and identify new market trends. Another area of opportunity is the rise of artificial intelligence (AI) and machine learning, which can automate routine tasks, improve efficiency, and enable more personalized services. The expansion of the Internet of Things (IoT) presents opportunities for connectivity and real-time monitoring, particularly in sectors like healthcare, manufacturing, and logistics. Cloud computing offers scalable and cost-effective solutions for storage and processing needs, empowering businesses to scale rapidly and innovate without heavy infrastructure investments. E-commerce and digital platforms provide new avenues for reaching global markets, creating opportunities for businesses to expand their customer base and increase revenue streams. Cybersecurity and digital identity solutions



are also emerging as crucial opportunities to safeguard sensitive information in an increasingly interconnected world. Overall, the digital evolution opens doors for innovation, efficiency improvements, and novel business models, providing organizations with the tools to thrive in an ever-evolving digital landscape.

Digital evolution facilitates seamless communication and collaboration among supply chain partners, including suppliers, manufacturers, distributors, and customers. Cloud-based platforms and collaboration tools enable real-time sharing of information, documents, and data analytics insights, fostering closer relationships and tighter integration across the supply chain network. Improved collaboration leads to better coordination, faster problem resolution, and greater agility in responding to changes in market demand or supply chain disruptions. Embracing these opportunities in digital evolution enables logistics companies to gain a competitive edge by enhancing operational efficiency, optimizing inventory management, and delivering superior customer experiences. By leveraging real-time tracking, predictive analytics, automation, and collaborative technologies, organizations can adapt to dynamic market conditions, mitigate risks, and drive sustainable growth in the e-logistics sector.

## 2. LITERATURE REVIEW

For the purpose of this research we are presenting a literature review as follows. R. Soliani (2023) analysis the crucial components of success for companies operating in the retail industry and focuses on identifying challenges, opportunities, strategies and solutions in logistics management in e-commerce. Javier Turienzo, (2023) focuses on transforming the business model by increasing digitalization of the economy and the emergence of technological systems. Jake Alimahomed Wilson (2022). signifies the importance of e-logistics revolution, and describes how it is driven by Amazons agenda setting supply chain management practices, which have reshaped the global logistics industry. Alexander Tsipoulanis, discusses the importance and the impact of digital technology on the transformation of supply chain management, through an examination of potential use cases and implementation of strategies and under a methodological framework related to supply chain operation reference (SCOR) Model, which is connected to the principles of lean thinking. R. T, Tazhiyev, etc. considers the positive and negative sides and difficulties in transport and Logistics Company during digital technology implementation in their activities. A qualitative research method is used to identify the positive side and negative side of digital technologies.

## 3. OBJECTIVES OF THE STUDY

**3.1 Objective 1: Identify to Challenges in Implementing Digital Evolution in E-Logistics:** Investigate the current state of digital evolution adoption in e-logistics. Identify technical, organizational, regulatory, and cultural challenges hindering the implementation of digital evolution. Explore barriers related to data quality, integration, cybersecurity, technological complexity, and change management. Assess the impact of these challenges on logistics operations, cost structures, and customer satisfaction. Propose strategies and recommendations for overcoming identified challenges and facilitating successful implementation.



### 3.2 Objectives 2: To explore exploring Opportunities for Improving Supply Chain Efficiency through Digital Evolution:

Evaluate the potential benefits of digital evolution in enhancing supply chain efficiency. Investigate how digital evolution can optimize various aspects of supply chain operations, including procurement, transportation, warehousing, and last-mile delivery. Identify key success factors and critical enablers for realizing the full potential of digital evolution in e-logistics. By addressing these objectives, the study aims to provide valuable insights into the challenges, opportunities, and strategies for implementing the digital evolution in e-logistics, ultimately contributing to the advancement and optimization of supply chain management practices.

## 4. RESEARCH METHODOLOGY

We have done a survey by preparing a questionnaire with some impactful questions which was designed using a 1 to 5 Likert scale. This questionnaire was also intended to gather data on challenges and opportunities faced by companies like FLIPKART, DTDC, BLUEDART etc in implementing digital evolution in e-logistics, utilizing a combination of quantitative and qualitative methods. Seventy four respondents were asked to rate their agreement with each statement on a scale of 1 to 5.

### 4.1 RESEARCH DESIGN

The research design for this study was primarily quantitative. However, since we also aimed to collect qualitative data on challenges and opportunities, our analysis employed more of a mixed-methods approach.

Research Questionnaire on Digital Evolution in E-Logistics

Implementation Challenges

**R<sub>1</sub>:** The company faces challenges related to data security and privacy in implementing digital evolution in e-logistics.

**R<sub>2</sub>:** The company perceives high initial implementation costs as a challenge in adopting digital evolution for e-logistics.

**Opportunities and Benefits**

**R<sub>3</sub>:** Digital evolution has improved real-time tracking and visibility in the company's e-logistics operations

**R<sub>4</sub>:** The use of digital evolution has enhanced predictive analytics for demand forecasting in the company.

Overall Satisfaction

**R<sub>5</sub>:** Overall, the company is satisfied with the impact of digital evolution on its e-logistics operations.

**R<sub>6</sub>:** What are your thoughts on the future of e-logistics in India, and how is Flipkart preparing for it?

## 4.2 SAMPLE SELECTION

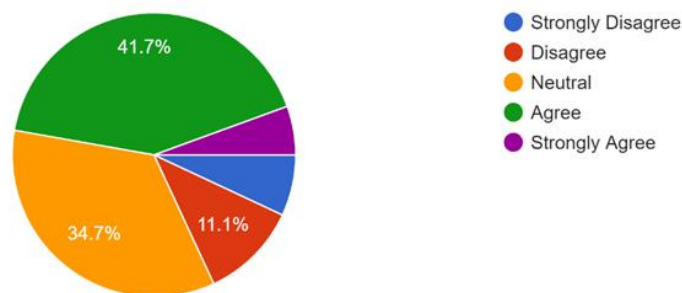
We collected answers from sample size of 74 where the respondents were from companies like FLIPKART, DTDC, BLUEDART etc, which have implemented e-logistics in their supply chain management systems. The selection was based on factors like industry sector, company size, geographic location, etc. Since we wanted to ensure diversity in our sample to capture a broad range of perspectives. The responses to the questionnaire were collected online. The survey questions as shown in 4.1 are focused on quantifiable aspects such as the effectiveness of digital evolution systems, the frequency of challenges encountered, the extent of opportunities identified, etc.

To gather qualitative data on challenges and opportunities we have designed some semi-structured open-ended survey questions. These questions can delve deeper into specific issues and were meant to allow respondents to provide detailed insights into their experiences with digital evolution in e-logistics.

## 5. DATA ANALYSIS

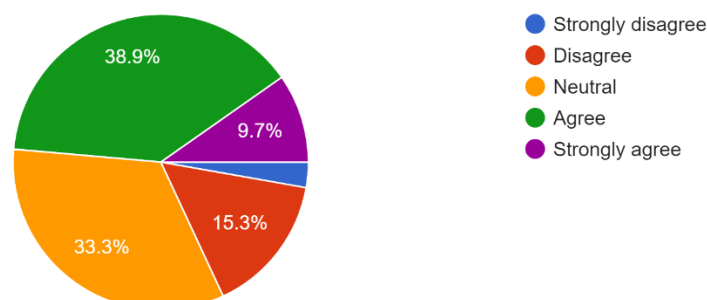
Integrating digital evaluation with existing legacy systems is a significant hurdle for the company.

72 responses



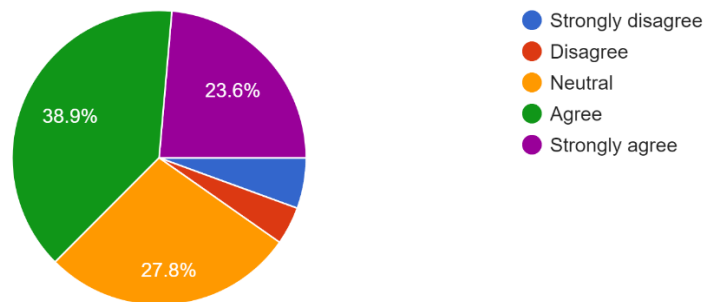
The company perceives high initial implementation costs as a challenge in adopting digital evaluation for e-logistics.

72 responses



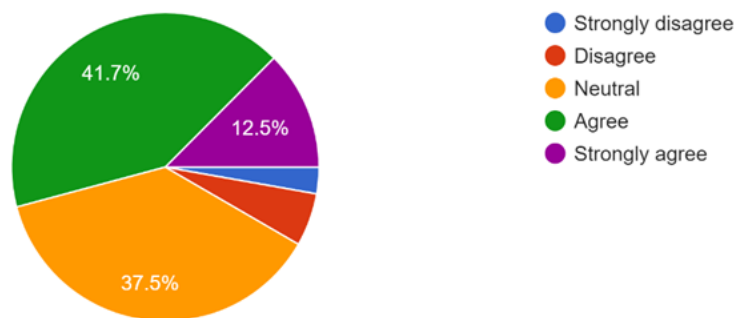
Digital evaluation has improved real-time tracking and visibility in the company's e-logistics operations

72 responses



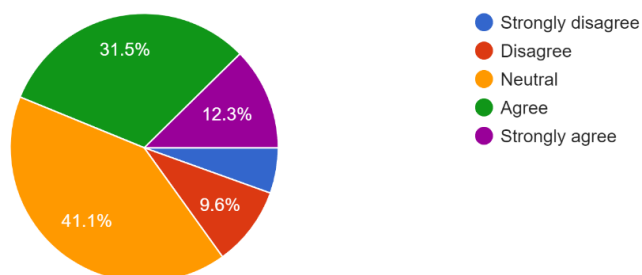
The company faces challenges related to data security and privacy in implementing digital evaluation in e-logistics.

72 responses



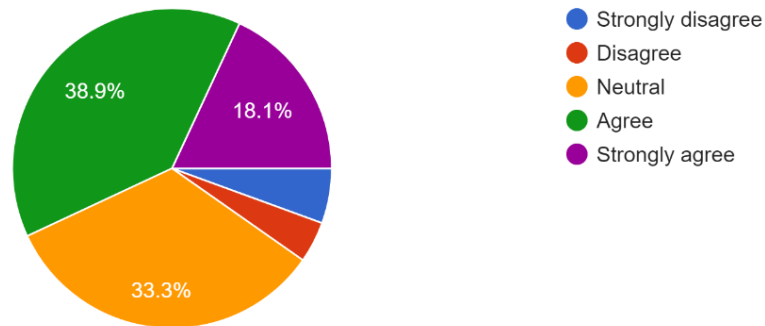
There is resistance to change among stakeholders during the implementation of digital evaluation in e-logistics.

73 responses



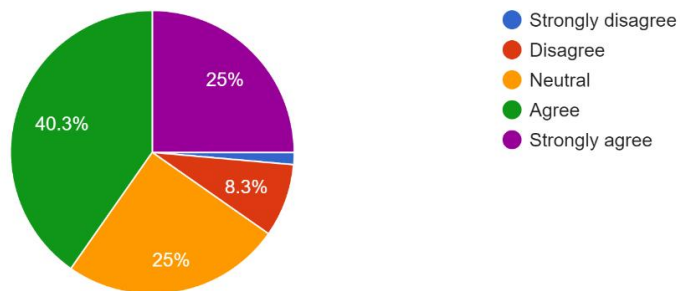
Overall, the company is satisfied with the impact of digital evaluation on its e-logistics operations.

72 responses



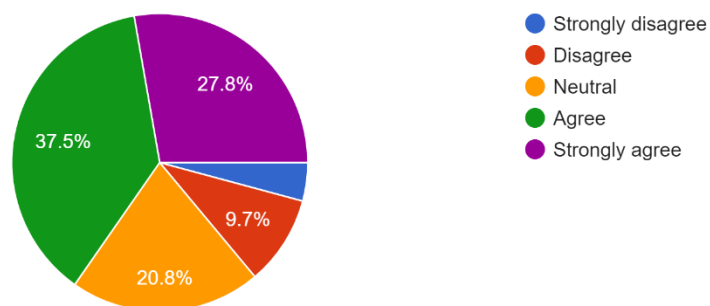
Digital evaluation has facilitated improved collaboration within the supply chain in the company.

72 responses



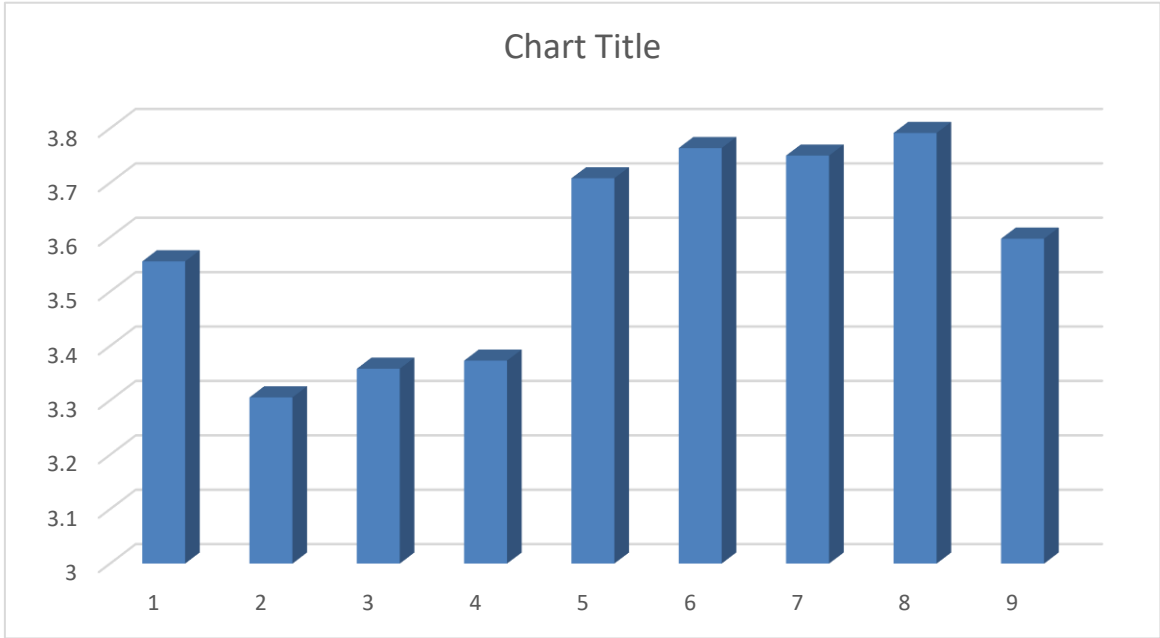
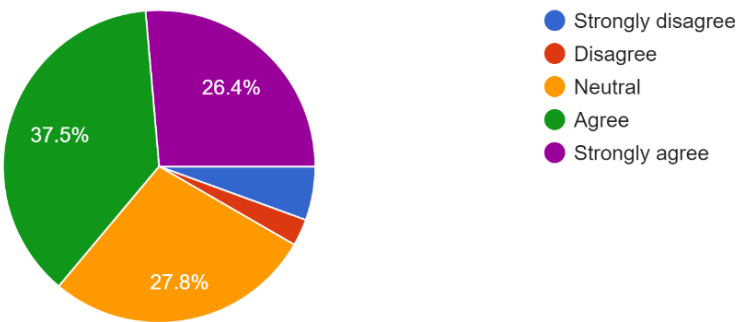
Automation of processes through digital evaluation has led to increased efficiency in the company's e-logistics.

72 responses



The use of digital evaluation has enhanced predictive analytics for demand forecasting in the company.

72 responses



## 6. FINDINGS

- I. **Data Security and Privacy Challenges:** A substantial portion of respondents (54.2%) express concerns or disagreement regarding the implementation of digital evaluation in e-logistics in relation to data security and privacy. Specifically, 72.2% are either neutral, disagree, or strongly disagree, indicating a noteworthy apprehension within the company.
  - II. **Integration with Legacy Systems:** Over half of the respondents (52.8%) find integrating digital evaluation with existing legacy systems to be a significant hurdle. The neutral stance from 34.7% of respondents suggests that a considerable portion remains undecided or is cautious about this integration challenge.
  - III. **Resistance to Change:** A majority of respondents (72.2%) acknowledge resistance to change during the implementation of digital evaluation in e-logistics. The combined percentage of those who disagree or strongly disagree (22.2%) implies that a significant portion of stakeholders may be resistant to the digital transformation.
  - IV. **High Initial Implementation Costs:** While a substantial portion (48.6%) acknowledges the challenge of high initial implementation costs, a considerable percentage (54.2%) is either neutral or agrees. This indicates a nuanced perspective within the company regarding the financial implications of adopting digital evaluation for e-logistics.
  - V. **Opportunities and Benefits:** The positive impact of digital evaluation is evident in the responses related to opportunities and benefits. Real-time tracking and visibility (66.7%), predictive analytics for demand forecasting (63.9%), increased efficiency (58.3%), and improved collaboration within the supply chain (58.3%) showcase the perceived advantages.
  - VI. **Overall Satisfaction:** Despite the challenges and concerns expressed, a substantial majority (68.1%) of respondents convey overall satisfaction with the impact of digital evaluation on e-logistics operations. This suggests that, despite facing hurdles, the respondents acknowledge the benefits and opportunities associated with the implementation of digital evaluation in enhancing e-logistics operations.
- In summary, while there are notable challenges and reservations surrounding data security, integration, resistance to change, and implementation costs, the overall sentiment indicates a positive acknowledgment of the benefits and opportunities brought about by digital evaluation in the realm of e-logistics.

## 7. CONCLUSION

In conclusion, the survey findings reflect a nuanced landscape within the company regarding the implementation of digital evaluation in e-logistics. The significant concerns expressed by over half of the respondents regarding data security and privacy underscore the critical importance of addressing these issues in the integration process. Integration with legacy systems emerges as a notable challenge, with a substantial portion of respondents expressing hesitation or indecision, emphasizing the complexity of merging digital evaluation with existing infrastructure. Resistance to change is a prevailing sentiment, acknowledged by a majority of respondents, indicating potential challenges in stakeholder buy-in and necessitating effective change management strategies.

Despite the acknowledged challenge of high initial implementation costs, a sizable percentage either agrees or remains neutral, showcasing a balanced perspective on the financial implications of adopting digital evaluation. The positive impact on e-logistics operations is evident in the perceived benefits, such as real-time tracking, predictive analytics, increased efficiency, and improved collaboration. Notably, the overall satisfaction of 68.1% suggests that, despite the acknowledged challenges and reservations, the company recognizes and appreciates the transformative potential of digital evaluation in enhancing e-logistics operations. In navigating these challenges, strategic measures addressing data security, integration complexities, and change management can further optimize the positive impact and overall satisfaction with digital evaluation in e-logistics.

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