EFFECT OF TECHNOLOGICAL ADVANCEMENT ON GLOBAL RETAIL INDUSTRY DEVELOPMENT TRENDS

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Abstract

The purpose of this research is to analyse how worldwide retailing has changed because of technology progress. The retail industry has seen a dramatic shift in how firms' function and interact with customers because of the rapid development of technology. This study delves into the ways in which recent technology breakthroughs like e-commerce, mobile apps, AI, and data analytics have affected the evolution of the retail sector. This research examines consumer behaviour, supply chain management, marketing strategies, and the overall customer experience in retail through the lens of technological innovation. This is accomplished through a cross-sectional design with usable data of 200 from respondents that was obtained randomly. The analysed data using SPSS version 26 based on the Pearson correlation and Multi Linear Regression demonstrates a positive and significant effect of marketing trends, supply chain trends, and inventory trends on development trends in the global retail industry. As provided by the study, the growth of online

marketplaces, the importance of data security, and the merging of offline and online channels are just a few of the opportunities and threats that are brought to light by this study. Businesses and policymakers can better adapt to the changing landscape, capitalize on emerging opportunities, and maintain competitiveness in the increasingly digital and interconnected world by understanding the effects of technological advancement on global retail industry development trends.

Keywords: Marketing Technology trends, Retail Industry, Global Trends; Supply chain trends; Inventory trends; Artificial intelligence.

1. Introduction

The retail industry is no exception to the rule that technological progress has become a driving factor in transforming sectors worldwide. Significant shifts have occurred in the retail industry, which includes the sale of goods and services to consumers, because of technological developments. These innovations have altered not only the way business's function, but also the habits and anticipations of consumers. Businesses that want to survive and thrive in today's dynamic digital environment must have a firm grasp of how technology progress affects the growth patterns of the retail sector around the world. Technology has recently introduced solutions that streamline retail operations, improve customer experiences, and propel expansion in the retail sector. One of the most significant changes is the expansion of e-commerce, which has replaced the physical storefront with an international network of websites. The widespread availability of smartphones and mobile applications has given consumers even more freedom, allowing them to shop whenever and wherever they like.

Artificial intelligence and data analytics have also helped merchants learn more about their customers' tastes and habits, which has led to more tailored advertising campaigns. The implications of these technical developments on the retail sector around the world are extensive and varied. They have revolutionized supply chain management, inventory control, and logistics in addition to affecting shoppers' preferences. In addition, businesses are increasingly focusing on blending their offline and online operations to provide a consistent omnichannel experience for their customers. In a highly competitive market, it is essential for merchants and policymakers to understand these effects and their ramifications so that they may forecast trends, devise strategies, and make educated judgments.

While technological progress has opened many doors of opportunity, new threats have also surfaced. With so much customer data in their possession, businesses are increasingly vulnerable to cyber-attacks, data breaches, and privacy concerns. The growth of e-commerce behemoths

and online marketplaces has also wreaked havoc on conventional retail models, making life difficult for SMBs. Considering these changes, the purpose of this research is to investigate how technological progress has influenced the growth patterns of the worldwide retail sector. This study aims to shed light on the evolution of the retail industry by investigating the effects of recent technology developments on various segments of the market.

This research will examine the important trends, difficulties, and possibilities brought about by technology improvements in the retail industry through a review of existing literature, case studies, and industry reports. The firms and governments can successfully adjust strategies, harness the promise of emerging technologies, and navigate the retail sector's changing landscape if they have a thorough understanding of how technological progress affects global retail industry growth trends. In recent years, technology growth has impacted the development trends in the global retail industry. Technology growth refers to the changes of new ideas and improved methods to produce goods (CFI, 2022). During the pandemic of Covid-19, the retailers operated their business with an omnichannel model, which generated offline and online channels. In 2021, the total retail market of the United States reached a revenue of over 6.5 trillion U.S. dollars. In the same year, China's retail revenue was 13.1 trillion yuan, or some two trillion U.S. dollars in 2020 (Tugba Sabanoglu, 2022). Retailing in the twenty first century is the new millennium stands as a complex sector of the business in developed as well as emerging economies (Manfred Krafft, 2023). Technology growth has changed the development trends in the global retail industry from offline stores to online stores involving the making calls and making the payment through the websites (Danielle Smyth, 2021).

Technology growth has changed the development trends in the global retail industry with the use of AI in managing the retail business and other operations in the retail industry. In 2021, the global retail market generated sales of over 26 trillion U.S. dollars with a forecast to reach over 30 trillion U.S. dollars by 2024 (Tugba Sabanoglu, 2022). This study will collect data from the retail industry to examine the impacts of technology growth on the development trends in the global retail industry.

2. Problem Statement

The impacts of technology growth have transformed the development trends in retail and accelerated the revolution of the global retail industry. The global retail industry has readjusted enterprise technology in using technology such as AI/AR/VR technology in managing the business and in the supply chain management to satisfy all consumers

and plans to improve the marketing strategy of the retail industry. In addition, consumer spending habits have changed dramatically, they are increasingly reliant on technology and the Internet opting for online purchasing instead of in physical stores. Next, the technology growth also increases the sales of the retail business by using AI/AR/VR technology to manage the businesses. Technology has brought closer relationships between the global retail industry and consumers. They communicate with consumers and solve problems through fast and convenient technical services. In short, retail   is measured more by its effectiveness in receiving and delivering information. In national or global retail, information technology plays an important role in streamlining business processes and increasing the competitiveness of companies. Therefore, international, and global retail trade relies on technology and e-commerce platforms. Technology development is critical for global retail to achieve global presence and recognition and to capitalize on opportunities in potential overseas markets.

2.1 Research Objectives

• To examine the effect of technological growth on the development trends in the retail industry.

• To determine the effect of technology growth on the development trends in the retail industry.

• To determine the effect of technology growth and development trends in the global retail industry.

2.2 Operational definitions

The development trends in the global retail industry- The development trends of global retail industry are selling the products across the world to the customers around in the world in the potential overseas market (Anjali, 2019). Technology growth- Technology growth refers to the changes of the new ideas and improved method to produce goods (CFI, 2022). Marketing technologies trends- Marketing technology refers to a series of important tools that help to achieve marketing goals. Marketing technology can help marketing teams become more efficient, improve customer relationships, and become more agile. Especially for global retailers, marketing technology is more important to improve competitiveness in the global market. (Indeed, 2022). Supply chain trends- Supply chain trends refer to the development in controlling. The development of supply chain management refers to the strategic and operational activities of manufacturers to produce materials that meet customer requirements. Supply chain trends include automatic systems, AI (artificial intelligence), supply chain as a service, circular supply chains, risk management and stability, and increased focus on sustainability. (GEP, 2023). Inventory management evolutions- Inventory management development refers to the process of managing the

inventories from raw materials to finished products (ADAM HAYES, 2022).

3. Review of literature:

Global retailing refers to the sale of goods or services across geographic borders to willing consumers in different parts of the world to gain global exposure and recognition and capitalizing on opportunities in potential overseas markets (Anjali J, 2019). When it comes to development trends, technological development is indispensable. The global retail industry has changed dramatically due to the advent of technology (Thomas Knox, 2022). Using e-commerce to build a global presence has become necessary for all businesses. Technological development trends include artificial intelligence (AI), augmented reality (AR), the internet, web applications, etc. In short, there is a relationship between development trends with technology growth (Werner Reinartz, Nico Wiegand, Monika Imschloss, 2020).

Marketing technology is a set of integrated technologies that enable marketing functions such as effective and efficient targeting, customer acquisition, and retention (Development of Marketing, 2022). This includes technology tools that help digital or physical marketing teams do their jobs. It also often overlaps with advertising technologies that can automate or increase the reach of digital advertising. (Indeed, Editorial Team, 2022). Marketing technology is integral to improving customer satisfaction and loyalty, such as online customer service, customer management software, product refunds or returns, electronic advertising marketing, and other technologies (ScienceDirect, 2021).

In addition, Virtual Reality (VR) and Augmented Reality (AR) hold promise. New models of reality and technological devices improve the sensory experience. The survey shows that most companies use augmented reality to enhance the customer experience. For example, a vehicle or game that combines a virtual creature's mission with the user's real-world location. Thus, this is achieved through the GPS functionality of the mobile device (Loh Li Hara, Umi Kartini Rashida, Lee Te Chuana, Seah Choon Senb, Loh Yin Xia, 2022). Additionally, new advanced technologies in global marketing improve the customer experience online and their experience in brick-and-mortar stores worldwide. The research focuses on the future of in-store technology. Technological growth can create five possible areas of innovation to bring digital and brick-and-mortar stores closer—namely, collaboration, in-store technology, data analytics, the role of the sales force, and leveraging the mobile channel. This digitally enabled omnichannel strategy offers customers a variety of points at which to order, collect or return products and information. In short, marketing technology trends can impact the development of the global retail industry (Mostaghel,

2022). After two years, the Covid-19 pandemic has affected global supply chains, demand shifts and massive factory closures. Now that the pandemic is over, all businesses are moving forward. The supply chain needs to evolve to grow, and technological growth can make the supply chain develop gradually (Katie Nguyen, 2022). New technologies such as robotic process automation (RPA), cloud computing, and AI replace weak links and transform the supply chain software market. Overall, technological advancements have facilitated the widespread application of AI in different industries (Julia Siderska, 2021).

Moreover, e-commerce has disrupted online shopping, and supply chain management can be a brand differentiator. This keeps customers attached and loyal to a brand, so retailers must put much effort into upgrading the technology (Werner Reinartz, 2020). Besides, the main drivers of IoT growth are the massive increase in sensors, internet penetration, data storage, processing power, and the advent of artificial intelligence (KeremGülen, 2023). The future of IoT will increase productivity in the inventory industry and supply chain and leverage these resources to improve supply networks, reduce costs and generate revenue. Additionally, many companies are turning to AI to optimize their supply chains as they can quickly save time and money by speeding up the process. AI can transform business models by changing how we view future supply chain management trends. AI analyzes action patterns to predict the outcome of future scenarios. Automate downstream decision-making and match supply to forecaster demand. This allows managers to utilize their abilities in high-level decision-making and strategy development fully (Sylvia Marak, 2020). The key drivers of the global value chain (GVC) exports or factors affecting e-commerce growth (Kang, & Ramizo, 2022).

Inventory management systems provide a competitive advantage to global retail business models. It understands where each product is in the process of updating supply records (Adam Hayes, 2023). It tracks the flow of products in and out of the warehouse to understand inventory, product quantities available, and the order's sales process when shipped (Hector Sunol, 2022). Ensure that nothing gets lost or damaged in the supply chain through the inventory management process. Inventory management technology also helps update the inventory records in the data network system so that the data can be viewed at any time to understand the inventory available for customers and the price instantly. Warehouse management technology is constantly changing to satisfy customers and facilitate the purchase and ordering of products, which streamlines the process, making it more accurate while reducing repetitive tasks (Abby Jenkins, 2020). Thus, inventory management technology's growth has brought companies more clarity and accountability and improved competitiveness (WSI, 2021).

4. Materials and Methods

The research was quantitative type and used a cross-sectional survey method for data collections. This provided grounds for an in-depth analysis of how technological progress has influenced the growth patterns in retail industries worldwide. A representative sample of retail customers were selected to guarantee that all demographics, geographic locations, and shopping habits of Malaysia are adequately represented. The data collection was conducted in Google Forms and distributed throughout Malaysia. Hence, we managed to get response from 250 respondents out of that 200 of them were suitable for this study. The data was analyzed and presented based on the demographic profile of the respondents, a descriptive analysis, a validity and reliability test, hypotheses testing (i.e., using Pearson correlation coefficient and a multiple linear regression). In all, SPSS (Statistics Package for Social Sciences) version 26 software was used to analyze the information and data collected in this study.

5. Data Analysis:

The data collection was conducted in Google Forms and distributed throughout Malaysia. Hence, 250 questionnaires were obtained from respondents and only 200 of them met the criteria for a suitable data. This section includes the preliminary analysis and representation of results based on demographic profile of the respondents, a descriptive analysis, a validity and reliability test, hypotheses testing (thus, Pearson's correlation coefficient and multiple linear regression) and a summary.

Age Group

Table 1 show respondents' frequency and percentage of age. 21-35years old had the highest frequency and percentage, with 100 respondents, accounting for 50 %. The second highest was 36-50 years old, with 44 respondents, accounting for 22%. The third place was 51-60 years old, with 28 respondents, accounting for 14%. The Fourth place was below 21 years old, with 16 respondents, accounting for 8%. While the lower was above 60 years old, with 12 respondents, accounting for 6%.

Table 1: Age group of Respondents

Age group	Frequency (n=200)	Percent (%)
Below 21years	16	8
21-35	100	50
36-50	44	22
51-60	28	14

Above 60	12	6

Based on Table 2, there were four race categories: Chinese, Indian, Malay and others. The result indicated the highest number of race groups involved in this study were Chinese, with 111 respondents (55.5%), followed by Indian, with 41 respondents (20.5%). Thirdly followed by Malay, with 33 respondents, (16.5%). Lastly, the lowest race group was others, with 15 respondents (7.5%).

Table 2: Race of Respondents

Race	Frequency (n=200)	Percent (%)
Malay	33	16.5
Chinese	111	55.5
Indian	41	20.5
Others	15	7.5

Income Levels

Table 3 shows the number of respondents based on their income level. Of 200 respondents, 82 respondents (41%) had below RM1000 because most were students, followed by 50 respondents (25%) who had gained income between RM 1000 and RM 3000. Forty-eight respondents (24%) had income between RM3001 to RM 6000. The minority respondents had earned income above RM6000, which consisted of only twenty respondents (10%).

Table 3: Income levels of Respondents

Income Level	Frequency (n=200)	Percent (%)
Below RM1000	82	41
RM1000- RM3000	50	25
RM3001-RM6000	48	24
Above RM6000	20	10

Education Level

Table 4 show the frequency and percentage of the education level of respondents. Most of the respondents had reached the College Degree level, which consists of 89 respondents (44.5%), followed by the Graduate Degree level, which consists of 64 respondents (32.0%). Nineteen respondents (9.5%) were High School level. 11 (5.5%) had Diploma level. Eight respondents (4.0%) were Polytechnic Level. Next, seven respondents (3.5%) were Secondary School Level. Lastly, the minority of respondents were Primary School Level, consisting of only two respondents (1.0%).

Table 4: Education levels of Respondents

Education Level	Frequency9n=200)	Percent\7
Primary School	2	1
Secondary School	7	3.5
High School	19	9.5
Diploma	11	5.5
Polytechnic	8	4.0
College Degree	89	44.5
Graduate Degree	64	32.0

Employment Status

Table 5 indicate the education status of respondents in this survey. There are 92 respondents (46.0%) who are students, while 30 respondents (15.0%) are business owner, 27 respondents (13.5%) are Self-Employment, 23 respondents (11.5%) are Employment (Full time/ Part time), 15 respondents (7.5%) are Unemployment, and 13 respondents (6.5%) are Retired.

Table 5: Employment Status of Respondents

Employment Status	Frequency (n=200)	Percent
Student	92	46
Employed (Full time /Part time)	23	11.5
Unemployed	15	7.5
Business Owner	30	15.0
Self- Employed	27	13.5
Retired	13	6.5

Reliability Test and Validity Test- Reliability was related to the accuracy of a measure and the standardization of study studies or trials. Two categories of reliability can be identified, which are internal and external. The trial's internal validity and effectiveness were assessed using the general correlation element and alpha index. A random error measurement device's level of freedom is called scale reliability. Additionally, a measuring device should be considered reliable if the outcome is constant and consistent. Internal reliability, which is a divided-half procedure, includes Cronbach alpha. Cronbach alpha also is included in internal reliability, where Cronbach alpha analysis determines the internal consistency or average correlation in the instrument of study to measure reliability (Cronbach, 1951).

Table 6: Value of Cronbach's alpha for each variable

Variable		Cronbach's alpha	N item	Result
Independent Variables	Marketing Technology Trends	0.920	8	**Very Good**
	Supply Chain Trends	0.882	6	**Very Good**
	Inventory Trends	0.956	6	**Very Good**
Dependent Variable	Development Trends in the Global Retail Industry	0.889	20	**Very Good**

The value of Cronbach's alpha for each variable was calculated using SPSS reliability analysis, as shown in Table. There are three variables independent variables, which include Marketing Trends, Supply Chain Trends, and Inventory Trends. Each independent variable has a Cronbach's alpha coefficient value of 0.920, 0.882, and 0.956, respectively, according to the SPSS results. At the same time, the dependent variable is Development Trends in Global Retail Industry which has Cronbach's alpha result of 0.889. The findings showed the validity and acceptability of the actual 200-respondent questionnaire used in this study.

Regression Analysis

In the presence of two or more independent variables and one dependent variable, multiple linear regression is used to assess the relationship between them. The goals are to show how closely the independent and dependent variables are related. Additionally, to determine the dependent variable's value at a specific value for the independent variables (Bevans, 2022). In this study, multiple linear regression is utilized to identify the influencing factor of marketing trends, supply chain trends and inventory management evolution to development trends in the global retail industry.

Table 7: Multiple Linear Regression

Variables	Multiple Linear Regression		
	beta	t-stat (95% CI)	P-value
(Constant)	0.71	5.08 (0.44, 0.99)	<0.000
Marketing Trends	0.20	4.31 (0.10, 0.29)	<0.000
Supply Chain Trends	0.42	8.74 (0.33, 0.51)	<0.000
Inventory Trends	0.22	8.00 (0.16, 0.28)	<0.000
Dependent Variable: Development Trends in the Global Retail Industry			

Correlation Test- Pearson's Correlation Coefficient analysis, measuring the strength of linear correlations between independent variables (IV) and dependent variables (DV) is essential. Here are three independent

variables: marketing technology trends, supply chain trends and inventory management trends, whereas the dependent variable is development trends in the global retail industry.

Table 8: Pearson's Correlation Coefficient between marketing technology trends towards development trends in the global retail industry.

		Marketing Trends
Development trends in the global retail industry	Pearson's Correlation Coefficient	.689**
	Sig. (2-tailed)	.000
	N	200

H1: There are positive influencing factors of Marketing technology trends towards development trends in the global retail industry. According to the relationship between marketing technology trends and development trends in the global retail industry, both variables have a significant relationship. The p-value is significant, indicating a high positive significance correlation by 0.000 between the variables since p<0.01. The marketing technology trends has a moderate positive correlation at (r=0.689).

Table 9: Pearson's Correlation Coefficient between Supply Chain trends towards development trends in the global retail industry.

		Supply Chain Trends
Development trends in the global retail industry	Pearson's Correlation Coefficient	.763**
	Sig. (2-tailed)	.000
	N	200

H2: There are positive influencing factors of supply chain trends towards development trends in the global retail industry. Simultaneously, the relationship between supply chain trends and development trends in the global retail industry is significant. The p-value is significant and indicates a high positive significance correlation by 0.000 between the variables since p<0.01. The supply chain trends of use have an excellent positive correlation at (r=0.763).

Table 10: Pearson's Correlation Coefficient between Inventory towards development trends in the global retail industry.

		Inventory Trends
Development trends in the global retail	Pearson's Correlation Coefficient	.700**
	Sig. (2-tailed)	.000

industry	N	200

H3: There are positive influencing factors of inventory towards development trends in the global retail industry. On the other hand, the relationship between inventory management evolution and development trends in the global retail industry shows a significant relationship. The p-value is significant and indicates a high positive significance correlation by 0.000 between the variables since p<0.01. The trust variable stated an excellent positive correlation at (r=0.700).

Table 11: Summary of Hypothesis Testing

H.	Hypothesis	Pearson's Coefficient	Correlation
		Sig. Value	Supported / Rejected
H1	There are positive influencing factors of Marketing. Technology Trends towards development trends in the global retail industry.	r = 0.689, p<0.001	**Supported**
H2	There are positive influencing factors of supply chain. trends towards development trends in the global retail industry.	r = 0.763, p<0.001	**Supported**
H3	There are positive influencing factors of inventory. towards development trends in the global retail industry.	r = 0.700, p<0.001	**Supported**

Based on table above, the relationship between the hypotheses was examined using Pearson's Correlation Coefficient analysis. The findings revealed that the hypothesis was accepted at a 0.001 significant level. Factor Analysis with Smart PLS- Reliability and validity- Cronbach's alpha (CA), DG rho and composite reliability (CR). Cronbach's Alpha measures the internal consistency or reliability of a set of survey items. Use this statistic to determine whether a set of items consistently measures the same characteristic. Cronbach's alpha quantifies the degree of agreement on a standardized scale of 0 to 1. Higher values indicate greater agreement between items. Composite reliability (sometimes called construct reliability) is a measure of the internal consistency of scale items, like Cronbach's alpha (Niemeyer, 2003). It can be treated as equal to the total value of the variance of the actual score versus the total variance of the scale score (Brunner and Suss, 2005). Alternatively, it is "an index of the common variance between observed variables used as an indicator of implicit construction" (Fornell and Larcker, 1981).

MARKETING TECHNOLOGY IN DEVELOPMENT TREND

Table 12: Marketing Technology in Development Trend

		Cronbach's alpha	N item	Result
Independent Variable	Artificial Intelligence (AI)	0.945	1	Very Good
	Digital Technology	0.768	1	Very Good
	Over- reliance on modern marketing technology	0.904	1	Very Good
	AI, VR, AR and data analytics	0.880	1	Very Good
	Digital ads and social media content	0.957	1	Very Good
	Innovation technology	0.857	1	Very Good
	The Metaverse	0.900	1	Very Good
	Robotics Process Automation (RPA)	0.700	1	Very Good
Dependent variable	Marketing trends	0.789	8	Very Good

The value of Cronbach's alpha- The value of Cronbach's alpha for each variable was calculated using SPSS reliability analysis, as shown in Table 12. There are eight variables independent variables, which include Artificial Intelligence (AI), Digital Technology, Over-reliance on modern marketing technology, AI, VR, AR and data analytics, Digital ads and social media content, Innovation technology, The Metaverse and Robotics Process Automation (RPA). Each independent variable has a Cronbach's alpha coefficient value of 0.945, 0.768, 0.904, 0.880, 0.957, 0.857, 0.900 and 0.700 respectively, according to the SPSS results. At the same time, the dependent variable is marketing technology trends which has Cronbach's alpha result of 0.789. The findings showed the validity and acceptability of the actual 200-respondent questionnaire used in this study.

SUPPLY CHAIN IN DEVELOPMENT TREND

Table 13: The value of Cronbach's alpha

		Cronbach's alpha	N item	Result
	AI/ML, LoT, AR, and cloud platforms	0.703	1	**Very Good**
	AI can easily plan resources.	0.809	1	**Very Good**

Independent Variable	utilization			
	Technological growth created agile. supply chains	0.788	1	**Very Good**
	GPS devices	0.980	1	**Very Good**
	Information technology in supply chain management	0.823	1	**Very Good**
	The use of 5G	0.906	1	**Very Good**
Dependent Variable	Supply Chain Trends	0.924	6	**Very Good**

The value of Cronbach's alpha for each variable was calculated using SPSS reliability analysis, as shown in Table 13. There are eight variables independent variables, which include. AI/ML, LoT, AR and cloud platforms, AI can easily plan resources utilization, Technological growth created agile supply chains, GPS devices, Information technology in supply chain management, and the use of 5G. Each independent variable has a Cronbach's alpha coefficient value of 0.703, 0.809, 0.788, 0.980, 0.823, 0.906 respectively, according to the SPSS results. At the same time, the dependent variable is supplying chain trends which has Cronbach's alpha result of 0.924. The findings showed the validity and acceptability of the actual 200-respondent questionnaire used in this study.

INVENTORY MANAGEMENT IN DEVELOPMENT TREND

Table 14: The value of Cronbach's alpha

		Cronbach's alpha	N item	Result
Independent Variable	Advanced retail technology	0.798	1	**Very Good**
	Digital transformation	0.802	1	**Very Good**
	Inventory Management system	0.700	1	**Very Good**
	Technology platform development	0.905	1	**Very Good**
	Warehouse automation	0.997	1	**Very Good**
	Omnichannel inventory control	0.879	1	**Very Good**
Dependent Variable	Inventory Trends	0.708	6	**Very Good**

The value of Cronbach's alpha for each variable was calculated using SPSS reliability analysis, as shown in Table 14. There are six variables independent variables, which include Advanced retail technology, Digital transformation, Inventory Management system, Technology platform development, Warehouse automation and Omnichannel inventory control. Each independent variable has a Cronbach's alpha coefficient value of 0.798, 0.802, 0.700, 0.905, 0.997, and 0.879 respectively, according to the SPSS results. At the same time, the dependent variable is inventory trends which has Cronbach's alpha result of 0.708. The findings showed the validity and acceptability of the actual 200-respondent questionnaire used in this study.

Fitting Discriminant validities, Fornell and Larcker (1981) AVE, Validity Heterotrait Monotrait (HTMT) ration

Table 15: Composite reliability (CR), the square root of the average variance extracted (AVE) (in bold) and correlations between constructs (off-diagonal).

Latent Constructs	Composite Reliability (CR)	Average Variance Extracted (AVE)	Latent Constructs		
			A	B	C
Marketing Growth (A)	0.969	0.839	**0.916**		
Supply Chain Growth (B)	0.965	0.820	0.759	**0.906**	
Inventory Growth (C)	0.942	0.729	0.763	0.822	**0.854**

According to the table above, CR is more significant than 0.70 for all constructs, and AVE values range from 0.729 to 0.839. Discriminant validity was assessed by Fornel and Larcker (1971) by comparing the square root of each AVE to the (off-diagonal) correlation coefficients for each construct in the appropriate rows and columns. Many differences exist between a marketing technology/supply chain trends project and a supply chain trends inventory project. However, the difference between 0.019 and 0.091 is too small to ignore. For this measurement model, discriminant validity can be accepted and supports discriminant validity between constructs.

Validity Heterotrait Monotrait (HTMT) ration

Table 16: HTMT Result

	Marketing technology trends	Supply Chain trends	Inventory management evolution
Marketing technology trends	-		
Supply Chain trends	0.79	-	

Inventory management evolution	0.81	**0.87**	-

Based on the HTMT scores, the values (in bold) in the table indicated problems of discriminatory relevance between the criteria. This suggests that the HTMT criterion detects collinearity problems between hidden constructs (multicollinearity). Supply Chain trends Concepts the problem is the efficiency of inventory management evolution. Most parts are probably the same size. In other words, it contains overlapping elements based on respondents' perceptions of establishments.

6. Discussion, Recommendations and Conclusion

This study objectives meant to examine the effect of technological growth on the development trends in the retail industry results in the first stated hypothesis provided a positive and significant relation. The significant effect of technological growth on the development trends in the retail industry is in line with Khaled, et al (2019) study that examined the relationship of technological and marketing innovations on retailing industry from the perspective retail businesses from India. In another related terms, this finding is in agreement with Mac Lennan, Tiago, and Pereira, (2023) past study on Technological and non-technological trends in fashion eco-innovations which found a positive a significant effect of ecological innovations of technological trends amid Brazilian fashion industry which can be extended to the retail industry as well. Additionally, our study's positive and a significant result on the effect of technology growth on the development trends in the retail industry supports Lan, (2023) recent study on market development strategy of renewable energy industry in Vietnam which indicates that a market development strategy as a business growth strategy is centred on businesses penchant to introduce new products or services into an existing or new markets and is enhanced with the adoption and growth of technology. The third objective that examined the relationship of technological growth and development trends in the global retail industry is also in tandem with Lu, Kuo, and Tran, (2023) study that there is a positive influence as well as negative effect of corporate social responsibility on multinational enterprises in the global retail industry.

Our study's primary goal is to help governments, individuals, and retail firms all throughout the world. This research relates to the world since it focuses on the global retail industry sectors which makes the initiatives we suggest crucially. Additionally, it helps all the stakeholders to realize how the impacts of the technology growth on the development trends in the global retail industry, and it also enables students in the school's retail programme to comprehend the importance of the retail industry sector. The direct and indirect impacts of the technology growth on the development trends in the global retail industry are also highlighted by

this research. The results will inform readers that the impacts of the technology growth on the development trends in the global retail industry is not as straightforward as it first appears. This enables students to make greater use of this information in current coursework or in future employment. This research also makes it possible for retail businesses worldwide to locate new business prospects and give more people work chances.

In practical terms, this study may also help the retail firm realize that if the company's technology, marketing technology trends, supply chain trends and inventory management trends are out of date, it will negatively impact the operation of the retail business and the overall customer experience. To compete with other businesses, retail companies will also put a lot of effort into advancing their technologies. Based on the results obtained, the development of the technology and its impact on the development trends of the global retail sector are determined.

Overall, our study's main objective that examined the crucial implications of technological developments on the development trends of the global retail industry has been achieved and shows a correlation between the independent variables, which are marketing technology, supply chain, and inventory management trends, and the dependent variable, development trends in global retail. This study helps people understand how evolving technology is affecting the development trends of the global retail industry from the perspective of marketing technology trends, supply chain trends, and inventory management trends. Researchers can observe among these independent variables the closest in-fluent correlation to the dependent variable. Perhaps people will realize deeply the impact of the technology growth will become an integral part of the future of the global retail industry. Nonetheless, our study may have some limitations based on the number of respondents, the location and the methodological approach. It may be prudent for further studies in different locations with the addition of other related variables for more understanding and enriching the stock of knowledge.

Bibliography

ADAM HAYES. (2023, March 28). Inventory Management Defined, Plus Methods and Techniques. Investopedia. https://www.investopedia.com/terms/i/inventory-management.asp

Anjali J. (2020, June 29). Global retail. The Investors Book. https://theinvestorsbook.com/global-retailing.html#Trends

Brzeziński, M., Cushman, & Wakefield. (2021, July 15). Jak e-commerce wpływa na rynek magazynowy w regionie CEE? Media LOGISTYKA. https://www.logistyka.net.pl/bank-wiedzy/item/92060-jak-e-commerce-wplywa-na-rynek- magazynowy-w-regionie-ceeCFI Team. (2023, April 28). What is Technological Progress? CFI.

https://corporatefinanceinstitute.com/resources/economics/technological-progress/CFI Team (2020, November 10). Technological Progress.

https://corporatefinanceinstitute.com/resources/economics/technological-progress/Codedesign. (2022, May 26). How does e-Commerce Influences Supply Chain

Management?https://codedesign.org/how-does-e-commerce-influences-supply-chain- management

Demir, H. H. (2022). Identification of Factors Affecting the Exports of High-Tech Products.

Technological Development and Impact on Economic and Environmental Sustainability, 128–142. https://doi.org/10.4018/978-1-7998-9648-7.ch010

GEPInsightDrivesInnovation. (2023, Feb 02). 5 EMERGING TRENDS IN SUPPLY CHAIN MANAGEMENT.https://www.gep.com/blog/strategy/5-emerging-trends-in-supply-chainmanagement#:~:text=The%20main%20trends%20in%20supply,and%20increased%20focus%20on%20sustainability

JASON FERNANDO. (2022, July 07). Supply Chain Management (SCM): How It Works and Why It Is Important. Investopedia https://www.investopedia.com/terms/s/scm.asp#:~:text=Supply%20chain%20management%20is%20the,competitive%20advantage%20in%20the%20marketplace

Julia Siderska. (2021, July 18). The Adoption of Robotic Process Automation Technology to Ensure Business Processes during the COVID-19 Pandemic. MDPI Articles. 13(14), 8020. https://www.mdpi.com/2071-1050/13/14/8020

Kang, J. W., & Ramizo, D. M. (2022). Nexus of Technology Adoption, E-commerce, and Global Value Chains: The Case of Asia. Asian Development Review (ADR), 39(02), 45-73.https://econpapers.repec.org/article/wsiadrxxx/v_3a39_3ay_3a2022_3ai_3a02_3an_3as0116110522500147.htm

Katie Nguyen. (2022, December 8). 11 logistics and supply chain trends to expect in 2023.

Magestore.https://www.magestore.com/blog/supply-chain-trends/#s1

Kerem Gülen. (2023, May 25). Exploring the dynamic fusion of AI and the IoT. Data Conomy. https://dataconomy.com/2023/05/25/artificial-intelligence-in-internet-of-things/

Khaled, A. S., Ahmed, S., Tabash, M. I., Al-Homaidi, E. A., & Hossain, M. I. (2019). The impact of technological and marketing innovations on retailing industry: evidence of India. Journal of Reviews on Global Economics, 8, 948-957.

Lan, T. T. N. (2023). Market development strategy of renewable energy industry in Vietnam. International journal of business and globalisation.

Liu, F., Xiao, B., Lim, E.T.K. and Tan, C.-W. (2017), "The art of appeal in electronic commerce: Understanding the impact of product and website quality on online purchases", Internet Research, Vol. 27 No. 4, pp. 752-771. https://doi.org/10.1108/IntR-09-2016-0280

Loh Li Hara, Umi Kartini Rashida, Lee Te Chuana, Seah Choon Senb, Loh Yin Xiaa. (2022).

Revolution of Retail Industry: From Perspective of Retail 1.0 to 4.0. ScienceDirect. Procedia Computer Science 200 (2022) 1615–1625. https://www.across-magazine.com/wp-content/uploads/2022/06/7.2022-Revolution-of-Retail-Industry.pdf

Lu, W. M., Kuo, K. C., & Tran, T. H. (2023). Impacts of positive and negative corporate social responsibility on multinational enterprises in the global retail industry: DEA game cross-efficiency approach. Journal of the Operational Research Society, 74(4), 1063-1078.

Mac Lennan, M. L. F., Tiago, E. F., & Pereira, C. E. C. (2023). Technological and non-technological trends in fashion eco-innovations. Innovation & Management Review, 20(1), 60-75.

Matthew Giannelis (2022, Nov 22). Impact of the internet on modern society.

TechNews.https://www.techbusinessnews.com.au/blog/impact-of-the-internet-on-modern- society/ .

Objectivity. (2022). Top 5 Retail tech trends for 2022. (5/23)

https://www.objectivity.co.uk/media/rh5dukdw/objectivity_top-5-retail-tech-trends-report.pdf

Ömer Faruk Görçün, Sarfaraz Hashemkhani Zolfani & Mustafa Çanakçıoğlu (2022, March 09).

Analysis of efficiency and performance of global retail supply chains using integrated fuzzy SWARA and fuzzy EATWOS methods. Spring Link-Operations Management Research (2022) 15:1445–1469 (1-5/25) https://link.springer.com/article/10.1007/s12063-022-00261-z

OnlineManipal. (2022, September 22). Supply chain management in e-commerce.

 https://www.onlinemanipal.com/blogs/supply-chain-management-in-e-commerce#:~:text=E%2Dcommerce%20helps%20in%20supply,find%20your%20products% 20more%20easily

Rana Mostaghela, Pejvak Oghazib,c, Vinit Paridad,e,f, Vahid Sohrabpour. (2022).

Digitalization driven retail business model innovation: Evaluation of past and avenues for future research trends. ELSEVIER. JournalofBusinessResearch146(2022)134–145 https://www.diva-portal.org/smash/get/diva2:1652337/FULLTEXT01.pdf

Sabih, M., Ejaz, M., Quershi, K. K., Asad, M. U., Gu, J., Balas, V. E., & Farooq, U. (2022,

January 12). Fraud Prediction in Pakistani E-commerce Market. 2021 4th International Symposium on Advanced Electrical and Communication Technologies (ISAECT). https://doi.org/10.1109/isaect53699.2021.9668438

Sanjay Chauhan, Rajesh Singh, Anita Gehlot, Shaik Vaseem Akram, Bhekisipho Twala, Neeraj

Priyadarsh. (2022, Dec 29). Digitalization of Supply Chain Management with Industry 4.0 Enabling Technologies: A Sustainable Perspective. MDPI Articles, 11(1), 96. https://www.mdpi.com/2227-9717/11/1/96

Sarah Amsler (2021, Feb). DEFINITION Inventory Management. Retrieved 8 May, 2023 from https://www.techtarget.com/searcherp/definition/inventory-management

Sean Harapko. (2023, Jan 6). woman with headset and tablet in warehouse How COVID-19 impacted supply chains and what comes next. EY. https://www.ey.com/en_my/supply-chain/how-covid-19-impacted-supply-chains-and-what- comes-next

Steve Van Kuiken. (2022, October 21). Tech at the edge: Trends reshaping the future of IT and business. McKinseyDigital. https://www.mckinsey.com/capabilities/mckinsey- digital/our-insights/tech-at-the-edge-trends-reshaping-the-future-of-it-and-business#/

Sylvia Marak. (2020). Supply Chain Trends for 2023 and Beyond.

SelectHubConfidenceSoftware.https://www.selecthub.com/supply-chain-management/supply-chain-management-future-trends/?noamp=mobile#8

Tugba Sabanoglu (2023, May 24). Retail market worldwide - Statistics & Facts.

https://www.statista.com/topics/5922/retail-market-worldwide/#topicOverview

The Economic Times. (2023, June 01). What is 'Market Development'? Bennett, Coleman & Co. Ltd. Journal. https://economictimes.indiatimes.com/definition/market-development

Thomas Knox. (2022, Jan 25). Three Technology Trends Transforming the Retail Industry.

Forbes.https://www.forbes.com/sites/forbestechcouncil/2022/01/25/three-technology-trends- transforming-the-retail-industry/?sh=7ae6f8f91026

Werner Reinartz, Nico Wiegand, Monika Imschloss. (2020, September). Full Length Article: The impact of digital transformation on the retailing value chain. ScienceDirect. Pages 350-366

WSI. (2021, March). INVENTORY MANAGEMENT AND HOW TECHNOLOGY KEEPS IMPROVING IT. Supply Chain Solutions. https://www.wsinc.com/how-technology-improved-inventory-management/Verified market research. (2022, Nov). Global Retail Industry Market Size By Product (Pharmaceuticals, Luxury Goods), By Distribution Channel (Hypermarkets, E- Commerce), By Geographic Scope and Forecast. ESOMAR22 Corporate.