

Role of Artificial Intelligence on M-Commerce and Website based Marketing: Emerging Needs of Study

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ABSTARCT

Serendipitously, digital innovations have entered the entire ICT basket, which includes computers, tablets, and mobile phones. Instead of using physical networks, wireless and Wi-Fi networking is seen to represent a new generation of technology. Technology is an enabler, which can be used to customise and personalised customer choice in terms of consciousness and intention to purchase by rich texts about product, new interactive images, interactive videos, good audios, sites. Through cognitive and affective indentations to purchase in the E-Commerce websites. Technology is the tomorrow's new dawn. Also, change is inevitable and desirable. Change in fact has been forced upon us to adopt new technology. Artificial Intelligence (AI) is one among them, which has been created by humans to think and react like one of us but with a more accurate performance. This paper is focussed to understand how far Artificial Intelligence makes it successful in behaviour of the customer's consciousness intention to purchase and customer journey in cognitive marketing. The study mainly focuses on customers of twin city of Odisha, India. The results of the study showed that AI and Customer Experience have a positive, meaningful relationship.

Keywords: Purchase, E-Commerce, Artificial Intelligence, Cognitive Marketing.

Introduction

India has undergone a massive transformation in its economy, society and policy during this millennium to reach \$5 trillion economy by 2025. Technological changes, especially the universal reach of mobile telephony, digital identity in Aadhar and reduced data costs have expedited India's rise in digital curve. The Technology has massively impacted every aspect of our lives over the past 30 years. **Lakhmraju, Mohan (2017)** India's youthful demographic which has exerted an aspiration pull in our economy, with society yearning for better education, health, ease of living and doing business. Technology has changed and is continuing to change the way banking is conducted. There are many emerging technologies are fast changing from "Technologies to watch" to "Technologies to deploy". There are 8 disruptive technologies playing the biggest role. Thus, (a) Data Management, (b) Cloud ERP and EPM, (c) Block chain, (d) Robotic process Automation, (e) Machine Learning, (f) Cognitive Technologies, (g) Natural Language Processing and (h) Digital Analytics and Delivery. Technology will bring changes at an exponential leave and at an unfathomable speed and scale. Technology is opening up new frontiers but it is also presenting new challenges that the world must conform. The platform of Digital customer experience, in which different technologies such as cloud, AI, video streaming and hosting are married to create an eco-system.

Historical Background of Artificial Intelligence (Ai)

Table 1: Background of Artificial Intelligence (AI)

Year	Developments
1940-50 The Birth of AI	"During 1950, Alan Turning created Turning Test, a method of inquiry for determining whether a computer is capable of thinking like a human being or not".
1956-1974: The Golden Years	"During 1956 -Conference was held at Dartmouth college where the term Artificial Intelligence coined".
1961	"Samuel's Checkers programme used -Machine learning to beat humanoid players".
1966	"IBM's Shorbox done arithmetic by voice command". The Shakey became the first mobile robot 'aware' of its surrounds. ELIZA, an artificial conversational "therapist" created at MIT's AI Laboratory.
1974-1980	"During 1978 Creation of programmes such as R1 / XCON to support sales representatives evade errors in product suggestions".
1980-1987: The Boom periods	1987-1994: second winter 1994: Present: Modern Era Two robotic cars drove long-distance on the highway
1997	1997: Deep Blue, a chess playing computer advanced by IBM defeated world champion Garry Kasparov. 2000: Kismet, a sociable machine talented of expressing emotions,

	lunched
2004	“Honda Asimo, a personal Robot was released”.
2011	“IBM’s Watson beats two of the most successful human contestants on Jeopardy, a long running US game show”.
2016	“Outline of virtual agents with Siri, Google Now and IP Soft’s Amelia”.
2017	“Google’s Auto ML lets AI generate AI”.
2018	Google spin-off Waymo lunched self-driving cars in Arizona.

Source: Accenture; other reports

As it is credited with a range of other shifts in existing market patterns and continues to shift sectors, technology is a major contributor to this transition. But a paradigm change has occurred with the accelerated use of technology and accounting is at the forefront of all technical developments. The leading factors are an increase in cloud technology investment and the rise of small businesses. In the country, China is the biggest cloud technology consumer, followed by India. In revolutionising the profession, the new block chain technology will also play a major role in freeing accountants from daily bookkeeping practises and offering greater transparency about an organisation's finances and obligations. Ernst Young, Price Waterhouse, KPMG and Deloitte are the Big Four in the accounting sector, leading the trend towards recognising the accounting block chain.

Table 2: Internet penetration % wise population (India’s position is ‘9’)

Country	Internet penetration % of population	Nos.
Africa	39.60	522 millions
Asia	54.20	2.3 millions
Europe	87.70	726 millions
Latin America	68.90	453 millions
Middle America	67.90	176 millions
North America	89.40	328 millions
Australia	68.40	29 millions
China	58.40	829 millions
India	40.90	560 millions
World	58.80	4.54 billions

(Source: Internet world status, The Economic Times 3rd September 2019, p-10)

Another big technological wave, Artificial Intelligence (AI), is here to stay and develop in the future by leaps and bounds as it can perform the most complicated tasks without a monthly salary overhead. For any company wanting to adopt this technology, an overhaul of the accounting department, leading to systemic improvements, is a necessity as it increases efficiency and accuracy and decreases expenses. There are different ways in which AI can help enhance the function of accounting. First, as AI gathers data from various agencies, gathers and merges it in no time, the reconciliation process is quicker and free of errors.

Second, AI leads to paperless procurement and better control of vendors. Third, with the aid of automated workflow, creditor / debtor management is streamlined. Moreover, digitisation of accounting documents ensures that the audit feature is better usable and accurate. And lastly, with the assistance of AI, cost control is smooth, which can also help answer some of the users' frequently asked questions. A Sage survey reveals that 66% of accountants were prepared to invest in AI. In addition, the Internet is typically included, but it often includes wireless text messaging, instant messaging, mobile applications, podcasts, electronic signage, digital TV and radio networks, etc. In recent years, mobile and internet innovations have refined the manner in which e-commerce websites are distributed.

Table 3: Major global players of AI (Artificial Intelligence)

Company	Name of AI (intelligence personal assistants)
Google	Google Assistant
Apple	Siri
Amazon	Alexa
IBM	Watson assistant
Microsoft	Cortana
Blackberry	Blackberry assistant
Nuance	Nina
Cognitive code	Silvia
Samsung	Bixby

(Source: Business Standard, 3rd September 2019, p.15)

Cognitive development, such as the cognitive functioning of (a) mental perception processes, (b) memory judgement, and (c) reasoning, as opposed to emotional and volitional processes. Cognitive technology is the general term applied to technologies capable of performing certain tasks, including the identification of handwriting, expression, or faces; language comprehension; planning; partial or ambiguous knowledge reasoning; and learning. Further, the Cognitive marketing means how a consumer attached with different perspectives through brands. In addition, resource management is another field in which cognitive technology can help enhance productivity and minimise costs. Applications of cognitive technology may capture, analyse and send real-time information to producers of consumer goods to help them handle inventory and fulfil orders more effectively. In how (a) consumers discover, (b) pick, (c) buy, (d) get, (e) use, and (f) get help with consumer products, cognitive technologies are intended to play a larger role. These innovations open up vast possibilities for e-commerce websites for any consumer goods to make the approach and smoother technique of consumer life easier, to reduce confusion and improve trust in purchases, and to help customers rejoice in and even connect with products as well as searching for e-commerce websites. The E-Commerce websites which has been ahead of the curve in using AI, ML, Deep Learning, Enterprise Data –Lake technological advances to deliver services to consumers. The consumer benefited from hassle-free use of channels more tailored products, services and better response time. **(Biswal, Manas Ranjan. (2020))**

Literature Review

In this section, researchers have trying to their level best to collect various data through published and unpublished Sources like **According to Hosanagar, Kartik. (2020)** stated the digital revolution has taken over the modern world. “AI offers tremendous opportunities for automation and digital transformation in several fields”. “In terms of using AI, India lags far behind china and the US”.

Oracle (2017) explained the role of AI in customer experience. It states that “AI brings customer data to life; it uses machine intellect to filter through, analyze, learn from, and interpret big data in ways us mere mortals are not bright”. AI to enhance the customer overall experience.

Klein et al. (2017) “performed a study on important retail executives to study the effect of AI technology on the change of customer engagement”.

Lemon and Verhoef (2016), AI can be used to track the feelings of consumers. There are three stages in the consumer journey: the pre-purchase process, the purchase process, and the post-purchase phase. The first stage includes behaviours such as identification of need, searching, and the creation of a collection of considerations constructed from exposure to web-based knowledge, advertising, user-generated content, word of mouth, or other stimuli. In the second stage, customers pick what they want and continue with the payment, based on the information given. The third stage is characterised by behaviours such as use and consumption, and phenomena of positive or negative post-purchase engagement.

McCull-Kennedy et al. (2019) Establish a conceptual structure for assessing and interpreting the consumer experience that takes into account the viewpoint of the consumer, such as emotions (i.e., excitement, affection, surprise, frustration, sadness, and fear) and cognitive reaction to the various touch points (i.e. grievances, compliments, and suggestions) that occur during the purchasing decision journey. Especially, they suggest using a text mining model based on linguistics to collect user information that are critical for making marketing decisions.

Kalpna Chauhan and Anandan Pillai, (2013) posting frequency of any image, video, etc. on any Digital Marketing platform has an impact on online marketing strategy.

Yi-Shun Wang (2001) for web sites that sell digital goods and services, a systematic model and tool for measuring customer information satisfaction (CIS) has been developed. Important progress has been made in creating a general method to assess consumer satisfaction with the marketing of digital goods and services on websites.

Objectives of the Study

Technology is the tomorrow’s new dawn. Change is inevitable and desirable. Change in fact has been forced upon us adopt new technology in different sector. Artificial Intelligence (AI) is poised to disrupt our creation. Smart Tech is also changing the face of manufacturing while the 3rd industrial revolution was about mass production, the 4th revolution referred to as Industry 4.0; is focussed mass customisation and efficiency. It also faster integration of

automation in to every day work through IOT (Internet of things), AI (Artificial Intelligence) and ML (Machine Learning). Following are the objectives of the study undertaken to fulfil the research objectives:

- a) To explore the factors related E-commerce websites of Amazon and Flipkart with respect to searching product by consumer consciousness intention.
- b) To find the factors which are significantly influence through Artificial intelligence with respect to twin city of Odisha.
- c) To suggest suitable measures of improvement on the basis of findings of the study.

Research Methodology

Finally, the consumer consciousness intention as regards to searching the products of lifestyle by the twin city of Odisha was measured. All of the selected items were measured on a five-point Likert scale ranging from “1 = strongly disagree” to “5 = strongly agree.” The collected data were then inserted into SPSS and analyzed using structural equation modelling (SEM) on AMOS 23.0 version.

Analysis and Discussion

The following Table no.4 shows the demographic profile of the sample respondents (N= 542). Out of the total respondents, majority of the respondents are females (54.70 percent) and Males (45.30 percent) respectively. Further, in age of the respondents, majority are coming in the range of 26 to 30 years (49.60 percent) then coming 31 to 40 years (23.10 percent), while 22.40 percent belongs to below 25 years. Few of the respondents belongs to 41 years and above (4.90 percent). With regard to qualification of the respondents, majority are having bachelor degree (34.50 percent) then coming high school (29.20 percent) and few of the respondents are belongs to diploma (19.40 percent) and post graduate (16.90 percent).

Finally, the demographic profile shows majority of the respondents (25.40 percent) are having income 30,000 to 45,000 then coming more than 45,000 rupees (25.40 percent) and then coming less than 15000 rupees (17.20 percent) respectively. Few of the respondents are having monthly income from 15,000 to 30,000 (5.40 percent). The research also focuses on the influence of website ads on consumer purchasing behaviour, which increases the intentions of the consumer towards the product and purchasing behaviour. The ads of the website affected customer buying

decisions to a modest degree as only approximately half of respondents were affected by market recognition purchases through internet advertising. Consumers do not purchase goods; instead, they buy reasons to satisfy themselves or solve their problems.

Table 4: Demographic Profile of the respondents (N=542)

Gender	Male	246	45.3
	Female	296	54.7
	Total	542	100
Age	Below 25 years	121	22.4
	26 to 30 years	269	49.6
	31 to 40 years	125	23.1
	41 years and above	27	4.9
	Total	542	100
Qualification	High school	158	29.2
	Diploma	105	19.4
	Bachelor (UG)	187	34.5
	Postgraduate (PG)	92	16.9
	Total	542	100
Monthly income	Less than 15000	94	17.2
	15001–30,000	29	5.4
	30,001–45,000	281	52
	More than 45,000	138	25.4
	Total	542	100

Source: developed from the survey data

After profile analysis of the respondents, further analysis was undertaken to examine the reliability of the twenty-three related to potential of artificial intelligence in customer journey towards E-commerce websites variables. Reliability analysis i.e. Cronbach's alpha (α) was applied. Reliability analysis was conducted after screening of data and replacing missing values by SPSS software. As regards to shopping as their main source of pleasure and associate it with leisure and lifestyle related activities.

The Consumers are becoming highly green conscious about searching the websites. Technologies such as (a) Affective Computing, (b) Emotion AI can bring in a good experience by integrating data-driven interactions that represent modern Human Centered Design (HCD) techniques that encourage deep emotional connexions across e-commerce websites with products and brands, which in turn can drive loyalty and business activities in line with growth. Contextually relevant content is necessary to operationalize the customer experience on a scale.

Table 5: Descriptive and Reliability Analysis (N= 542)

Sl.	Particulars.	Mean.	Std. Deviation.	Cronbach's Alpha (α).	N. of Items.
1	Potential of Artificial Intelligence (AI) in Customer Journey of Cognitive Marketing.	4.231	0.237	0.875	23

Source: developed from the survey data

The Alpha value of combined is coming more than 0.80, reveals all the items in the questionnaire are reliable. Therefore, it can be inferred, based on the alpha outcomes of the Cronbach, that the measurement items achieved acceptable reliability. Artificial Intelligence (AI) is expected to alter both marketing tactics and consumer habits dramatically. AI seems likely to impact marketing approaches, including business models, sales processes, and choices for customer support, as well as customer behaviours in terms of, for example, text, speech, images, or facial expressions. (Kaplan and Haenlein 2019, p. 17).

Further, customer friendliness remains open to feedback and responsive
That enabled for E-commerce websites to deliver and improve services.

Table 6: Factor loading of items (AI)

Items and Construct	Factor loadings
Customer Demand Anticipation (CDA)	
This AI carries high quality of Customer consciousness.	0.830
This AI provided the Demographic shifts.	0.510
This AI offers to the consumers in variety of products and services.	0.540
Improved Inventory Management (IIM)	
The supply chain can be traced out through AI.	0.850
The delivery services and put signature of the consumer can easily trace out through AI.	0.580
The reaching to the perspective consumer and reverse purchase with same websites will be thoroughly evaluated by AI.	0.640
Efficient Delivery Management (EDM)	
Multiple tailor-made products are offered through AI	0.800
To compete with other product, the spur advertisement can made successful though AI.	0.710
The smaller and premium pack size with self congruity and product	0.730

evaluation is dealt with AI.	
Thee- loyalty cues with brand trust through AI.	0.650
Personalized Suggestions (PS)	
AI shows the comparative best prices for most products.	0.760
AI enabled monitoring of transactions are managing grid stability.	0.680
The AI broadening base of digital access.	0.930
Image-Based Product Search (IBPS)	
The Product search are frequently shown.	0.660
The Seasonal promotions are in use by AI.	0.560
Comparative Prices are shown in through AI.	0.840
Early Identification of Potential Consumer (EIPC)	
The sentiment of the customer can be identified through AI.	0.480
The Web analytics can find the potential consumer through AI.	0.880
The value-add services focussed the sub-conscious mind of the consumer through AI.	0.940
Automating and Expediting Administrative Tasks (AEAT)	
The website is dynamic.	0.650
The effect of Design of the websites is influence the consumers through AI.	0.530
The listing of the Product with different segment can put forth with AI.	0.740
The role of SEO is carrying out the website listing through AI.	0.660

Source: developed from the survey data

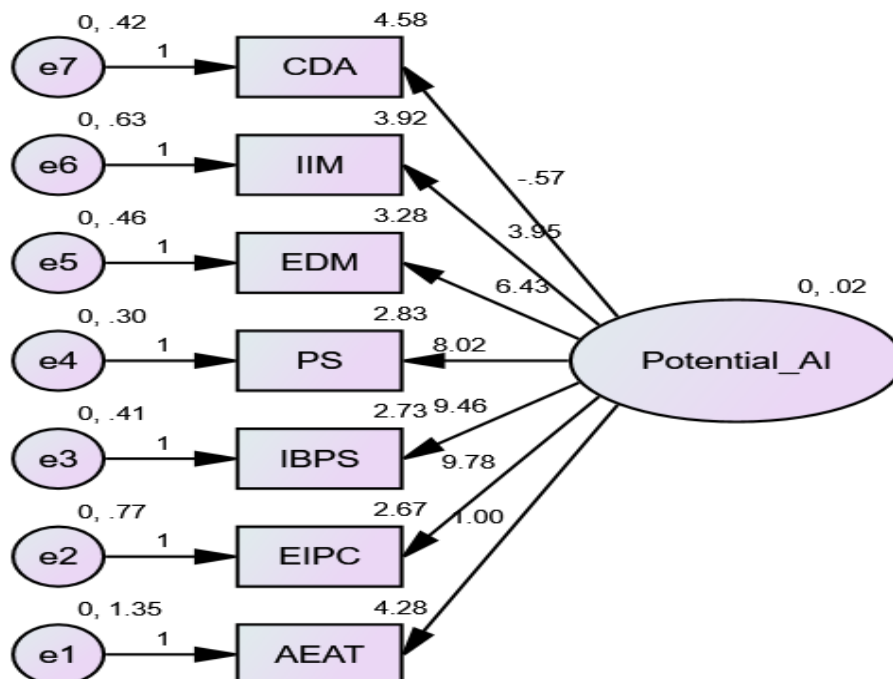


Fig.1: SEM of Potential AI

CDA: Customer demand anticipation; **IIM:** Improved inventory management; **EDM:** Efficient delivery management; **PS:** Personalized suggestions; **IBPS:** Image-based product search; **EIPC:** Early identification of potential consumer; **AEAT:** Automating and expediting administrative tasks.

Table 7: Summary SEM results of Potential of AI

Particulars.	CFI	NFI	GFI	RMSEA	RFI
Chi-square = 227.477	0.915	0.912	0.918		0.910
df = 14				0.085	
P value = 0.000 (Probability value/ significant value)					

Source: developed from the survey data (Primary)

df: degrees of freedom; **CFI:** Comparative fit index; **NFI:** Normed fit index; **GFI:** Goodness – of-fit; **RFI:** Relative fit index; **RMSEA:** Root Mean Square Error of Approximation.

The above table shows the model fitness structured of SEM with respect to potential of AI. The findings of the above table, reveals that all the factors of AI were well associated. The model was well fitted and examined, that each indicator variables loaded significantly with its intended construct. In the SEM model, Chi-square = 227.477, df = 14, p<0.001, CFI=0.915, GFI=0.918, NFI=0.912, RFI = 0.910, RMSEA=0.085, provided a good fit to the data (Browne and Cudek, 1993; Hu and Bentler, 1999). Further, as far as customer experience, security and stability are disadvantages. A buyer can log in to the website or app of the company, fill in details such as location, language of choice and requirement. Further, people are more comfortable in shopping via video streaming that scaling up to cater to their requirements. It focuses entire sequence of documentation. Its also becoming popular as brick-mortar stores at away to stay competitive world. The personalised buying experience can make it successful through Artificial intelligence which a cause a big leap in terms of tech like the internet changed things in the last decade. (Ahmad, Samreen(2020) . The predictive behavioural indicators and periodic verification also put a right direction towards to identify location data and based on the location data for gathering more information.

Table 8: Regression Analysis of Variable (Potential of AI)

Particulars	Estimate	S.E.	C.R.	P Label	
AEAT <---	Potential of AI	1.000			
.EIPC <---	Potential of AI	9.778	3.299	2.964	***
IBPS <---	Potential of AI	9.461	3.188	2.968	***
PS <---	Potential of AI	8.020	2.702	2.968	***
EDM <---	Potential of AI	6.428	2.171	2.961	***
IIM <---	Potential of AI	3.949	1.348	2.930	***
CDA <---	Potential of AI	-0.566	0.267	-2.116	***

Source: developed from the survey data (Primary); **S.E.:** Standard Error; **C.R:** Critical Ratio

Thus, The above table shows the results of regression model derived through SEM. As shown in the above table, all the p value of the contributing variables related to the potential of AI in E-commerce websites was accepted since the significant value of p is coming *** (<0.05).

The path analysis reveals that - regression weights of the above model is structurally fitted. Further, all the contributing variables to the factor (Potential of AI) are statistically significant and contributing to the SEM. Out of the seven derived factors, the factor “*EIPC*: Early identification of potential consumer (9.778) is contributing maximum towards potential of AI in E-commerce websites. Then coming the factor “*IBPS*: Image-based product search (9.461)” since estimated value of the regression weights is coming highest. Further, the factor - *CDA*: Customer demand anticipation (-0.566) though coming significant (***) but negatively associated with potential of AI in E-commerce websites. Since, AI will not work in anticipation of demand, the factor is coming negative impact though it is coming significant.

Conclusion

Improving The Customer Experience Has Become A Daunting Challenge For An Organisation Due To The Constant Increase In Customer Expectations. Companies Aiming To Have A Modest Edge In Customer-Service Should Look At More Than Just Providing Content Across An Acceptable Channel At The Right Time. AI Provides The Organisation With An Awareness Of The Clients, Helping Organisations To Prepare Strategies Accordingly. In Order To Illustrate The Fact That Customer-Service Is Currently One Of The Foremost Areas In The Investment And Adoption Of AI Systems, Forrester’s 2016 Global State Of AI Online Survey Legget Reports That AI Is Now Increasingly Used By Many Companies To Boost The Tailored Customer Experience. Half Of Customers Are Now Involved In Digital Interactions With Smart Assistants Such As Siri, Cortana, And Alexa, For Example. Further, It Is Stated That “AI Will Provide Happiness To Customers By Making These Conversations Natural And Active, Anticipating Needs Based On Context, Preferences And Prior Queries; Delivering Advice, Resolutions, Alerts, And Offers; And Getting Smarter Over Time.”

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