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RESULTS & DISCUSSION

FINDINGS

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A STUDY ON CONSUMER AWARENESS, USAGE PENETRATION AND ADOPTION OF 3G MOBILE SERVICES IN INDIA

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ABSTRACT

From August 2008, the Apple iPhone 3G is available in India on Airtel and Vodafone. This study focused on Moradabad's users' usage pattern, awareness and adoption of 3G mobile services amongst university students. A primary data collection tool (structured questionnaire) was administered and the results (n=76) indicate high (98%) saturation level in terms of usage, awareness and adoption of mobile phones compared to several countries. Most of the users are sensitive to price. It is found that prices of 3G mobiles influenced their purchasing power. The 3G mobile service usage rate was found to be low (8%) in comparison to other parts of the world. While their response towards its usage, ease of use and intention to use through survey was highly motivating, the respondents reported that they would be influenced by peer usage instead of TV and advertising. The study also found that security of 3G services and speed of the service was the dominating factors in the adoption of these services in India. TV, hoardings and friends were the dominating awareness media for 3G related information. The findings have future implications for the marketing strategy by the operators and security aspects of 3G mobile services in India. The paper also discusses the future direction of research.

KEYWORDS

Awareness, adoption, 3G mobile service, usage pattern.

INTRODUCTION

3G is an improvement of 2G services, is a family of standards for mobile telecommunications defined by the International Telecommunication Union. 3G services include wide-area wireless voice telephone, video calls, and wireless data, all in a mobile environment. It allows simultaneous use of speech and data services and higher data rates. 3G is defined to facilitate growth, increased bandwidth and support more diverse applications. These applications are mainly made possible due to the enhanced data rates as a result of the 2-8MBPS bandwidth availabilities.

Some of the applications are (1) Mobile TV (2) Video Conferencing (3) Tele-medicine (4) Location Based Services (5) Video on Demand. Many studies have investigated the user acceptance and success factor of mobile services in general, and 3G in particular. Despite the wide range of value added services provided by 3G, consumer usage of this technology remains low. According to the latest report released by Telecom Regulatory Authority of India (TRAI), India has 538.38 million Urban Subscribers while 267.74 million Rural subscribers. 3G services have already become popular in Japan, UK, Hong Kong, Australia, Sweden and Denmark etc. Countries such as South Korea, Taiwan and Indonesia, where mobile technology usage, in general, is higher than 70%, 3G technology users are below 30% Japan, being the exception, has a record high of 80% 3G users, out of the 84.1% of mobile users. However, there are no studies dealing with the awareness, adoption and usage of 3G mobile services in India.

The three mobile operators in the country introduced the 3G technology at present-MTNL and BSNL. MTNL is targeting four fold jumps in its 3G mobile subscriber base to 6 lakhs by March 2010 in Mumbai and Delhi. Also, BSNL launched 3G service on Feb.27 in 70 cities of India. Coverage of the networks are concentrated in the country's one largest region of western U.P. Moradabad. The recent introduction of 3G mobile services has motivated this study.

LITERATURE REVIEW

3G (Third Generation) is the latest wireless technology. It is also known as UMTS (Universal Mobile Telecommunications System), an improvement over 2G (Second Generation) providing wireless access to the data and information to the users from anywhere and anytime. It is the latest mobile technology. 3G cellular phones were first launched in Japan in October 2001. The literature on various aspects on 3G is scattered and sketchy. There has been research on current usage, adoption and factors that affect usage in various countries, while some authors have presented their views regarding the past generation services and future of 3G and its potential. With this background, this study was conducted. According to Carlsson Christer, Hyvönen Kaarina, Repo Petteri and Walden Pirkko [3], mobile phones encourage users to try out new services, but the adoption rate of them is nowhere close to SMS, which still reaches a much wider audience. Barnes J. Stuart [2] indicates on business-to-consumer markets, he examines how value is added in the stream of activities involved in providing m-commerce (mobile commerce) to the consumer. As such, it analyses the key players and technologies that form part of the m-commerce value chain, providing a foundation for future strategic analysis of the industry. He also provides predictions regarding the future of m-commerce.

According to C. Thavamani [6] they focused on the evolution of 3G technology, their impact on society and their importance and limitations. Dulyalak Phuangthong and Settapong Malisawan [9] aims to examine the factors affecting the user adoption in mobile learning on 3G mobile Internet technology in Thailand by using technology acceptance model (TAM).

Pagani [16] have also found user information technology acceptance literature, formulate a model of consumer adoption of third generation mobile multimedia services, validate it through a qualitative exploratory study comprising 24 focus groups in six markets, and empirically test the proposed model on the Italian market. They also show that the importance of determinants differs by age groups or segments. G. Robert suggest that the potential for audio and video services streamed to mobile handset from the perspective of consumer behaviour. The author argues that consumer choice rather than technology or supply side activities will determine the success of the services and that demand for mobile broadcasting services will come primarily from consumers who are currently using mobile audio and video services with other technologies. The author argues that increased attention needs to be placed on pressing issues as mobile communications capabilities increase and that a wide range of factors will influence consumer demand for mobile services.

Dr. Singh Sudha, Dr. Singh D. K., Dr. Singh M. K. and Kumar Singh Sujeet [7] focused and examined the factors affecting the adoption of 3G services among Indian people. The study adopts the revised Technology Acceptance Model by adding five antecedents-perceived risks, cost of adoption, perceived service quality, subjective norms, and perceived lack of knowledge. They showed that perceived usefulness has the most significant influence on attitude towards using 3G services. Of the five antecedents, perceived risk and cost of adoption are found to be significantly influencing attitude towards use.

While Kuo and Yu [14] from a study in Taiwan propose that 3G telecom operators not only have to serve as network system and spectrum provider, but also have to develop into a "service- focused" instead of "Technique-focused". Further, 3G telecom operators should place their focus on "creating" 3G services

instead of "enhancing" already existing 2G or 2.5G services. Some operators are provided with 2G and 2.5 G services on a 3G network system, so the consumers are unable to take full benefits and convenience brought by the 3G system. Although the main highlight of 3G services are high speed data transmission, entertainment and e-payment in developing countries in Asia, Africa or even some parts of US suffer from lack of infrastructure to support these objectives. Income affordability, mobile network coverage, high subscription charges and telecommunication infrastructure to support all these activities classified with regard to findings is difficult for developing or even some developed countries in the world [6].

PURPOSE OF THIS STUDY AND METHODOLOGY

Literature suggests that there is great deal of research on adoption of mobile phones and mobile related services. This ranges from mobile Internet services [18], mobile device features and services [1], mobile value added services [22], usage of mobile applications [13, and 12] and mobile data service usage [14]. Although, some mobile services such as SMS, ring tones, internet have been adopted on a large scale or at least have been tried by a majority of users [4], advanced services such as MMS, Mobile TV, Video conferencing etc. have not yet found ways into the everyday lives of consumers. A growing field of research supports that cultural background influences the adoption of technology [19, and 8]. Abu [20] advises that future studies are required to perform a quantitative analysis on which technological innovations and policies are valid, considering the country's unique characteristics of geographical coverage, population, topography, and income level. However, there are few studies in India where per capita income as well as mobile penetration is very high. This study aimed at assessing the awareness and usage (penetration rate) and adoption of new 3G mobile services, perceived ease of use, perceived usefulness, behavioral intention to use, social influence, attitude towards 3G mobile services in India. A structured questionnaire was designed to collect data from Moradabad region. The reason for taking this region is that it covers whole western U.P..

DATA COLLECTION AND ANALYSIS

115 students of BTech participated in the study, by completing the questionnaire. 76 questionnaires were found valid. The reason for selecting students was that more than 90% of the students have a good financial status. Therefore, every student was able to afford a cell phone. 58% respondents were female and more than 70% of them were in the age group of 18-22 years, which was the target age. Further 99% of the respondents were using mobile phones; this indicates saturation level in penetration of usage of mobile phone. It is possible that some of them were subscribers of more than one telecom operator. Regardless of the high level of mobile penetration, only 48% of the respondents were aware of 3G mobile services in India. Out of the 48%, 8% of the respondents were using 3G mobile services. This was relatively low as compared to other countries. Further comparison is made in the discussion section. Data revealed that less than 50% (43%) respondents were willing to change to 3G mobile handsets, suggesting low potential for growth in 3G mobile services in the Indian market.

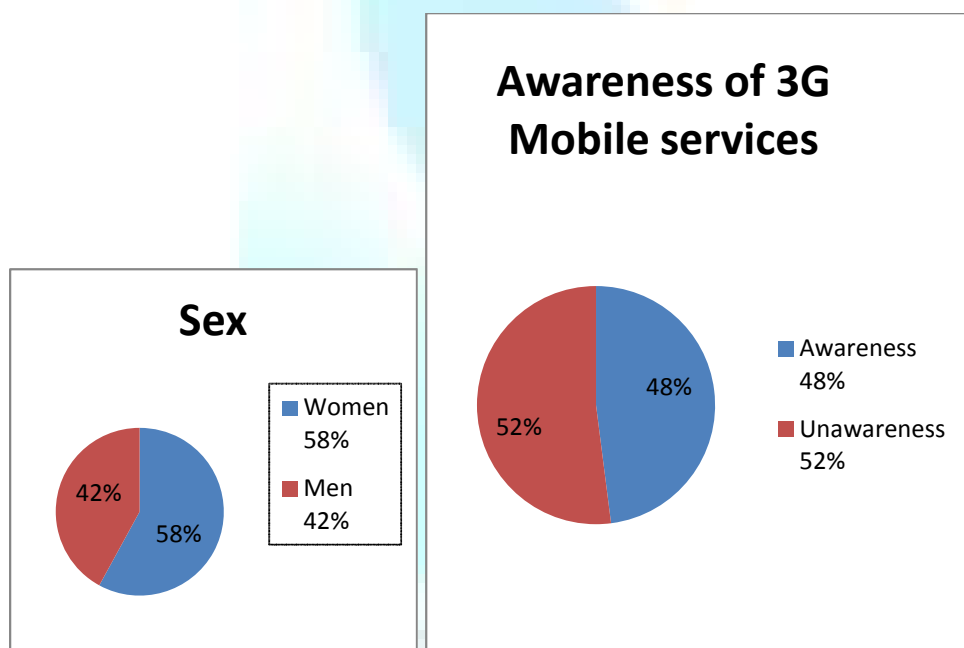


Table I indicates that the most used service was that of SMS (62%), followed by 32% of respondents using offline services, such as calendar, calculator, offline games. Internet usage and downloading, listening of ringtones is used by over 30% and 19% respectively of respondents. Watching/downloading movie /video and games were occasionally used by 19% of respondents, 15% respondents occasionally play/download music while less than 5% of the same using mobile e-mail. Over 45% of the respondents have never used the MMS service. Also the service with highest unawareness rate was MMS.

The data in Table II confirms the low usage of 3G mobile services as found earlier. It is worth noting that majority of respondents had never used the 3G mobile service (above 50%).

It is evident from the table III that security of the system was extremely important, followed by speed of data transfer and usefulness of the service. Surprisingly, price was not the dominating factor as only 21% of the respondents found it extremely useful

TABLE I: CURRENT USAGE OF VARIOUS FACILITIES BY RESPONDENTS

Existing Mobile Services	I don't know the service	I never used the service	Occasionally	up to 5 times per month	6-20 times per month	over 20 times per month
Short Message Service (SMS)	1%	5%	18%	9%	12%	62%
MMS(Multimedia Message Service)	9%	45%	5%	5%	1%	3%
Mobile e-mail	7%	36%	17%	2%	4%	5%
Ring tones	2%	18%	23%	15%	3%	19%
Listening/downloading music	3%	12%	15%	5%	10%	12%
Watching/downloading movie/video	6%	18%	17%	6%	8%	18%
Playing/downloading online games	3%	34%	19%	8%	5%	15%
Internet	2%	12%	24%	5%	8%	30%
Offline Services (i.e., calendar calculator, offline games, etc)	2%	7%	17%	13%	12%	32%

BAR CHART OF CURRENT USAGE OF VARIOUS FACILITIES

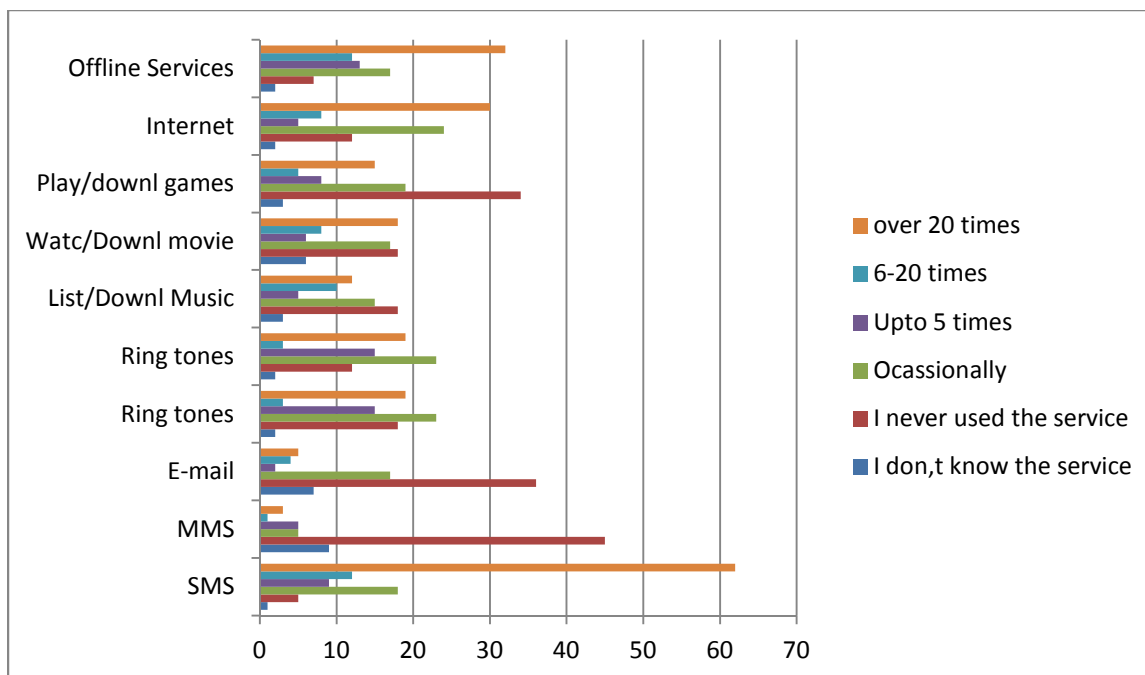


TABLE II: USAGE OF 3G MOBILE SERVICES

Usage of new mobile services	I don't know the service	I never used the service	Occasionally Used	Used upto 5 times per month	Used 6-20 times per month	Used over 20 times per month
Mobile TV	11%	43%	8%	4%	2%	2%
Video calls	9%	43%	7%	6%	2%	1%
Wireless voice telephony	13%	41%	6%	2%	0%	3%
Multimedia instant messaging	10%	41%	8%	4%	2%	1%

CHART OF USAGE OF 3G MOBILE SERVICES

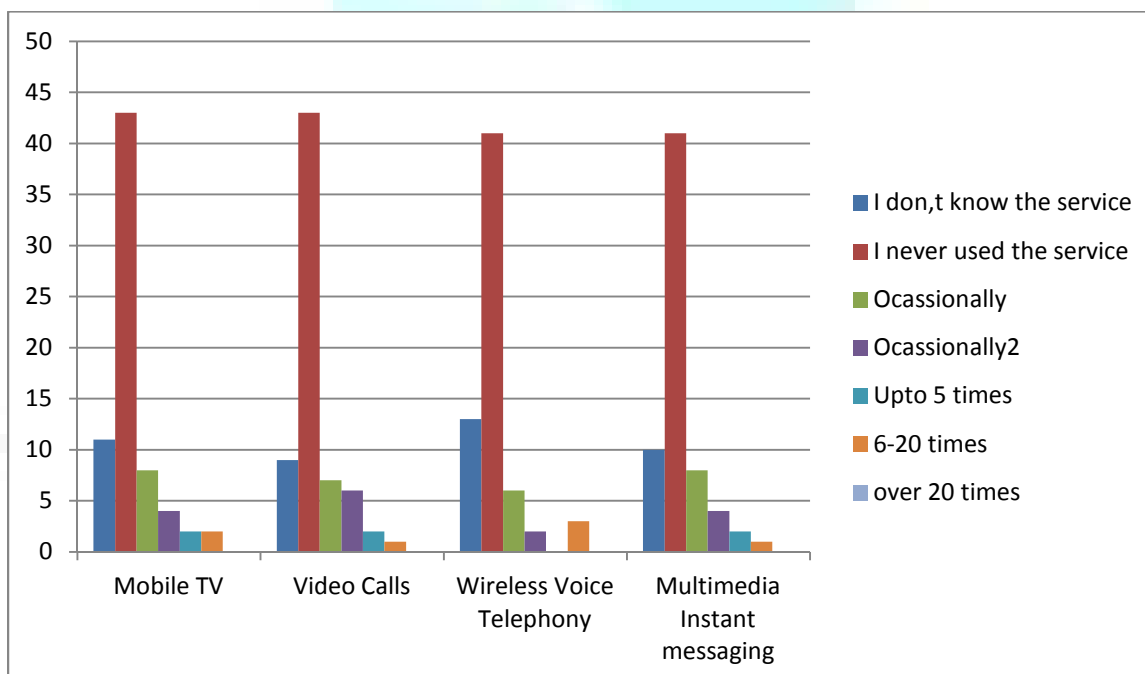


TABLE III: FACTORS IN THE USAGE OF 3G SERVICES

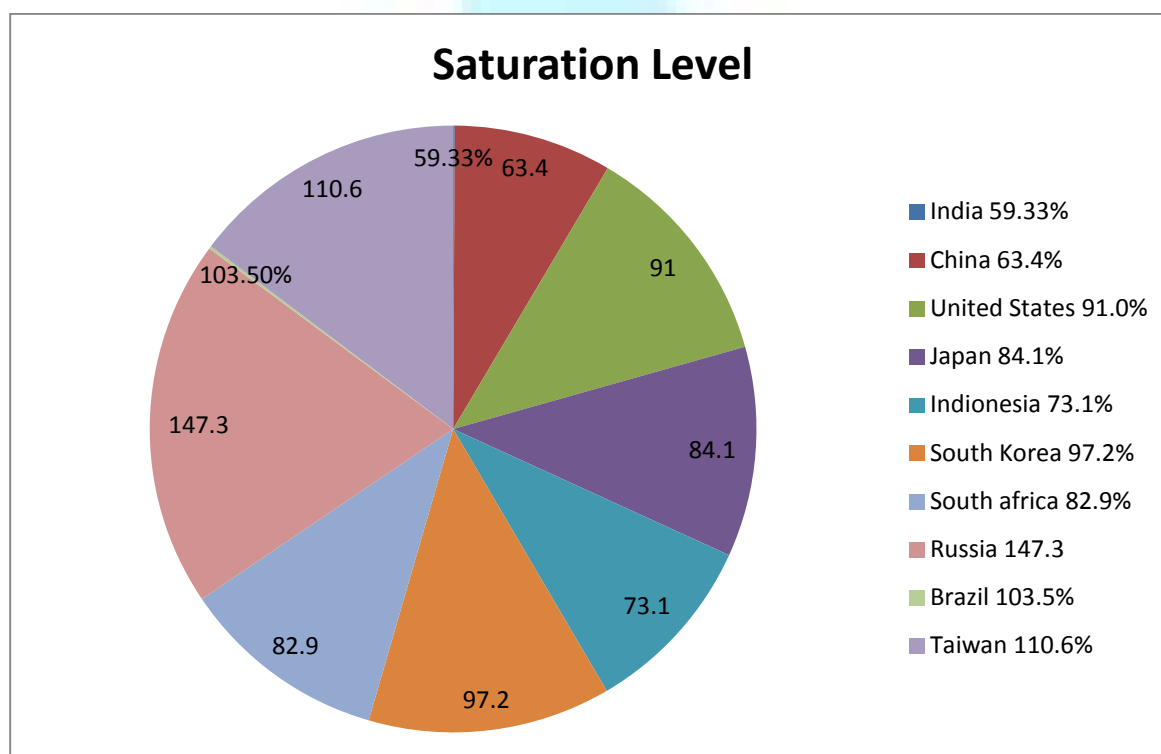
How important are the following factors for using new 3G mobile services?	Extremely important	Very important	Important	Neither important nor Unimportant	Unimportant
Price	21%	12%	26%	25%	6%
speed of data connection/transfer	55%	19%	10%	8%	1%
screen size of the mobile device	26%	21%	15%	7%	2%
complexity involved	14%	9%	29%	16%	2%
Security	65%	26%	18%	5%	3%
usefulness of the service	51%	13%	17%	14%	3%

Given the low rate of usage of 3G Internet services in India, the data was further analyzed for Perceived Usefulness of 3G services, Perceived ease of Use and Attitude toward usage. The findings are that, although, the mobile usage was moderate (45%) but the respondent's perception towards its usage, ease of use and intention to use were highly motivating. More than 50% felt that 3G can enhance effectiveness and productivity, while 51% agreed that the 3G mobile service were easy to use. 50% of respondents are in the favor and willing towards the usage of mobile services, But the main matter for the the respondents were price ,most of them are not ready to buy expensive 3G mobile phones. From our earlier findings ,security being rated higher than speed, Speed and the network is another factot that is extremely important . Two most important Medias for getting awareness on the 3G mobile services was found to be TV ,newspaper and friends. The respondents reported that they will be highly influenced by peer usage.

DISCUSSION

The study revealed almost saturation of 3G mobile phone usage (59.33%) in the respondents. This subscription rate is much lower than many countries, for example China (63.4%), United States (91.0%), Japan (84.1%), Indonesia (73.1%), South Korea (97.2%), and South Africa (82.9%). However, it is much lower than countries like Russia (147.3%), Brazil (103.5%), and Taiwan (110.6%).

SATURATION LEVEL AMONG COUNTRIES



Given the high population of India, the 59.33% saturation of 3G mobile phone seems to be lower in this country. Future study on the factors affecting saturation rate in India can be done. Although the study found high 95% awareness of 3G, low usage (20%) of 3G mobile services was also concluded. 3G usage in India is lower compared to Japan (80%), Taiwan (28.5%), South Korea (14%) while comparable to Europe (11%) and Indonesia (8.2%). The high cost of 3G services in India could also support low usage. Another reason for low usage rate of 3G services in India could be that most of the users studied are not spending time in commutation and most of them not known how to use that services compared to other bigger countries and hence do not feel the need of the facilities provided by 3G which is 'anytime' and 'anywhere' connectivity. Various researchers have suggested ways to improve the low usage of 3G mobile services and factors that affect such usage. For example Kuo and Yu [21] suggest that 3G telecommunication operators face huge challenges on their way to success and they can only survive if only they develop into "service -focused" instead of "technique-focused" business models. Future studies could be taken in India telecommunication market to find suitable strategies for fast diffusion of 3G mobile services. The finding, that of the SMS being the only service adopted by majority of India's mobile users, is in line with other studies.

MMS usage remains low in India's market. Though European market has also not adopted multimedia messaging to large extent, due to various reasons such as pricing policy and relatively complex usage but Asians have eagerly adopted this service [15]. In relation to security, being the highest concern factor for usage in India, finding of Bohlin, et al [10] suggest that phones need to be turned into secure communication devices to enable them to be used for authentication and avoid risks to privacy. Accordingly, the operators in India would have to consider this aspect. Literature suggests that pricing of the 3G services is one of the biggest challenges facing telecommunication companies[11] [5] but this study reveals that for India's subscribers price is not one of the main criteria for choosing this technology.

LIMITATIONS OF THE STUDY

Students of BTech residing in the city region were used as the sample and therefore, the results needs to be tested on larger group comprising of respondents from all other areas and cities.

CONCLUSION AND FUTURE RESEARCH

The study reveals insights into the usage and adoption of 3G mobile services in India. It compared with others markets and conclude that the subscription rate is much lower than many countries.

The highest concern factor for the users of 3G in India is Security(65%), the follow up studies could examine this factor to investigate the context (for example intrusion, collection or transfer of personal information, security features of the phone etc.) that is relevant for these users. Further studies should concentrate on country specific characteristics or culture specific characteristics to explain the adoption of 3G in India. In addition, the current and future prospects of individual services like mobile Commerce, mobile Internet, mobile advertising etc should be examined in depth in light of 3G. However, 3G technology poses a challenge for the operators who have to develop innovative business models for increasing subscribers of 3G. From business point of view, telecommunication policies for exploitation of cost and performance of 3G networks need to be addressed.

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