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BUSINESS APPROACHES PATHWAYS TOWARDS STRATEGIC MARKET CAPTURE IN TELECOMMUNICATION INDUSTRY

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ABSTRACT: *Telecommunication business companies face many sustainability challenges that range from rapidly evolving* technological and infrastructural changes to increase in the demands of potential customers or clients. *While telecommunication business companies' investment varies in terms of products and services, their focus on market also varies accordingly. However, the rapidly changing market due to technology evolution and customer demands bring in a lot more challenges than the ones which can be anticipated. Business sustainability in Telecommunication company's business strategies vary according to the business model they use which influences on their focus on various business opportunities. Each competitor has different tactics to use when it comes to gaining the sustainable market share and generation of good revenue. Due to rapidly evolving nature of telecommunication industry, the telecommunication companies require regular assessment and improvement of their business focus. A thorough investigation and analysis of selected telecommunication business companies have been presented that focuses on highlighting the strengths and weaknesses of telecommunication companies with respect to conducting successful business and sustainable market capture strategies while carefully outlining the business model components that play crucial part in achieving it. Detailed evaluation of their focus on various business model canvas components and individual entities have also been presented to outline the importance of incorporating certain entities within the business model to target success. Impact of these strategies, 5G technology, its demands and promises have also been discussed to provide an insight into the need for improvement of business models for sustainable growth within telecommunication business sector.*

Keywords: *Telecommunication Business Industry; Mobile Communication; Business Model Canvas; Marketing and Management*

JEL classification: M1, M20, M30
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INTRODUCTION

Telecommunication sector faces a number of challenges which can also be considered as opportunities for the rapid growth or improvement of the same. Telecommunication has also served as a platform for a vast number of digital innovations, possible solutions and their testing platform (Elibal & Özceylan, 2021; Sanchez-Segura et al, 2021). Promising investment opportunities can also be foreseen. Timely adaptation of new demands of the market and conditions is necessary for sustainable business in this sector and companies that can change their approach to business accordingly are witnessing significant success in the market (Wang et al., 2021;

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Canestrino et al, 2019). Due to the increase in the consumer demands and types Telecos have starting to prefer more integrated as well as hybrid models for business.

A number of companies or organizations use corporate business models and often share businesses among the top management, partners and/or stake holders (Raimi et al., 2022; Sajadieh et al., 2021). These organizations use different business models from those of their subsidiaries. The success stories of these businesses depend up on their relationships and market capture. On the other hand, customer expectations and their behaviour towards specific products also play vital role in success of a business and these behaviours and expectations may change rapidly resulting in rapid growth or rapid failure of the business. A number of options or solutions have been suggested by the researchers globally to overcome the rapid changing expectations by adapting the on-demand service model to survive the challenges.

The companies have been using various tactics to handle the pressure of competition by asking the Over the top (OTT)s to pay for the usage of the network or for business to make use of cloud environments but have been left behind while some of the competitors could gain a regulation in favour (Terho et al., 2023; Bhatia, 2022; Susanty et al., 2022). On the other hand, to survive the competition in real world the telecommunication business companies not only need to work on improving its productivity margins but increase the infrastructure performance (Figure 1). It can be done via integration of multiple platforms and using different technologies that suits the economical structure of the company (Ferraz et al., 2023; Fried & Lakomaa, 2022; Najm & Ali, 2022). Moreover, the company needs to focus on the organization of its business to be able to grow and provide services that can be used as an advantage against its competitors.

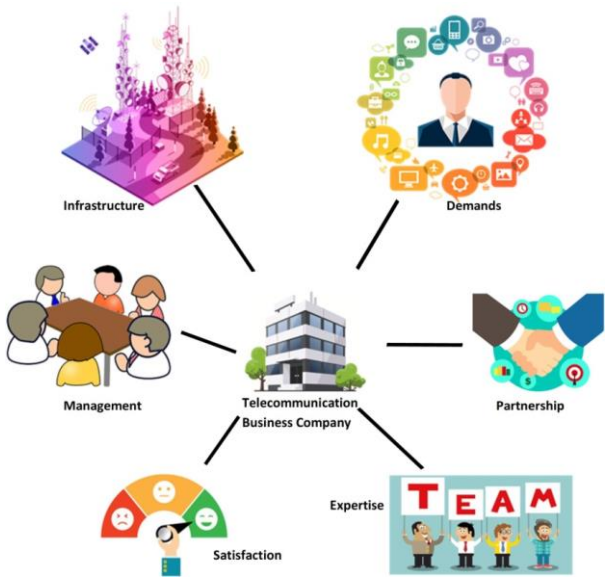

Figure 1. Challenges faced by the telecommunication business companies

Source: Author's own elaboration

However, there is cost associated with everything. New skills need to be incorporated to speed up and to be able to meet the new challenges and create new opportunities for the business and its sustainable survival

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in the competitive market. Hence, innovation will have to be supported and trainings will be required for the workforce thus changing the focus of the management to an entirely new region for prosperous business (figure 2). It is important to understand the key areas a company deals, considers or focuses on. Business model canvas can help identify these important components.

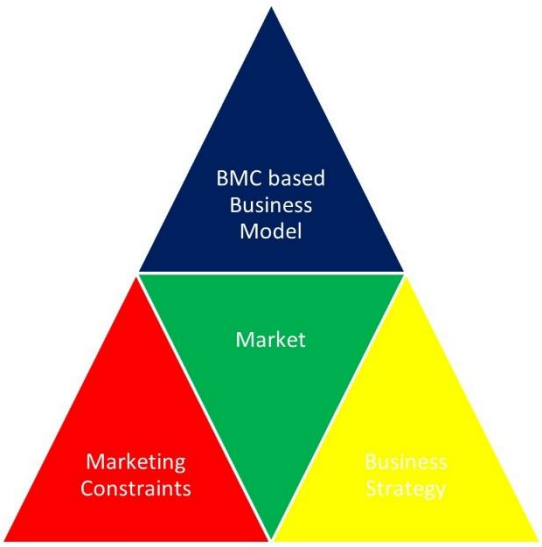

Figure 2. Business Model Canvas, organization and Market – Framework for a better business

Source: Author's own elaboration

This paper/research has made a substantial and novel contribution by providing an in-depth analysis of the business in the telecommunication sector for companies via considering and evaluating strategical, managerial as well as financial perspectives to help understand strengths, weakness, major drawbacks and possible future perspective for business growth and market sustainability.

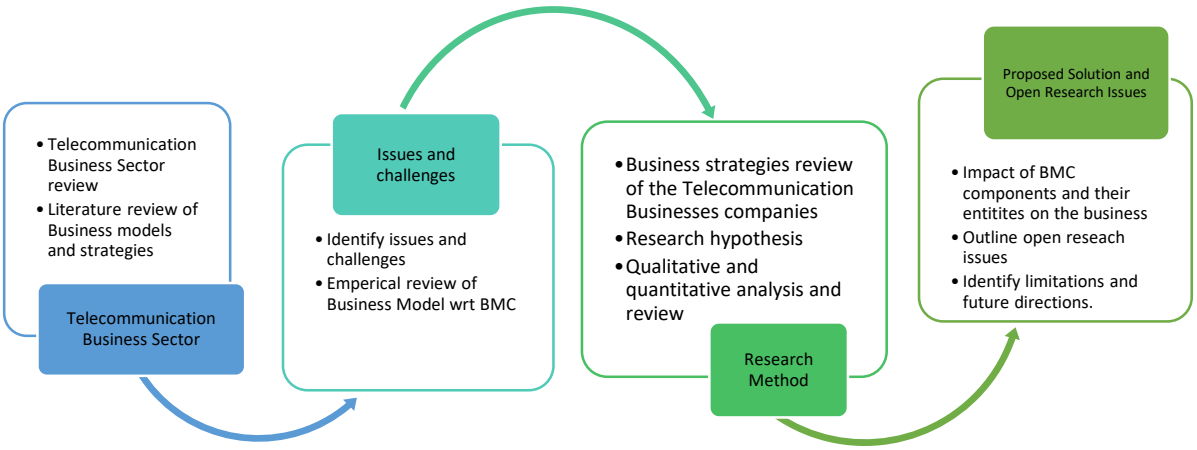

Figure 3. Research Methodology

Source: Author's own elaboration

Perceptive and predictive analysis have been used for the managerial and marketing strategies, setbacks, and descriptive/statistical analysis for the financial data of the organizations. Figure 3 illustrates the research

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contribution and study path. An open-ended approach is opted to explore the business strategies via documentary analysis using the documents/reports from each company as well as from related articles on the global research forum.

Although, business model canvas plays vital role in creation and successful execution of a business model, major factors and key attributes associated with Business Model Canvas (BMC) as often ignored in a business model of a telecommunication company. To the best of our knowledge, this perspective and this analysis has not been conducted on the telecommunication companies under consideration. Rest of the paper has been formatted as follows. BMC and its components have been discussed in Section 2. Section 3 contains in-depth discussion regarding the three successful Telecos and their business models based on the BMC components. Section 4 is dedicated to results and discussion containing analysis and evaluation of the perspective of business and its focus that can lead to conducting successful business in the telecommunication industry by the three Telecos. Section 5 provides some open research issues and possible paths to help design an optimized business model for telecommunication business companies. Section 7 presents conclusion of the research.

2. Business Model Canvas

Basic as well as significant components of a business can be identified using a Business Model Canvas as it also provides an understanding about the company's business model (Athanasopoulou & De Reuver, 2020; Ghazi et al., 2019). Distribution of the key elements by the BMC helps cope with the market competition as those elements play a vital role in running a smooth business. It also helps in focusing on the key areas to make a significant place in the market, surrounded by competitors. Hence the BMC actually guides the company regarding customers they serve, using which channels the value proposition may be provided to the customers and under severe competition in the market the market share may be acquired and shared by the company.

The BMC may help in understanding the competitor's business model too. BMC presented by A. Osterwalder and Pigneur (2011) has been considered in this paper to provide an analysis and evaluation of the business models of three telecommunication companies; NTT Docomo, China Mobile and AT&T. The considered BMC consists of nine components (figure 4) that a good business model may require for a successful business of a company. These include Key Activities, Key Resources, Key Partnerships, Value Propositions, Customer Relationships, Distribution Channels, Customer Segments, Cost Structure and Revenue Streams.

Each of the components is analyzed and discussed individually to highlight the strengths and weaknesses of each company with respect to running a business successfully. Every single component plays a vital role in understanding a business model closely and efficiently by a company. It is important to know how these BMC components influence in the success of a company while using a business model. In this paper, with the help of the BMC, business models of NTT Docomo, China Mobile and AT&T have been taken into consideration to provide a detailed analysis as well as an insight into the strengths and weaknesses of these business models with respect to doing successful business.

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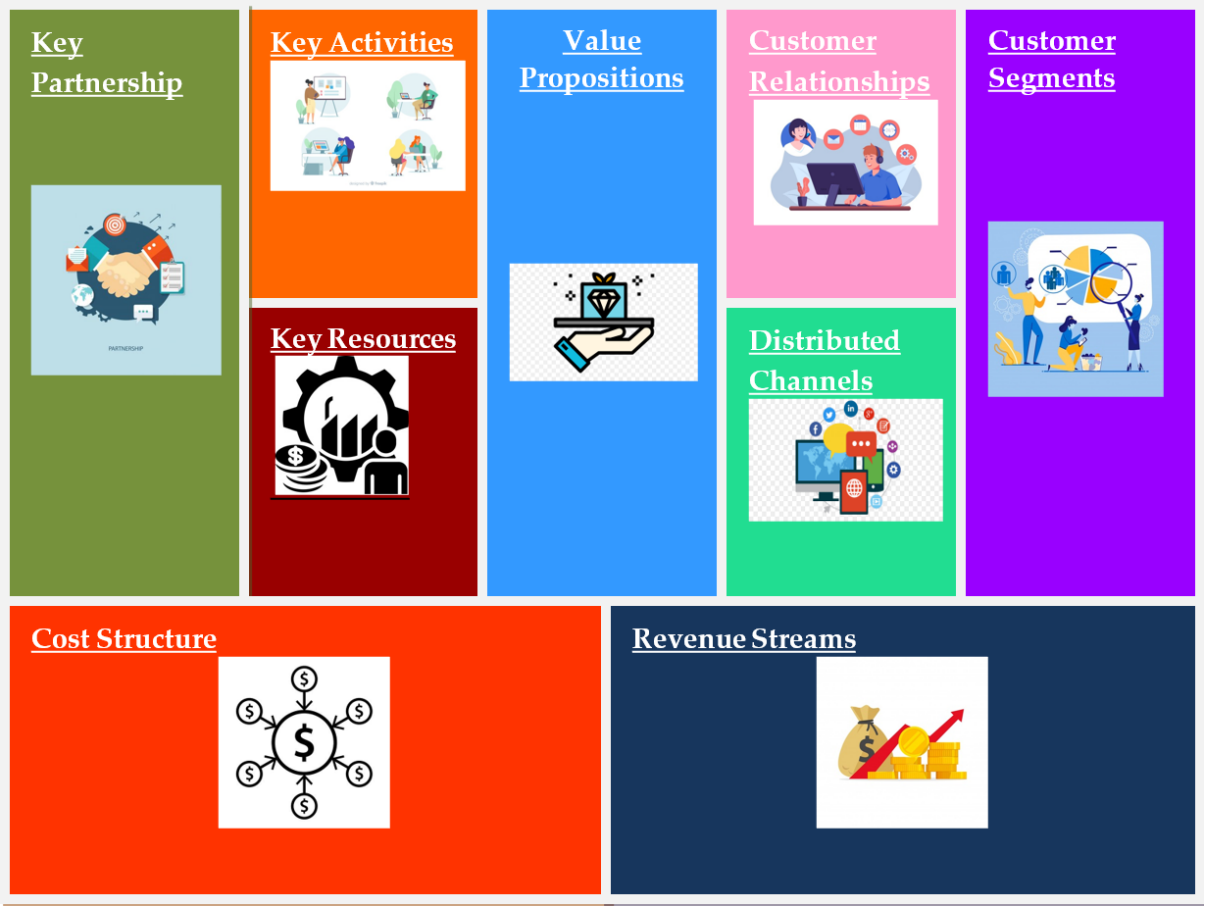

Figure 4. Business Model Canvas (BMC)

Source: Author's own elaboration

A detailed discussion is presented in the next section.

3. Telecom Business Components

Telecommunication technology is evolving rapidly and so are the demands of a user. For any telecommunication business company, to sustainably conduct a successful business, it is important to acquire deep understanding of various aspects of the telecom business requirements from as wider perspective as possible (Kurniawan et al., 2018). In this section, a detailed analysis of business models of three telecommunication companies; AT&T (AT&T online) NTT Docomo (NTT online) and China Mobile (China mobile online) is provided with the help of BMC components to highlight the strengths and weaknesses of those business models and to provide an insight into the future challenges associated with evolving telecommunication technologies. Nevertheless, this analysis will also help with understanding the current and future challenges associated with the business conducted by the telecommunication business companies. The BMC components are discussed below in detail.

3.1. Key Activities

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This component focuses on the company's basic operations with respect to what is done and how it should be done. For the analysis, a tabular comparison is presented for the key activities component which includes 32 elements. Table 1 below shows the detailed comparison.

Table 1. Business Model Components - Key Activities

Key Activities	NTT DoCoMo	China Mobile	AT&T
Cell Phones/Handsets	✓	✓	✓
DSL	✓	✓	✓
Internet	✓	✓	✓
Microcell			✓
Landline Phones			✓
Hosting			✓
Marketing		✓	✓
Engineering		✓	✓
Network Development and Maintenance	✓	✓	✓
Network Operation	✓	✓	✓
Customer Service and Support	✓	✓	✓
Technical Support	✓	✓	✓
IPTV			✓
Uverse			✓
Sales Channels	✓		
Billing Plans	✓	✓	✓
Dmarket	✓		
Finance/payments	✓	✓	✓
Docomo ID	✓		
Health care	✓		
Education	✓		
Overseas Business	✓		
Corporate Customers	✓		
M2M	✓		
Reputation and Brand	✓		
HR	✓	✓	✓
Capital Expenditure	✓		
R&D	✓	✓	✓
Alliances	✓		
ARPU (Average revenue per user)	✓		
New Business Area	✓	✓	✓
Number of Subscriptions	✓	✓	✓

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Out of the 32 elements there are 13 elements that are focused by all three telecommunication companies. China Mobile and AT&T also focus on two other elements marketing and Engineering. The business models of the telecommunication companies in the telecommunication sector may not have a huge difference in their business models however selection of BMC components and focusing respective elements may play a big role in capturing a market share. This comparison provides an insight into the selection of the focus on various elements in the key activities component and how these elements may be important for successful business of that company.

As illustrated in the Table 1, NTT Docomo's business model focuses on 7 more key activities that include Docomo ID, Healthcare, M2M, Capital Expenditure, Reputation and Brand, Corporate Customers and Average Revenue Per User (ARPU). Docomo ID has been developed as a framework that plays a vital role in the upper-layer service distribution which results in an increase in smart ARPU and the company can prosper in new business areas by generating more revenue. It also helps facilitate its customers by providing various authenticated actions that require individual ID verification such as one-click payments, mobile sites single sign-on, etc. The company also provides "four freedom" concept realization to its customers that includes OS-free, device-free, network-free and carrier-free. This element helps attracting more users/customers hence results in generating or increasing revenue of the company.

NTT Docomo has focused the most elements in the key activities component. It is important to understand the role of these elements for the successful business and market capture. While, it is not easy for any company to incorporate all these elements in its business model, including or focusing the majority of these plays an important role in the overall success of a business model canvas component to conduct successful business. However, with the changing demands of the market, survival of business may become an issue if "partnership" is not considered.

3.2. Key Partnerships

Nowadays, it may be difficult to do business without third party organizations whose services may boost the company's overall performance and revenue generation. This BMC component defines and details the services needed for market survival and how the third parties can be included in the business plan. Different projects, organizations or enterprises may be identified as partners using this component.

AT&T and NTT Docomo focus on all the elements of this BMC component but one that is Chinese Government'. Table 2 illustrates that China Mobile is the only company that has the focus on this element hence covering all the considered elements of the "key partnership" component. This unique partnership of China Mobile supports the company in the Chinese Telecommunication Industry. It helps the company with the regulations, control, rules and security aspect. Nevertheless, it can also track payments, individuals and record the services consumed by the individual users that may help the company in better understanding of the potential business areas and boost the market capture.

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Table 2. Business Model Components - Key Partnerships

Key Partnerships	NTT DoCoMo	China Mobile	AT&T
Outsource	✓	✓	✓
Vendors	✓	✓	✓
Universities	✓	✓	✓
Converged Businesses as Bundle	✓	✓	✓
Subsidiaries	✓	✓	✓
Equipment manufacturers	✓	✓	✓
Engineering services companies' contractors	✓	✓	✓
Regulatory agency	✓	✓	✓
Chinese government		✓	
Operators within telecom & technology sector	✓	✓	✓
Multinational Clients	✓	✓	✓

Source: Author's own elaboration

On the other hand, this partnership may also have some negative aspect associated with it. This partnership may affect international business of the company and the company may also have certain restrictions while dealing with international clients who may not like Chinese Government interference or hurdles. Business with international individuals or organizations may involve different approach, initiatives, services and rules. Here, being a partner, the government may restrict certain plans and services which may result in a decline in the overall market share, revenue generation or customer attraction and subscriptions. Majority of telecommunication business companies avoid partnership with the government as it mostly leads to hurdles, interferences and creates obstacles in doing successful business. Whereas, NTT Docomo and AT&T, being private companies, following rules and regulations, do not face any such interferences and can do business with international clients and organizations without hurdles. Moreover, it is also important to make sure right product and/or services reach the customer for a successful business.

3.3. Value Proposition

Value Proposition is the component that involves everything associated with providing high quality product and valued services to the customers that also helps in attracting more customers. The company via value proposition guarantees its customers that the products and services provided to them are high quality as compared to those offered by its competitors. Hence, this component provides a list of valued services, what tasks, actions and/or operations are done for the customers what has been promised and what and how it is provided. The table 3 below lists the elements of the value proposition component of BMC and provides a comparison among NTT Docomo, AT&T and China Mobile.

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Table 3. Business Model Components – Value Proposition

Value Proposition	NTT DoCoMo	China Mobile	AT&T
Managed Network	✓	✓	✓
Improve Efficiency	✓	✓	✓
Growth Revenue	✓	✓	✓
Full-service telecommunications services	✓	✓	✓
Telecom services to interconnect the Chinese society		✓	
Business primarily consist of mobile voice and data business	✓	✓	✓
IoT Business	✓	✓	✓
Mobile payment service	✓	✓	✓
Wireline broadband and other information and communications services	✓	✓	✓
Entertainment applications	✓	✓	✓
Quality and reliability of its network services	✓	✓	✓
Brand standing and reputation	✓	✓	✓
Commitment to R & D	✓	✓	✓
Accessibility of its multi-channel services	✓		
Patents	✓	✓	✓
Provide up to date solutions to its customers	✓	✓	✓

Source: Author's own elaboration

China Mobile solely focuses on providing telecommunication services to the Chinese society and promises to interconnect them together. It promises all but one key elements of the values proposition component which is providing accessibility of its multi-channel services to the customers. Similarly, AT&T while promising majority of the key products and services to its customers does not provide telecommunication services to Chinese society and its customers have no accessibility to its multi-channel services. On the other hand, although NTT Docomo does not provide telecommunication services to Chinese society, it guarantees accessibility of its multi-channel services to its customers; local and international. Providing its customers with the accessibility to multichannel services works as a game changer for NTT Docomo.

Accessibility to multichannel services include customer support via a number of platforms hence this can facilitate the customer beyond satisfaction and can potentially be self-help support service. This kind of service may help the company in reducing its overall business cost and may also help in saving without having to compromise on what it offers. The services in this element need proper implementation to guarantee customer self-satisfaction. This allows the customers to connect with the company regardless of their demography using any platform convenient and comfortable to them. This helps in boosting business among loyal customers and

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gaining trust in new ones due to delivering high quality and well managed services across a wider range of platforms. This also helps in boosting the revenue as more subscriptions may be obtained quickly. Nevertheless, Customer Relationship also plays a vital role in doing successful business in the telecommunication industry.

3.4. Client/Customer Relationship

This BMC component has an important role with respect to not only creating strong ties with the customers but also retaining them. Therefore loyalty is gradually established via building good relationship among the service provider and the customer. Revenue earned by a business can directly be affected by the client/customer relationship. While a good relationship guarantees loyalty and business growth, a weak relationship may result vice versa. This makes it important for the company to provide timely response and fulfilled the desired demand of the customer as much as possible for a successful business. The table 4 below summarizes the type of services the three tech giants focus. This focus on these elements helps provide, construct and consult better and targeted services for the customers/clients.

Table 4. Business Model Components – Client/Customer Relationship

Customer/Client Relationship	NTT DoCoMo	China Mobile	AT&T
Rollovers and promotions			✓
Free upgrades			✓
Consult and build better system for clients	✓	✓	✓
Service for targeted customers	✓	✓	✓
Self-service basis	✓		
DoComo shop	✓		
Dmarket portal	✓		
Mobile network subscription (MNS)	✓		

Source: Author's own elaboration

AT&T provides rollovers and promotions and free upgrades to its customers that help them receive free mobile and services. This may help the company in capturing interest of the customers with respect to retaining and/or finding customers and market share. However, NTT Docomo focuses on a few more elements for good business that are currently ignored by the China Mobile and AT&T. These include Self-service basis, Docomo Shop, DMarket portal, and Mobile Network Subscriptions (MNS). Hence, it provides more services as compared to customer consultation based for sales and after-sales. Docomo shop helps in strengthening the customer trust and loyalty due to the customer service capabilities that is directly and indirectly influential for the customer satisfaction. Customer service times have been affected due to a number of reasons and require proper management. NTT Docomo provides online service guidance and with the help of tablet usage these service times are adequately managed by the company. It is important to ensure that the customer does not have to wait which reflects in creation of loyal customers hence grater revenue may be earned. D Market helps

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customers find what matches their tastes, life style and convenience. NTT Docomo via DMarket provides user-friendly, convenient and every-day used service to help its customers with their daily life. These services are not only offered to their existing customers but also to non-subscribed users. These initiatives have helped the company in achieving breadth and depth; expanding the number of stores and increasing the offered services and products. Nevertheless, the overall revenue generation by the NTT Docomo has massively increased as compared to that of its competitors. It is however equally important to identify the customers their demands and/or their needs to provide targeted products and/or services hence focus on better revenue generation.

3.5. Customer Segments

In this component the company actually group the customers/clients based on certain similarities in demand, usage, locality, etc to enlist the sectors that help in generating large portion of the company's revenue. These groups help company understand their needs and/or demands and to provide targeted services and products to that group appropriately and effectively. This also helps company in conducting targeted marketing of the products and services. The table 5 below illustrates the elements of the customer segments component focused by AT&T, NTT Docomo and China Mobile.

Table 5. Business Model Components – Customer Segments

Customer Segment	NTT DoCoMo	China Mobile	AT&T
All generations	✓	✓	✓
Small business	✓	✓	✓
Government	✓	✓	✓
Family and individuals	✓	✓	✓
Massive market	✓	✓	✓
Home users	✓	✓	✓
Customer base	✓		

Source: Author's own elaboration

The Table 5 shows all the companies focus majority of the elements to make sure they acquire a good market share and capture more customers. However, customer base is solely focused by NTT Docomo which helps the company in developing opportunities for new business. This also helps in securing partners for device development and services hence showing path to new business opportunities. Customer base in NTT Docomo and its operational scale is the foundation of the business model of the company, the number of users and/or subscribers X Average Revenue Per User (ARPU), the customer base maintenance and expansion is a challenge in the company's growth strategy. Simultaneously, the company's customer base also characterizes a large segment of potential customers. In the size of this segment lies the key strength of the NTT Docomo's efforts to acquire trusted partners in terms of communication services, product and application developers, manufacturers and alliances. Hence on a wider perspective, new business opportunities means more business hence more revenue which may help and provide an edge in capturing market share as compared to that of the

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competitors, fast. Nevertheless, it is important to highlight the company's key resources as those are the most important assets for a company to conduct successful business using a business model.

3.6. Key Resources

For a business model to work, key resources play a vital role. These are the assets that are needed by every business model. Value propositions are generated through them as well as company's revenue. These resources are owned, leased or both by a company. The company's business model indicates the type and the amount of resources that are utilized or being utilized by a company. These can not only indicate the type and number of activities a company is involved in but their quality also impacts on the company's productivity and sustainability. Hence in the business spectrum this component defines type of material, equipment, staff, etc, needed at the operational end. Hence for a specific customer segment, it plays an important role to indicate the minimum delivery needed by the company for that targeted set of customers to generate revenue and guarantee value proposition. The table 6 below illustrates the elements focused by the companies.

Table 6. Business Model Components – Key Resources

Key Resources	NTT DoCoMo	China Mobile	AT&T
Support from Chinese government		✓	
IoT industry ecology	✓	✓	✓
NFC	✓	✓	✓
Market oriented mechanism	✓	✓	✓
Lean organization structure and process standardization	✓	✓	✓
Voice –over LTE (VoLTE)	✓	✓	✓
Mobile broadband network	✓		✓
Sales and distribution channels	✓	✓	✓
Chain of retail stores	✓	✓	✓
More Patents for LTE	✓		

Source: Author's own elaboration

The table shows that all three companies try to focus on the majority of the elements of the key resources component. However, China Mobile is the only one that is supported by the Chinese Government hence may have advantages and disadvantages associated to its products and services due to this support. With the support from Chinese Government, the company can provide services and coverage to Chinese Communities in all parts of China hence has an edge over generation of revenue as compared to its competitors. Majority of the telecommunication business companies avoid governmental interferences and receiving business directives as these result in certain possible restriction and may not be able to operate business freely. This can be disadvantageous in terms of acquiring market share due to tough business competition. AT&T and NTT Docomo do not face such intervention hence can offer wide variety of products and services to their

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customers/clients. It is equally important how to time and locate the appropriate launch of products and services by a telecommunication company for good business.

3.7. Distribution Channels

The BMC component distribution channels outlines the directions or paths that must be used for a successful delivery of products and/or services by the company to customers/clients at a specific place on a specific time. These channels play vital role in the business growth of a company. These channels or routes can be as short as direct dealing between the company and the customer/client or they may involve multiple intermediate routes to reach a customer, such as via distributors, wholesalers, retailers, etc. The companies under consideration also use multiple channels to reach their customers as illustrated in the table 7 below.

Table 7. Business Model Components – Distribution Channels

Distribution Channels	NTT DoCoMo	China Mobile	AT&T
Advertisement	✓	✓	✓
Retail channels	✓	✓	✓
Robust sales portal	✓	✓	✓
Wide range of solutions	✓	✓	✓
Company owned stores	✓	✓	✓
Customer services hotlines	✓	✓	✓
Virtual outlets	✓	✓	✓
Weixin (WeChat)		✓	
Website	✓		
Online store/DoCoMo Shop	✓		
Online entertainment/ Dmarket can be accessed through APP/mobile & desktop browsers	✓		

Source: Author's own elaboration

China Mobile solely uses Weixin (WeChat) application for a large number of purposes that include messaging, mobile payments, social media, etc. The app has been developed by Tencent. It is widely popular among Chinese Communities as many of its services have limited geographical use that is only in China. Where AT&T focuses most of the elements of the component, NTT Docomo provide more services to its customers via focusing on virtual platforms that include online stores, online entertainment, DMarket and Docomo Shop. The customers/clients can access DMarket via Desktop Browsers, Mobile Browsers and Mobile Application. Hence, NTT Docomo provides quick and effective services to its users which may result in boosting its business as compared to its competitors. One click access to services and products make it convenient for NTT Docomo's customers to access its services and products easily and efficiently in their busy

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life. Moreover, a successful company needs to outline its cost and expenditure so that its business model can work. The next BMC component "cost structures" outlines the importance of the same.

3.8. Cost Structure

For a business model to work, it is important to outline all the costs that are incurred by the company. This component describes these costs. Nevertheless, the estimation or description of these costs becomes relatively easier once the following components have been defined; key activities, key resources, as well as key partnerships. Every business model's aim is to try to minimize the costs however in telecommunication industry a low-cost structure is very important. For a company, these cost structures define certain costs that the company will earn conducting business using a specific business model to manufacture and deliver the company's value proposition. Every operation in business has cost associated with it for example maintaining customer relationship; costs associated with this operation are distributed across all products and/or services offered to customers/clients to minimize the overall costs. Moreover, the cost structure component helps in characterization of two large business model classes; cost-driven and value-driven. While the former tries to minimize expenses or costs, the latter targets revenue generation via services and/or high quality offers. Table 8 outlines the elements focused by the three telecommunication companies with respect to the component cost structure.

All the three companies focus on the majority of the elements important for a successful business. However, AT&T focuses two more elements that help in better cost evaluation and estimation of the overall cost associated with the business. AT&T focuses on the elements payroll of employees and attorneys and acquisition of the other companies. The term acquisition is used when a company is a partial or major share holder of another company or its assets.

Table 8. Business Model Components – Cost Structure

Cost Structure	NTT DoCoMo	China Mobile	AT&T
R&D activities	✓	✓	✓
Sales & Distribution networks	✓	✓	✓
Maintenance & Development IT infrastructure and commercial infrastructure	✓	✓	✓
Retention of its personnel	✓	✓	✓
Salaries and benefits	✓	✓	✓
Network of sales and administrative offices	✓	✓	✓
Chain of retail stores (rent and utilities)	✓	✓	✓
Acquisition of the other companies			✓
Payroll of employees, attorneys and all			✓
Operative cost	✓	✓	✓

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Procurement	✓	✓	✓
Copy rights	✓	✓	✓
Royalties and licenses	✓	✓	✓
Content acquisition	✓	✓	✓
Taxes	✓	✓	✓

Source: Author's own elaboration

New products can be developed, newer and better resource accessibility, as well as talented human resources are a few more to name that the buyer company may profit from. Moreover, an acquisition of a company results in opening doors to new market immediately that too with a trusted reputation, recognized brand and existing loyal customers/clients. AT&T has an edge in the competition with respect to cost evaluation and overall business cost estimation. Boosting business also means focusing one of the major goals of any telecommunication business company that is revenue generation. The component revenue structure details cash generated via various revenue streams.

3.9. Revenue Streams

This BMC Component focus on what revenue a company earns from the company's individual customer segments. It actually represents the money that is generated by every single customer segment of the company and its profit. This cash is usually estimated or calculated by subtracting costs from the total revenue generated by the customer segments. This component serves as a key component for the business models that are customer-focused. Hence for successful generation of company's revenue streams, customer-centric approach plays a vital role. In other words, it is important to consider a value or an estimation of it that the customer or client may be willing to pay for hence fairly pricing the products or services based on the approximated worth. The income can be generated from two types of revenue streams; transaction based and recurring based. The first is associated with the money generated from customer's on-time payment for the products or services whilst the latter is related to continuous payments made by customer which may involve post-purchase-customer-care or for service plan or value proposition. Businesses mostly focus on customer policies either leading to business models with incomplete structure for revenue streams or completely ignoring them. It is vital for a business to identify this component as cash flowed in by the business but not the profit and it is equally important that the revenue streams are clearly defined. Therefore, not only these revenue streams need to be clearly listed but the amount associated with them and their life-cycles should also be carefully specified. Once they are clearly outlined and mapped a business can be able to evaluate whether to choose a revenue stream or not. The table 9 lists the revenue streams elements focused by NTT Docomo, China Mobile and AT&T. Out of the three companies, as illustrated in the table 9, only AT&T focuses on the new converged services. This element provides an edge to AT&T for getting access to new combined services in the

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telecommunication industry which represents the new customer need with the changing demands and emerging new trends in technology.

Table 9. Business Model Components – Revenue Streams

Revenue Streams	NTT DoCoMo	China Mobile	AT&T
Mobile and broadband communications services	✓	✓	✓
Equipment sales	✓	✓	✓
Other services (content services/payment solutions/device protection services)	✓	✓	✓
Sales of all services and devices	✓	✓	✓
Network infrastructure	✓	✓	✓
Consulting and rebuild businesses	✓	✓	✓
New converged services			✓
Service fees	✓	✓	✓
Roaming charges	✓	✓	✓
Subscription fees	✓	✓	✓
Interconnection fees	✓	✓	✓
IoT projects	✓	✓	✓
Mobile payment commissions	✓	✓	✓

Source: Author's own elaboration

This element can also help AT&T generated better revenue in a number of customer segments associated with the customer demands in these new converged services.

Every BMC component and its entities contribute to the successful business and market capture if considered carefully and incorporated in the business model of the organization. However, it is not a simple and straightforward task. Impact of each component on business cost while incorporating it/them must be evaluated. The next section presents qualitative and quantitative analysis and evaluation of the AT&T, China Mobile and NTT DOCOM.

4. Results and Discussion

Over the last two decades, the telecommunication business industry has emerged as one of the largest revenue generating industries in the world. The companies associated with telecommunication business generate revenue via products and services sold to customer/clients.

4.1 Economical Affect

There are different ways of analyzing any company's business sustainability; these may either include answering some simple questions based on various business core activities or detailed business model analysis (Ribeiro et. Al, 2023). The former (Figure 5) may involve these:

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1. Identification of key stakeholder/s which is also known as stakeholder profiling.
2. Competition in market capture in terms of focus on customers? Or Context Mapping.
3. What moves or can make the customers loyal? In other words "Core Distribution".
4. How the business will make money?! The most important one; Revenue Generation

Figure 5. Major questions for business analysis of a company

Source: Author's own elaboration

4.2 Findings and Recommendations

On the other hand sustainability of the Business models is often analysed via identifying major elements and activities that are vital to generate value for business. It can also be used to identify opportunities to start new business or how to grow existing business via those opportunities in the market place. Three main methods to analyse the business conducted by these companies were used that include behavioural analysis, retention analysis and channel analysis. For each telecommunication company focused in this research the following has been done for:

1. Identification of key stakeholder/s which is also known as stakeholder profiling.
2. Relationship between the company's BMC key attributes and strategies has been explained and highlighted.
3. Value proposition has been created for business's customers.
4. Customer segment has been determined.
5. What channels are created and how they are used by the businesses to reach to their customers have been thoroughly discussed.
6. Which company focuses on customers and its relationship that need to be created to achieve customer loyalty has been identified and presented.
7. Revenue streams creation for the business enterprises have been focused and evaluated to determine the value of success.

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8. Key resources with respect to a company's capability to successfully conduct business in the market have been determined.

Based on the above key points used for analytical methods based on BMC has been used that helps in visualizing vital building blocks needed to run a sustainable successful business. For all the three companies focused to provide a detailed insight into their business capabilities and success the BMC components are highlighted to provide an insight regarding strengths and weakness of each. The table 10 shows what elements are solely focused by any of the three companies.

Table 10. Business sustainability key factors

BMC Components	China Mobile	AT&T	NTT DoCoMo
Key Activities		Micro Cell	Sales Channels
		Landline Phone	DMarket
		Hosting	DoCoMo ID
		IPTV	Healthcare
		Uverse	Education
			Overseas Business
			Corporate Customers
			M2M
			Reputation and Brand
			Capital Expenditure
			Alliances
			ARPU
Key Partnership	Support from Chinese Government		
Value Proposition	Telecom services to interconnect Chinese Society		Accessibility of its multimedia channel services
Customer/Client Relationship		Free Upgrades	Self-service base
		Rollovers and Promotions	DoCoMo Shop
			DMarket Portal
			Mobile Network Subscription
Customer Segments			Customer Base
Key Resources	Chinese Government		Patents for LTE
Distribution Channels	Weixin (WeChat)		Website
			Online store/DoCoMo shop

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		Online Entertainment/DMarket can be accessed Mobile Application and on Desktop browser
Cost Structure	Acquisition of other companies	
	Payrolls of employees, attorneys and all	
Revenue Streams	New converged services	

Source: Author's own elaboration

The table 10 illustrates NTT Docomo generates business mostly from "customer-centered" and "business-capture" methods. While it facilitates its clients and/or customers, it also explores latest trends in the market, products and services by competitors, research and technology analysis, makes it easier to conduct business and accesses broad range of markets with the help of partners and allies. This helps in business growth as well as market capture. Nevertheless, partnering with other companies and business may also help in adapting the technology changes with minimal cost related to infrastructure and services. With emerging technologies, the needs and demands of the customer and/or clients are also changing. While adapting to these changes pose a challenge to conduct business, certain business related decisions in such scenario also bring in risks associated with this adaptation. These risks may be minimized and the challenges may be met via associations and partnerships and market survival for a business may be successful.

The AT&T, on the other hand, seems more likely to invest in the infrastructure and keeps a watch over the competitors, their products and services. Such investments may be fruitful as long term business survival tactics. AT&T as an alliance to another telecommunication or Information Technology business company may help in providing up-to-date products and services that can support the rapidly changing technology and trends in telecommunication. While AT&T and NTT Docomo may be able to generate greater revenue or capture greater market share globally, China Mobile is still a successful telecommunication business company in the regional China. The ability to communicate with the Chinese Government plays a vital role in conducting business successfully and acquiring products and service licenses. China Mobile conducts successful business of providing connection to millions of people across urban and rural areas of China.

Moreover, it is also important to analyse the financial statements of the teleco giants to gain a better understanding of the real-time impact of their business strategies on their annual revenue and other important financial matrices. For any company, an analysis of its financial statement helps the decision-making process as well as it can help the stakeholders gain a better insight into the company's performance, health and business value (Al-Omoush et. al, 2023). These statements can be analysed based on past, present and future performance. The income statement can illustrate the revenue breakdown into expenses involved in the business based on gross profit, net income taxes, etc.

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A graphical representation of the business analysis has been presented below to highlight the strengths and weaknesses of these Teleco gaints which include their five years net income and revenue statement. While revenue can illustrate the impact of market success of a company, it can also depict the sales activities and growth overtime (Tanjung, 2023). It can help in setting marketing campaigns and can be used as a benchmark for the product initiatives, furture strategic plans and new business opportunities (AT&T Financial Review online, NTT Docomo Financial Review online, China Mobile Financial Review online).

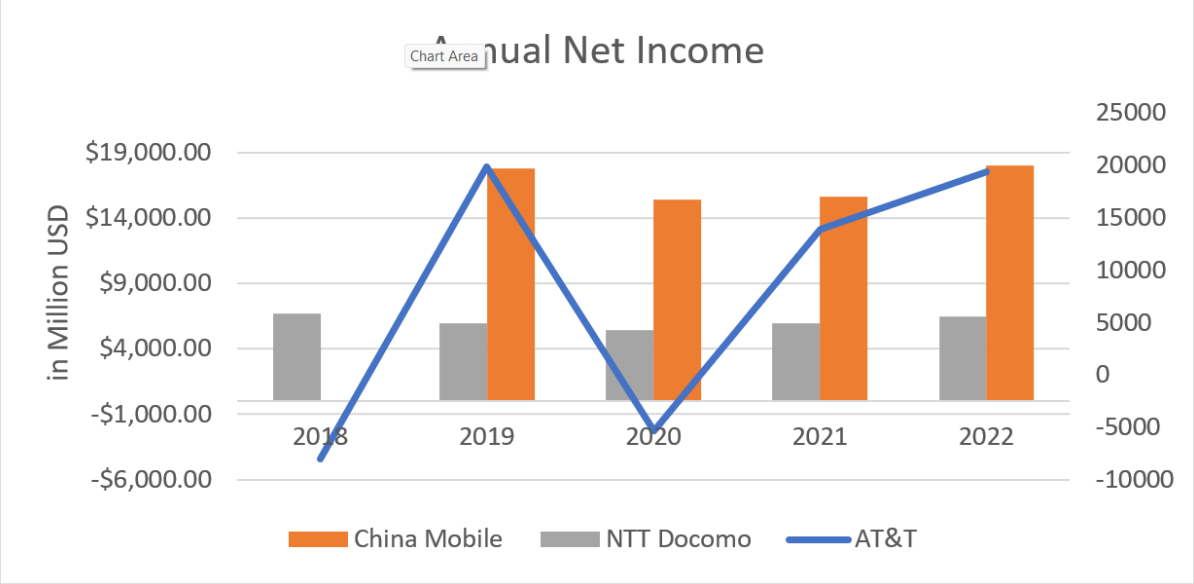

Figure 6. Comparison of the 5 years net-income of china mobile, AT&T and NTT Docomo

Source: Author's own elaboration

Comparing the annual net income of all three tech gaints, figure 6 illustrates how during and post pendamic sales have contributed to the business growth. Meanwhile, the total revenue of each company over last five years have been shown in figure 7, depicting while NTT Docomo sustained the impact of the pendamic and got back on the track to grow its business, China mobile's business has grown termendiously over time and the total revenue is greater than that of AT&T in the year 2022 which is very promising.

China mobile provides mobile social networking services also known as SNS and with the launch of 5G in the technology world it is a favourable service to capture significant revenue. Nevertheless, the companies need to be investing into the property, plant and equipment and the cost to it, due to frequent technological changes, can at times be huge (China Mobile Financial Review online). This research detailed BMC based analysis for business sustainability that includes route to gain a place in the market, capture customers, managing finances as well as value proposition helped in understanding the pros and cons associated with various formats of business dealings related to these three telecommunication giants. Not only it shows how a business can be started strategically but also shows how a right strategy can help determine behaviour of each BMC block.

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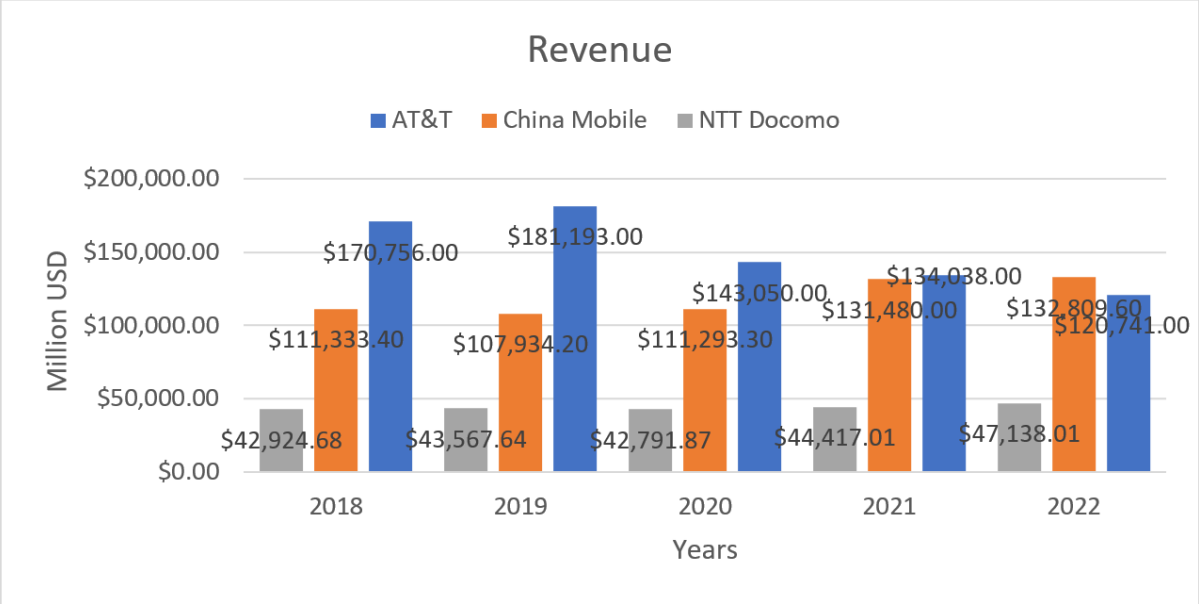

Figure 7. Comparison of the revenue generated by China mobile, AT&T and NTT Docomo over last 5 years

Source: Author's own elaboration

Consideration of the key attributes of the BMC blocks helps create strategies that can assist in putting focus on all the factors together. With the help of this research it will be easier to conceptualize how various business models behave under different business environments. Researchers, innovators as well as entrepreneurs will be able to have an overall understanding of how to analyse their business or venture for sustainability and incorporate or create strategies that focus on all factors. Moreover, for an invester it is equally important to review the non-financial information of the company to develop an insight into the factors that can have an impact on the company's return, company's management, as well as its competitors.

Each company has its own strengths and weaknesses and uses specific business model to conduct successful business in the telecommunication industry with sustainability. However, it is equally important to understand what changes may affect the business with changing trends in technology. Nevertheless, various business models are used by different telecommunication business companies and these models may be a combination of multiple business models to survive the competition for long term. The question remains which business model can be the most suitable one to use with changing business trends and client/customer demands and needs for sustainable business in the market? The next section outlines some open research issues related to the same.

5. Open Research Issues

Telecommunication has evolved in the past few decades changing the simple form of communication into exchanging and sharing any form of information and/or data anywhere, anytime, with anyone and everyone. The telecommunication service providers, from time to time, need to consider the growing demands of the customers and the market competition to conduct successful and sustainable business (Goebel et al, 2023).

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The world is in the phase of adapting 5G (5TH generation) that is basically designed to support the growing data, its efficient transfer and seamless connectivity, the mobile telecommunication companies are as per need incorporating infrastructural as well as service changes that can support this evolution. A number of challenges are associated with the same. Initially, as planned, the 5G will be operating on the existing 4G infrastructure and networks before it can actually starts to operate independently (Hoang et al., 2022; Moussaoui et al, 2022). 5G incorporates the IoT (Internet of Things) consisting of billions of devices connected and communicating and handling tremendous amount of data. 5G is said to incorporate immense machine to machine communication that is in other words also known as IoT, extremely reliable communication with low latency (improving device response time) and improved mobile broadband (this includes enhanced data transfer rate and better bandwidth capacity) (Gyemang&Emeagwali, 2020; Kalem, 2021). Hence, for the communities it promises smart homes, smart schools, better healthcare, and safe and smart cities (figure 8). For the industries and other businesses the 5G network will be able to provide the data that they need to make mission critical decisions to conduct successful business using the IoT and make progress in terms of better product design and manufacturing, better customer relationship and hence long term business sustainability as well as growth (Aljanabi, 2022).

Telecommunication business companies need to plan and shape their products and services according to the demand of the customers and market need. Hence it is important to keep focus on the how to promote the products to the customers and in return how to gain loyalty from the same to not only survive the competition but to gain good revenue. For this purpose it is vital to understand what business components are important with rapidly evolving technology to make sure the expertise, products as well as services are up-to-date.

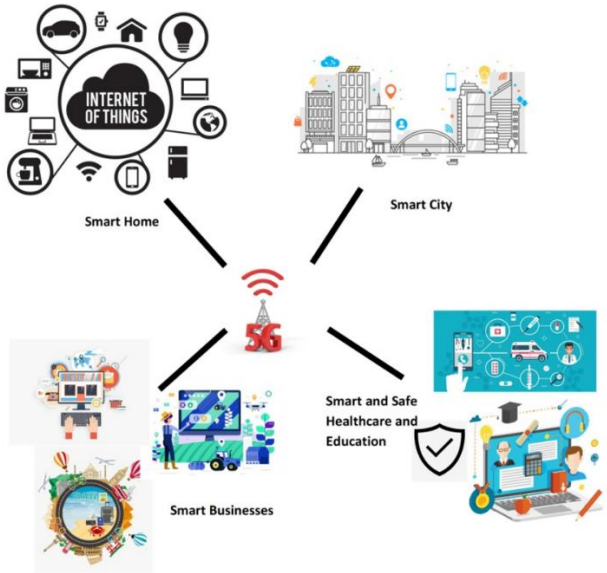

Figure 8. 5G Technology and its promises

Source: Source: Author's own elaboration

Not only that the policies and procedures will gradually change and will be globally adapted, incorporating energy efficiency and green communication will also play a vital part in business growth in near future

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(Mushafiq et. Al., 2023; Habibniya et. Al., 2022; Sanchez-Segura et. Al., 2022). It will be important for the telecos to focus on these two aspects to develop or improve the pathways to market capture. It is important to consider the fact that soon the traditional business models may not help in the telecommunication business industry neither can a hybrid model focusing on certain components might promise a successful growth in the revenue due to the interconnected behaviour of the business components, demands and needs of the customers in this industry. Hence an optimal business model designed for the telecommunication business that can encompass various components while providing flexibility of the focus needs to be designed to help the telecommunication business companies sustain in the market fruitfully. Nevertheless, changing a business model or its innovation requires certain capabilities such as being adaptive and flexibility in decision making. Business perspective also plays a vital role in key decisions for a company. Hence, creation or designing a business model cannot provide an assurance for success instead requires exploring, discovering, adapting, reviewing and evolving until a so called optimal business model is reached.

CONCLUSIONS

A detailed comparison among three successful telecommunication companies based on the business model canvas have been presented to help understand in depth how each company focus different components of the BMC and their individual entities to run a sustainable business. This detailed investigation provides an insight into how focusing on various BMC components can actually shift the business goal. Nevertheless, it also highlights various BMC components and their detailed entities and provides better individual understanding regarding same. The analytics of a business model brings together the BMC structure along with the analytics from the customer as well as operational data. When these are combined, this research can be used to connect strategic insights regarding how to improve customer loyalty, retain it and as well as grow in the market and sustain that growth. Various solely focused entities of BMC components have also been discussed to ensure that the researchers can acquire in depth analysis of the comparison regarding the three telecommunication business companies and to better understand the importance of focusing those entities and also highlights the strengths and weaknesses of these companies. The financial factor comparison of the three teleco gaints further highlights the weaknesses and strengths in the real-time environment based on their business strategies and approaches. This research will help researchers globally in understanding behaviour of various telecommunication business models and the strategies behind the success or failure of the businesses.

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Conceptualization, M.M. K.Arisar; methodology, M.M. K.Arisar; software, N/A; validation, N/A; formal analysis, M.M. K.Arisar; investigation, M.M. K.Arisar; data curation, M.M. K.Arisar; writing—original draft preparation, M.M. K.Arisar; writing—review and editing, S. H. Jokhio; supervision, N. Lian-Ju; project administration, N. Lian-Ju; funding acquisition, N. Lian-Ju.

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