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A Review of Technology Related Services in Creating Value Proposition for LRT Operator

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ABSTRACT

One of the main components in the business model canvas is a value proposition. To create an effective value proposition in the business model canvas can be the main challenges for businesses in emerging markets. A thorough review of value proposition theoretical concepts from the literature and how technology services influence the value proposition that contributes a beneficial impact to the LRT operator was discussed in this paper. This paper offers an important insight into the contribution of better understanding the role of technology-related services in the value proposition for ensuring the LRT operator can sustain and stay competitive in the current digital economy.

1. Introduction

The value proposition is one of the fundamental property of the business model canvas. Value proposition plays an important role in creating a strong differentiation between the organisations in gaining the market share in their target market segments. A primary concern for the organisation is developing a solid and robust value proposition to connect with the targeted customer and establishes a strong grasp on the competitive market. An enhancement and innovation of new technology have led to a proliferation of value proposition study. An important recent development in the value proposition literature is the notion of moving from a narrow dyadic, customer-supplier perspective, to a much broader view that includes multiple stakeholders or 'actors' within a service ecosystem [1].

The technology role in value capture has received considerable critical attention in the current emerging market. Recent developments in the fields of technology have led to the interest of Light Rail Transit (LRT) operator to explore how they can develop the value proposition from their assets and services. In order to meet customer expectations today, the LRT system has to be more than just providing the means for getting from location A to location B. Here technology-enabled services can

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play an important role to satisfy the demand with generating sustainable revenues for LRT operator. This paper explores the concept of the value proposition from the literature review and extends the value proposition concept to technology services for LRT operator.

2. Value Proposition

To have depth understanding what the main function of the value proposition is, previous literature were analysed. In the literature that has been analysed on the value proposition, there are three major metaphors has been identified: customer benefit, product or service offering and investment. The outcome of the analysis of the literature is presented in Table 1.

Table 1
Value proposition metaphors

Metaphor	Main motivation of Value Proposition	Explanation
Customer benefit	Added value to customer for a better customer experiences.	Bilgeri, Brandt [2] holds the view that the value proposition is a statement declaring how a product and/or service of a company adds value to customers and other stakeholders within the ecosystem. Ranjith [3] points out that the value proposition is associated with the ability of the firm to fill the gap between customer experiences. Osterwalder, Pigneur [4] describe value proposition as a benefits customers can expect from your products and services.
Product or service offering	Satisfy the customer need.	According to Joha and Janssen [5], value proposition is about demonstrating the business logic of value creation through offering products and services that satisfy the needs of their target segments. Glova, Sabol [6] point out that value proposition is about which customer group the service is targeted and how we organise ourselves to deliver the service in the most efficient way.
Investment	Resource utilisation	Frow, McColl-Kennedy [1] define the value proposition as a dynamic and adjusting mechanism for negotiating how resources are shared within a service ecosystem. Skålén, Gummerus [7] propose a holistic view of value propositions as promises of value creation that build upon configurations of resources and practices.

The main motivation of customer benefit is to add value to the customer for better customer experience. With better customer experience, the customer might have better customer engagement. To satisfy customer needs, the organisation can offer products and services most efficiently. One of the elements in the business is an investment. Most organisation invest for their resources and by understanding the value proposition, the resource utilisation can be maximised to gain more profit.

2.1 The Value Proposition Evolution

According to Payne, Frow [8], between the year of the 1910s to 1930s, the early use of the concept of a proposition is in advertising. Covin, Garrett [9] find that value proposition evolution is

related to venture performance in a curvilinear manner. Osterwalder, Pigneur [4] provides the value proposition canvas to describe the value propositions and the target customer segments in more detail and evaluate the "fit" between the value that intends to create and the expectations that customers have. The value proposition canvas makes explicit how you are creating value for your customers [10]. The value proposition canvas as suggest by Osterwalder, Pigneur [4] consists of two sides 1) Value map; and 2) Customer Profile as illustrated at Fig. 1.

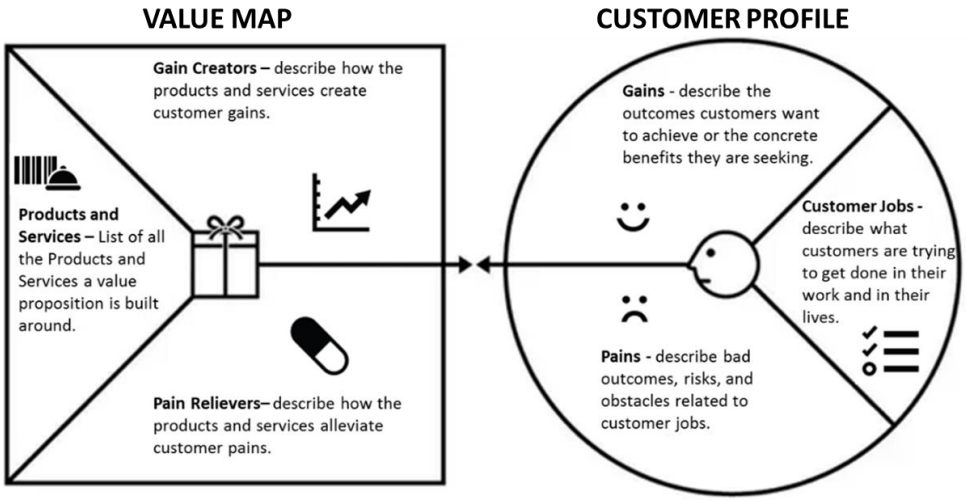

Fig. 1. The Value Proposition Canvas [4]

The strategy begins with the analysis thorough understanding of the target customer group by analysing the tasks performed by customers every day. The attention should be concentrated on the matters regarding the problem area related to the proposed solution. The next step is identifying the customer pains. Customer pains element is designed to identify any obstruction from all kinds of negative emotions, risks, contingencies, and costs that might appear during the planning and implementation. The next step will be to determine the customer gains. The element of gains can be any kind of positive emotions, social benefits, satisfaction, savings, and increased profits. The attention should be on exploring what pleases the customer, the solutions that customer most likes, and things that make customers lives better.

Having developed the profile of the customer, the organisation can offer a solution that is a value proposition. In the beginning, the organisation should list products and services that a value proposition contains. In the phase of pain relievers, the organisation should be considered how the proposed solution affects the pain of the potential customer. The gain creator should express the benefits offered to the customer by the proposed products and services. It should refer to a predetermined positive aspect that which is desired by the customer.

3. Technology Services in Urban Rail Transportations

The customer always desires trains that are fast, efficient, transnational, energy-efficient and able to manage with the increasing demand for public transportation especially urban rail services. The extensive area of intelligent transportation systems (ITS) has been responsible for establishing a major technological revolution in transportation [11]. Based on the literature review, there are five ideal-typical objectives for conceptualizations of technology services in the future Urban Rail Transportations development has been identified: for higher comfort, higher safety, better customer

engagement, the new line of businesses creation and to streamline the operation. The numbers of papers for the five ideal-typical objectives are presented in Table 2.

Table 2
Ideal-typical objective of technology services for future urban rail transportations development

Objective	Ai, Guan [12]	Islam and Rahman [13]	Zhang, Kandampully [14]	Fitzgerald, Kruschwitz [15]	Lee, Hong [16]	Liu, Wang [17]	Dat, Kanno [18]	Shi and Wang [19]	Hara, Nagao [20]	Highest Frequency	**Ranking**
Higher comfort	X					X	X			3	3
Higher safety	X					X		X		3	3
Better customer engagement		X	X	X		X	X	X		6	1
New business creation				X	X	X			X	4	2
Streamline operation				X		X		X		3	3

From Table 2, future rail development focuses more on better customer engagement. The higher customer engagement the more emotionally invested they are in the organisation brand. In return, the firm could reap benefits that allow service refinement, new service development, and new customer targets for new services [21]. Indirectly it opens up opportunities a new business creation for the rail operator. Train multimedia dispatching video streams, On-board and wayside HD video surveillance, passenger and freight management, Sensing information of rail infrastructures, Railway mobile ticketing, On-board real-time high data rate services and Capacity resource and security management [13] [14] [15] [17] [18] [19] just to name the some services that might able to ensure the objective of technology services for future urban rail transportations development can be achieved. In addition to real-time query and tracking the whole process of the location of the train and goods, the Internet of Things for railways can be developed to integrate the sensing information of rail infrastructures including bridges, viaducts, tunnels, leaky feeders, rail gaps, frozen soil, and slope protection through various sensing measures such as infrared, sound sensors, and temperature sensors [12].

4. Value Proposition for Klang Valley Light Rail Transit

The telecommunications industry and specifically the mobile communications sector - has undergone a profound change in recent years, as commercial and public entities aim to find strategic fits while adapting their business models [22]. Growing demand for high-speed internet is the primary driver for the new access technologies which enable experiencing true broadband [23]. To achieve the developed nation and be competitive nations, the government of Malaysia have introduced multiple policies in strengthening the supply of broadband at Malaysia [24]. Malaysia has seen a meteoric rise in Internet usage among its populations' couple with high broadband penetration [25]. Zeng and Gao [26] points out that in the development of the IoT the fibre-optic communications network is capable of carrying higher bandwidth, and it is suitable for long distance transmission, it is very suitable for expanding IOT applications, it has been applied in the network layer of IoT.

Telecommunication industries in Malaysia have a big potential for growth. According to the report from Malaysian Communications and Multimedia Commission [27] for the year 2014, the household broadband subscriptions in Malaysia continued its positive growth with national household penetration rate at 70.2%. A Report from MCMC [28], for year the 2017, the Communications and Multimedia (C&M) industry market capitalisation of RM183.99 billion represents 9.6% of Bursa Malaysia total market capitalisation of RM1,906.84 billion. In the new era of technology, a reliable and secure high-speed network is one of the elements in operating the businesses. Hence, the communication network must be engineered in order to: (i) meet stringent delay deadlines; (ii) be robust to packet losses; (iii) be safe and resilient to damages, and more generally, strike the desired balance between capital expenditure / operational expenditure (CAPEX/OPEX) costs and system / service availability [29].

When investigating the business case for Fibre to the Home (FTTH) deployment, it is frequently labelled as economically hard, due to the combination of high upfront investment in infrastructure deployment with the uncertainty of timely uptake guaranteeing sufficient Return on Investment [30]. In Klang Valley, the technology service provider facing a difficulty to provide a new trenching for optical fibre cable network. Local Council grant a limited permission with high security deposit for a new open trenching work for optical fibre cable within the Klang Valley area. The technology service provider needs to explore an alternative in providing the services to the subscribers. . One of the alternative to explore is using the Right of Way (ROW) of the LRT. The value proposition for LRT infrastructure is the location of LRT ROW where the alignment cover the entire Klang Valley and this might contribute to the cost-saving for technology provider and creation of new revenue stream to the LRT operator. In an investigation of Improving the FTTH business case–A joint telco-utility network rollout model, Tahon, Ooteghem [31] suggest that a deploying in synergy with other utility network owners can reduce rollout costs between 5 to 21%. Similarly, Verbrugge, Van der Wee [32] asserts that when deploying a fibre access network by using a joint trench for multiple utility infrastructures, significant savings can be realized. A financial report from MTR [33], a revenue from telecommunications businesses for Hong Kong MTR Corporation Limited (MTR) in 2015 was at HK$548 million (RM297 million) a third highest commercial revenue after retail and advertising.

5. Result and Discussion

In a bigger context LRT operator has a much bigger potential for commercialisation and additional revenue creation. Due to the high demand to carry the data from the new emerging telecommunication technology, a telecommunication business through optical fibre cable network might have potentially to become a new revenue stream to the LRT operator in Klang Valley. The Right of Way (ROW) along the tracks was the starting point for this commercialisation exercise. LRT's public presence in strategic locations and the public mindshare is of great value, especially for consumer-centric services. The requirement of future railway services and typical communication scenarios calls for large bandwidth and high data rate transmission capabilities [12]. From a technical perspective, technology-related services are composed of several building blocks with very different characteristics. Each element follows its own rules and requires specialised skill sets (see Fig. 2).

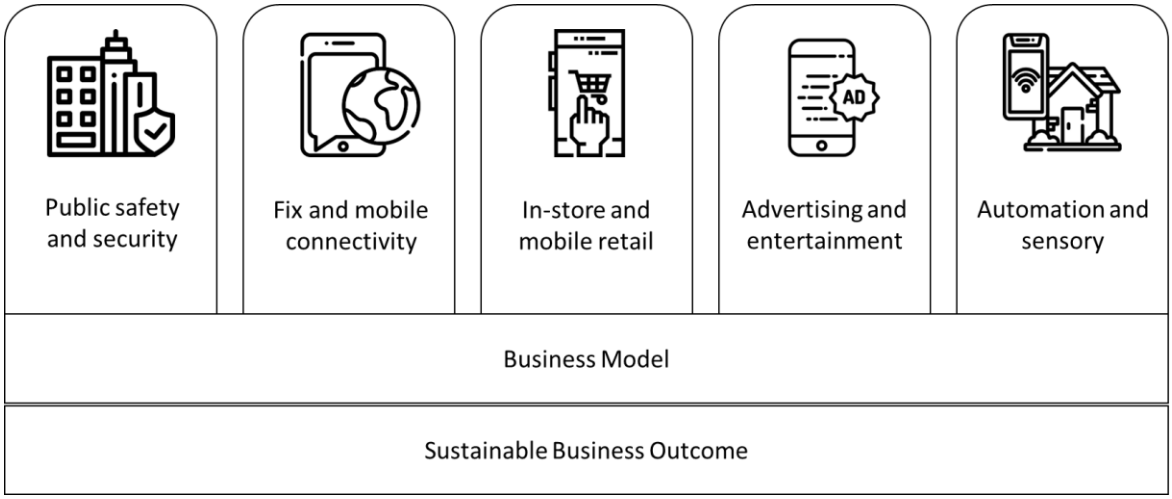

Fig. 2. Technology services building block

Public safety and security, fix and mobile connectivity, in-store and mobile retail, advertising and entertainment, automation and sensory. ROW at stations, inside rolling stock and vehicles, buildings and public spaces in totality open up many possibilities to deliver services close to the LRT customers. For each area, a multitude of single offerings can be generated. It commands an inclusive and adaptive business model in which the suitable organisation are embedded into a strategic framework serving the mission to facilitate the LRT operation sustainabilities. For consumer-centric services this is of very high value due to the location of the public transport is closely intertwined with a large consumer group that open for services and products especially the cross-selling and product bundling for value-added services.

6. Conclusion

The current market is changing due to the evolvements of technology. Sustainable business outcomes require a comprehensive value proposition for strategic planning and execution. The public presence of the LRT facilities in strategic locations and the public mindshare is of great value, especially for consumer-centric services. Beside the ROW, there is potential for utility services such as power, communication and entertainment for the LRT Transit Oriented Development. Building automation, technology-enabled facility management and smart home solutions will also have potential in contributing additional ancillary revenue. Sustainable business outcomes require comprehensive strategic business planning and execution. Further research needs to done to investigate the role of a technology-related services company and LRT operator to lead the technology services business model canvas.

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