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Business Model Canvas for Animal Health Business Using IoT Application

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***Abstract*— Animal health business has an opportunity to utilize the Internet of Things (IoT). A change in industrial direction was caused by this technological leap that focuses on the improvement of biological and chemical hazards detection for an animal. This paper aims to describe an improved business based on an IoT for farmers and pet owners. An animal health notification for these main consumers is allowing future business. The use of sensor and android system was giving strategic planning at the business model canvas. The future new business model of the IoT system is integrated with the development of the user interface.**

Keywords: animal health, Internet of Things, business model canvas, farm animals, pet animals

I. INTRODUCTION

The animal constantly faces problems from animal diseases. Animal diseases cause an impact on the farm economic performance and to the macroeconomics of the nation. Therefore, intervention is needed to control the risk of an animal disease outbreak. The recent development of technology, such as precision livestock farming that triggered by Industrial Revolution 4.0, allows controlling diseases and improving farms' productivity. The use of the Internet of Things (IoT) and big data is giving a new opportunity for the future development of the industry. As well as the economic benefit to the nation. The animal health business is related to food safety and pet animal business that were influenced by the IoT [1]. Furthermore, the influence of the IoT increases food safety as well as animal health as the source of food and health problems [2].

IoT gives an improvement in the animal-based product supply chain. It starts from the production to the final consumers through the traceability system. The traceability system gives assurance for the consumers that the product meets the appropriate level of protection for biological and chemical hazards along the supply chain. A previous study shows that many consumers feared food unsafe incidents and changed their consumption behavior [3]. Food unsafe incidents could be minimized by using the internet platform and reengineer computer systems, and at the same time, it creates a new business opportunity [2]. At the same time, pet animals could be monitored by using the same system. Pet animal diseases may exist as a threat to human health as the animal is known as the host of disease pathogen.

Identifying suitable and affordable bedding material is Animal-based product supply chain uses IoT in the supply chain monitoring appliances that work via a network of electronic physical devices. The network uses software to link, assemble, and associate data using sensor devices [4]. Each stage of the supply chain related to animal health and food safety hazards is recognized and inserted in the computing system inside the internet framework. Pet animals could be controlled as well and connected with the clinics and veterinarians for better health.

The business idea of using the IoT in supply chain with regards to animal health monitoring gives an opportunity that needs to be assessed and mapped to give better view for strategic plan and action. Therefore, this paper focuses on the use of IoT in the supply chain to monitor animal health and control disease. This paper aims to describe a business model canvas of animal health business based on IoT development.

II. MATERIALS AND METHODS

An initial concept of IoT business model in animal health monitoring was developed by the qualitative approach and adapted business model. The qualitative approach identified a possible business opportunity by Porter's generic strategies [5, 6]. The adapted business model canvas developed the value proposition of the possible IoT used for animal health business in livestock [7, 8]. The nine elements of the business model canvas (BMC), namely: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure, were mapped to describe the business model of animal health.

III. RESULTS

A wide range of possible IoT usage could be described in the animal health business. The pillar of this idea concerning animal health was to ensure the improved lives of animals, either for consumption or pet. The system development will have ensured the animal stay healthier by get fed and watered continuously controlled by a sensor and link with the android system of the owner smart devices. The sensor system is developed to detect the possible biological and chemical hazards and livestock behavior. The sensor was designed to detect nanomaterials related to the animal health and living environment by electrochemical or optical sensors. The information from the sensor will be scanned as an input for image comparison analysis.

The results of the productivity, the unhealthy poultry Based on the qualitative assessment, Porter Strategy suggested a focus strategy to develop the business model. The industrial structure of IoT in animal health business

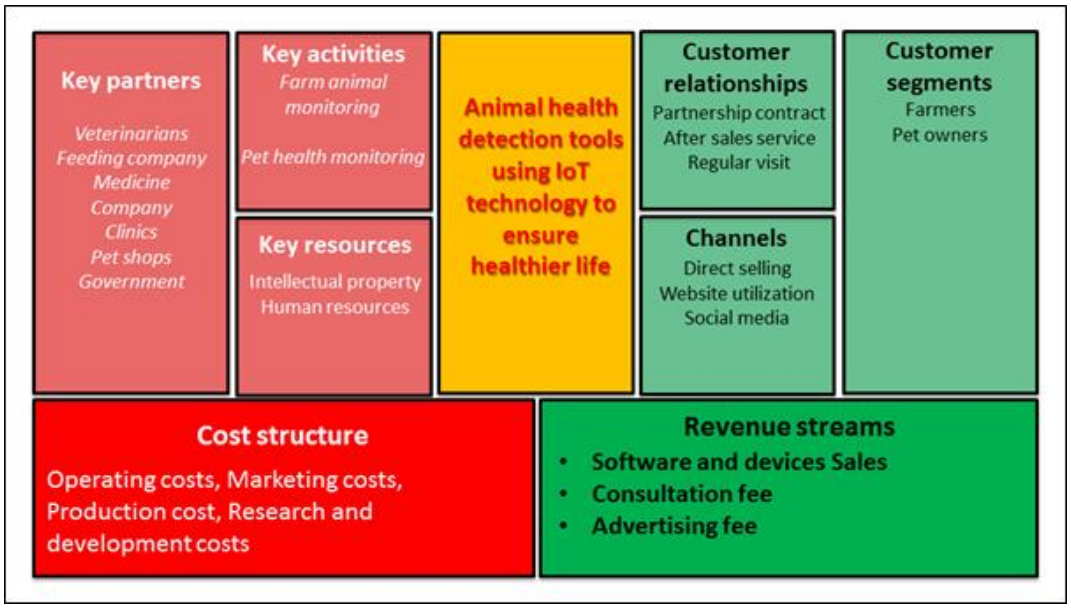

Fig 1. Business canvas model for the IoT for Animal health business

indicated that there are two main business focusses that give an ideal competitive environment, namely farm animal monitoring and pet animal monitoring businesses. In these two businesses, the environment gives a competitive advantage by IoT product innovation and or branding. These business in the proposed BMC proposed were classified as the customer.

The proposed value in the BMC model was animal health detection to ensure a healthier life (Fig. 1). The business was design to control the production in animal farm and pet keeping at the house for better health and live concerning animal welfare. A notification will follow the control in these two businesses to the farm manager or pet owner. Developing The IoT system will guarantee an improvement in animal health and traceability. The developed business model will enter the market by marketing channels, namely direct selling, website utilization, and social media optimization. This customer relationship program was designed to keep and increase consumer loyalty by contract, after-sales service, and regular visits.

IV. Discussion

The core competencies of research, design, development sensor, and nanomaterial detection technology focus on developing IoT business models for animal health [1]. This advanced technology will be the new market in the future that needs to be developed together with key partners. The specific segment of farm animal and pet animal should be targeted to have an efficient investment of IoT development for animal health. It could drive the future demand as long as the system developers used the focus strategy by Porter to pull the farmers and pert owners as their main consumers.

A partnership with many advanced online marketing channels such as websites and social media could support the BMC key activities in research development and innovation [7]. The IoT benefit for animal health networks and useful hazard estimates is the value proposed by the BMC that integrates the detection of nanomaterials and pathogens with sensor technology [4]. The detection devices are giving better assessments to improve the early diagnosis that could lead to early treatment for the animal. The real-time notifications give dashboards that deliver safeguarding action and treatment to the concern of animal health and, at the same time, protect millions of humans' health. The developed feature could give more trust toward animal consumption concerning the sales of animal at market channels which guarantee the sold animal [3]. The technology can protect the market and ensuring the animal health could be governed from the farm to the plate of consumers [9]. Moreover, it secures the pet animals from the infection and from becoming a host of a pathogen.

V. Conclusion

The proposed study to develop IoT in the animal health business suggested that the offered value from the BMC was an animal health detection to ensure a healthier life. The competitive advantage to develop business using IoT could be reached by a focus strategy that drives enhance technology and innovation. The main consumers, such as farmers and pet owners, need to be maintained by consumer relationships that guarantee the product innovation.

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