

Relevance of Blank's Customer Development Model in Selected Cases of Market-Oriented R&D Commercialization in Malaysia

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Abstract:

Steve Blank's Customer Development Model (CDM) was used to assess several acknowledged cases of successful R&D commercialization in Malaysia. Some aspects of Phase A (Customer Discovery) of CDM where hypotheses were developed, tested and verified in the field with prospective customers and the feedback was then used to qualify the business model, were adopted by the cases. Successful cases also implemented key features of Phase B (Customer Validation) by developing value propositions that were qualified by early customers and these were then used to drive sales. Product and company positioning were also developed and effectively communicated to target audience at this phase. None of the cases qualified the market type for their products or technologies by means of market-type questionnaire as recommended for Phase C (Customer Creation) of CDM. However, all the cases did implement some other aspects of Phase 3, i.e. (1) developing marketing & sales communication strategies to support company & product positioning during launch of company & product; and (2) demand creation strategies. Two of the cases have reached Phase D (Company Building) by going after mainstream customers and having functional departments to manage sales growth. The iterative nature of the processes for Phases A & B of CDM was found to be applicable in all the cases.

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I. INTRODUCTION

R&D commercialization is closely linked with innovation and both are seen as a major driving force for economic growth in many countries in the past several decades [1, 2]. Consequently, substantial resources have been spent on R&D commercialization by many countries to gain national competitive advantage; a measure of the intensity of this is the ratio of Gross Expenditure on R&D over a country's Gross Domestic Product (GDP) or GERD/GDP ratio¹ (for evidence from EU see for example a study by Sokolov-Mladenovic et al. [3]). Despite this, the success rates of R&D commercialization remained relatively low for many countries (there are no recent available data on the success rates of R&D commercialization at country level since they tend to vary by industries and by public versus private sectors; an indicative successful commercialization rate for Malaysia was shown by Universiti Malaya (UM), the country's top research university: out of 2,059 research projects that were approved in 2015, 125 products were successfully commercialized, giving a rate of 6.07%²).

The relatively low success rates of R&D commercialization have been attributed to many factors and these have a lot to do with the debate on technology push versus market pull that has not been fully resolved over the years (see for examples, [4 – 8]).

Yet another concept, market-orientation, was developed by Narver and Slater [9] explain a firm's superior business performance; this was expanded to R&D commercialization by Lewrick et al. [10], Festel and Ritterhouse [11] and Aniza et al. [12] – it emphasized the importance of identifying and qualifying customer needs (expressed or latent) and market intelligence in ensuring the success of R&D commercialization. Ultimately the success of any R&D commercialization boils down to market acceptance by the mainstream customers as indicated by Rogers [13] in his study of innovation diffusion.

More recently, Blank [14] has made a strong case for Customer Development Model (CDM) (Fig. 1) to improve the success rates for start-ups including those from R&D commercialization. He noted that the tools that were used for new businesses initiated by established organizations (such as business plan and sales teams) may not be appropriate for

start-ups since their biggest challenges are to discover and validate customers, which are normally given in the case established businesses.

In this study Blank's CDM was used to assess selected cases of acknowledged successful R&D commercialization from Malaysia's research universities and government research institutes (GRI's). The main objective is to understand which components of CDM were implemented in the cases that might have contributed to their success.

II. BLANK'S CUSTOMER DEVELOPMENT MODEL

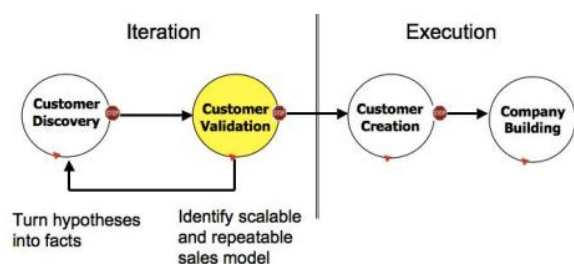


Fig. 1 Customer Development Model

(Source: <https://steveblank.com/2009/11/02/lean-startups-are-n%E2%80%99t-cheap-startups/>)

The four components of CDM consist of the following stages (Blank, 2013):

A. CUSTOMER DISCOVERY

Major phases:

- (1) State hypothesis
- (2) Treat & qualify hypotheses
- (3) Test & qualify product concept
- (4) Verify

B. CUSTOMER VALIDATION

Major phases:

- (1) Get ready to sell
- (2) Sell to visionary customers
- (3) Develop positioning
- (4) Verify

C. CUSTOMER CREATION

Major phases:

- (1) Get ready to launch
- (2) Position the company & product
- (3) Launch the company & product
- (4) Create demand

D. COMPANY BUILDING

Major phases:

- (1) Reach mainstream customers
- (2) Review management and build a mission-centric organization
- (3) Customer development team into functional departments
- (4) Build fast-response departments

III. DISCUSSION

The components of CDM will now be discussed in the context of acknowledged cases of successful R&D

commercialization in Malaysia.

A. CUSTOMER DISCOVERY

There are five hypotheses to be tested and qualified with prospective customers at this stage: product hypothesis, customer hypothesis, channel & pricing hypothesis, demand creation hypothesis, market type hypothesis and competitive hypothesis. Testing and qualification of these hypotheses are to be conducted with prospective customers. The verification phase involves verifying that the proposed product or technology actually addresses or resolves real problem in the industry. At this phase also a profitable business model for the product or technology would be verified.

Many of the successful cases of R&D commercialization in the study have tested the above hypotheses as part of their customer discovery phase. Cases from GRI's in particular have, by virtue of their project proposal mechanism, already incorporated the hypotheses testing early on. For example, in the case of FRIM's technology licensing of biodegradable packaging material from rice straw, product hypothesis, customer hypothesis, channel & pricing hypothesis, demand creation hypothesis and competitive hypothesis are well tested and qualified because the technology licensee (Free the Seed Sdn. Bhd.) is already doing similar product line. The additional biodegradable range fits in nicely with its current product portfolio. In fact, the technology taker easily moved to the next phases of Customer Validation and Customer Creation of CDM.

Another example is a non-steroid anti-eczema cream (Remdii) developed and commercialized by Professor Dr. Lai Oi Ming of Universiti Putra Malaysia (UM). Five out of the six hypotheses were tested and qualified by the company (with the exception of market type hypothesis). The hypotheses were tested by means of feedback from prospective customers via a dedicated Facebook group called Malaysia Eczema Support Group.

B. CUSTOMER VALIDATION

Phase 1 of Customer Validation stage is Getting Ready to Sell – it involves articulating value proposition, preparing sales materials and preliminary collateral plan, developing a preliminary sales roadmap, hiring a sales closer, aligning key executives and formalizing advisory board.

Generally, many of the cases of successful R&D commercialization tended to complete the tasks in Phase A, Customer Discovery before addressing the tasks in Phase B, Customer Validation, though there were instances where some of the tasks happened concurrently. For example, in the case of Remdii, value proposition and preparing sales materials which are tasks in Phase B, were done concurrently while getting the feedback from eczema sufferers via the Malaysia Eczema Support group Facebook.

Phase 2 of Customer Validation involves Selling to Visionary Customers – the tasks at this phase are finding visionary customers, refining and validating sales roadmap and refining & validating channel plan. An example of the

case to highlight the implementation of this phase is the GanoCare product range (the technology developed by MPOB) – preventive treatment in controlling Ganoderma disease of oil palm. Customer validation was achieved by having FELCRA Plantation Services Sdn. Bhd. in joint research & development with MPOB. This industry partner is a subsidiary to FELCRA Berhad, a major player in the oil palm plantation sector. By having this collaborative arrangement with a potential customer many of the tasks for Customer Validation were achieved.

Phase 3 of Customer Validation stage consists of Developing Product & Company Positioning and presenting this to analysts/influencers. Phase 4 is about Verifying production solution, sales roadmap, channel plan and business model. Decision about learning enough to scale up the business then has to be made before moving to stages C, Customer Creation and D, Business Building.

UMCH Technology Sdn. Bhd., a spin-off company of Universiti Malaya, was a case that had gone through Phase 3 and started to embark on Phase 4 of Customer Validation stage. Its value proposition was stated as:

“...aspiring to become the regional leader in providing highly relevant and effective fitness, wellness and healthy living solutions. We re-engineer the healthcare delivery system by empowering the individual to take charge of their own health at home and link them up with preventive healthcare strategies from our panel of fitness and health professionals at affordable cost. We are working on several innovative and pioneering solutions that integrate hardware, firmware, domain intelligence, big data management and healthy living needs into easily assessable, highly mobile and well integrated products”.

UMCH Technology solution is called CHIEF – Connected Healthcare Integrated Fitness. It achieved Phase 3 of Customer Validation stage, i.e. Develop Positioning, by arranging a pilot with one of the major players in healthcare insurance in the country. The company agreed to use UMCH Technology solution for about 2,000 of its staffs for six months. Successful completion of the pilot enabled the company to move to Phase 4 of Customer Validation stage, i.e. (1) verifying that the proposed solution solves customer’s needs; (2) verifying a repeatable sales roadmap; (3) verifying the channel plan; (4) verifying a profitable business model; and (5) deciding to scale up the business.

C. CUSTOMER CREATION

Interestingly, for Phase 1 of this stage, i.e. Getting Ready to Launch, none of the cases included in the study made any systematic approach by means of questionnaire to determine the market type (existing market, re-segmented market or new market) the start-ups were addressing as recommended by CDM. Most of the cases that reached this stage however, have set sales and marketing goals with appropriate customer creation budgets.

For Phase 2, Position the Company & Product and Phase 3, Launch the Company & Product, for many of the cases this was a natural continuation from Phase 3 Developing Positioning of stage B Customer Validation. The activities recommended at these phases, i.e. Phase 2: select Public

Relation (PR) agency, conduct internal and external audit and matching positioning to market type; and Phase 3: select launch by market type, select customer audience, select messengers, craft messages, understand message content, understand media for message and measuring success – unfortunately, were not directly verifiable. Suffice to say that in the case of spin-off companies from research universities, these tasks were taken care off by the PR agencies and accounting departments of the respective universities since their commercialization units have equities in the spin-off companies and it is a legal requirement to conduct auditing of the companies as part of annual financial reporting. The PR agency of the university or GRI would normally handle the marketing communication activities. In most instances, there were ample coverage by means of press releases in mainstream media about these spin-off companies or technology licensing takers.

Phase 4, Create Demand by formulating demand creation strategy for first year objectives and establishing appropriate criteria to measure attainment of objectives are, understandably, confidential information for the cases. However, indications of attainment of the objectives could be seen if the companies managed to get to Stage 4, Company Building.

D. COMPANY BUILDING

Three cases from the study have reached Stage 4 – BioApps Sdn. Bhd. (a spin-off company of University Malaya), MARDI-BASF Clearfield Rice Production System (MARDI-BASF Clearfield) and MPOB’s palm-based trans-free liquid *santan* (MPOB Liquid Santan). Phase 1, Reach Mainstream Customers is applicable to all three cases; however, the other 3 phases, Phase 2, Review Management & Build a Mission-Centric Organization, Phase 3, Customer Development Team into Functional Departments and Phase 4, Build Fast-Response Department, may or may not be applicable depending on the selected commercialization paths. Clearly all four phases are applicable to a spin-off start-up like BioApps, but phases 2 to 4 may not be applicable for licensing path to R&D commercialization, i.e. for MARDI-BASF Clearfield and MPOB Liquid Santan, since commercial scaling-up of these were done via technology transfer or licensing to established companies.

BioApps started with a captured customer base, i.e. patients requiring prosthetic and orthotic services at the Universiti Malaya Medical Centre. It went through the first 3 stages of CDM over a period of five years from 2012 to 2017; as of 2019 it has grown to a full scale business entity with 14 full time staffs headed by a General Manager, and a 3-members board of directors with 2 of them being the founders and shareholders. It has expanded into mainstream market with partner hospitals and corporations throughout Malaysia. More importantly, it has achieved positive cash flows in the past two years.

In the case of MARDI-BASF Clearfield the associated technology and system were jointly developed by MARDI and BASF, a major player in the agricultural sector. A regional training center was established to expand the acceptance of the technology and system among rice farmers

in Malaysia as well as the South East Asia region. The licensing path to commercialization by means of partnership with a major industry player has enabled the technology and system to achieve fast diffusion into mainstream customers, i.e. rice farmers facing weedy rice issues. All four stages of CDM were achieved more effectively and MARDI has reaped substantial royalties from this licensing arrangement since 2010.

Similarly, MPOB's technology of Liquid *Santan* was licensed to an industry player, Premium Food Corporation. The product has achieved wide distribution in major retail outlets throughout Malaysia as a healthier alternative to the one originally derived from coconut. Again, licensing path to commercialization with a credible industry player has enabled the product to achieve relatively fast diffusion into the mainstream market place.

In both cases of licensing path to commercialization, relatively fast diffusion rates, plus the ability to cross the "chasm or the valley of death" were achieved by means of industry partnership with established players that have the necessary business infrastructure already in place. This point is exemplified by MPOB which boasts of commercialization rates in excess of 30% for its technology transfer via licensing.

IV. CONCLUSION

Blank's CDM is clearly relevant to market-oriented R&D commercialization as indicated by the cases, irrespective of whether it is implemented by means of spin-off companies at research universities or technology licensing at GRI's. The iterative part of CDM involving Customer Discovery and Customer Validation stages are especially crucial for both paths to commercialization. The iteration works as a screening process to justify more resources to be deployed for subsequent stages (Customer Creation and Company Building); in a way it acts as an objective tool, grounded in the real world to make a case whether the start-up should proceed to the next levels with the corresponding bigger investments or it should exit with minimal loss.

The market type hypothesis of CDM (i.e. whether the commercialization is addressing existing market, re-segmenting of existing market or new market) appears to be overlooked by many of the cases. This oversight could affect the choice of the most effective strategies especially in terms of product features & functionalities and pricing. I

It can also be discerned from these cases that the major advantage of technology licensing to commercialization over spin-off start-ups is its ability to minimize the risks of getting stuck in the chasm or the valley of death of the innovation diffusion curve; the mitigating factor offered is by means of collaboration with established industry players that already have the necessary business infrastructure in place. In the case of GRI's in Malaysia, they are constrained by rules and regulations that tend to restrict their options to R&D commercialization to technology transfer or licensing. The research universities on the other hand, have more options to commercialization, from spin-off, joint-venture to technology transfer and licensing. Naturally, if one of the objectives of

R&D commercialization is to create entrepreneurs and new businesses (and not just getting the ROI from R&D investment), then spin-off start-ups would be the better (but not necessarily less risky) option.

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