Agile Approach to Minimize Risk Product Innovation in Functional Food Creative Industry

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Abstract: Product innovation is one of the most risk activities in business. Innovation purposed at delivering disruptive impact, or creating new market spaces or step-changes in product, process or business-model performance. The heart of the Agile method in product development is the use of a series of rapid, iterative learning loops, and become an integrated perspective in whole aspects in built to breakthrough innovation and create new source of value. This research purpose to implement the agile path method in food product innovation and how this approach can minimize risks which occur during disruptive condition. To reach the aim of this research, three major stages were conducted in lemongrass tea as functional food industry which were (1) Identify and analyse risk factor based on its complexity and adaptiveness, (2) Build the SWOT framework based on risk identification, and (3) Choose and analyse the best agile approach from SWOT Strategies. As the result, WT (weakness-threat) strategy has been chosen based on risk perception and become the key factor for the development of lemongrass tea to reach global market.

Keywords: Agile, Risk, SWOT, Food Industry

1. Introduction

Innovation purposed at delivering disruptive impact, or creating new market spaces or step-changes in product, process or business-model performance[1]. In common, these new phenomenon become parts of product life cycle to sustainable and profitable[2]. Innovation in products gain company growth, generate increased salesand profits, and become a crucial component in business planning. New product development is an interdisciplinary activity requiring input from top management, scientific, technical, marketing, finance, sales and other personnel[3].

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Risk exist in every business activities and caused by many conditions[4] and risk management identify, analyse, and control the risk in every company activities to run effectively and efficiency[5]. Product innovation is one of the most risk activities in business. In product innovation, risk factors can be differentiated in terms of their technological, organizational, and commercial factors [6]. Risks are inevitable in innovations. As an innovation strategy based on risk avoidancecannot be an option, proactive risk management is needed in which risks are identified in the early phases of product development when there is still time to influence the course of events[7].

The food and agricultural industry characterized by a number of features which challenge and shape the innovation process: volatility, long production cycles, slow growth, complex supply chains, traceability/food safety, highly regulated, technological convergence, a commodity industry and consolidation/coordination of a very fragmented industry. These characteristics can be classified into two major categories: complexity and adaptiveness[8].

Functional food is one of creative industry which offers innovation in line with the development of science and changesof lifestyles.Nowadays, consumer demand for food not only as the source of nutrients but also provides health benefits. Concept of functional food is containing active components and having physiological function used as disease prevention and treatment or gaining optimal health[9]. For an instance, lemongrass tea functional food contained high antioxidant with natural ingredients. Antioxidant acts as radical scavenger which donateshydrogen ion to neutralize free radical in human cells and inhibits occurrence of cancer. Incorporation of antioxidant in the diet might help in reducing oxidative stress and occurrence of degenerative disease such as cancer[10]. Lemongrass (*Cymbopogon spp*.) plant grows in tropical and subtropical region and is commonly cultivated as spices or essential oil. Lemongrass extract was reported to inhibit colon cancer in animal models[11]. Reported that ethanolic extract of lemongrass contains 535.44 to 1007.35 mg/100 g total phenolic and have 80.38 to 93.31% antioxidant activity[12].

The heart of the Agile method in product development is the use of a series of rapid, iterative learning loops. At the exploration phase of the development lifecycle, each loop focuses on answering a key question that is determined to have a high degree of importance and uncertainty, in order to build a progressively clearer picture of the desired solution. At the later stages of the development cycle, the loops shift their focus to realize and develop parts of the solution. However, as prototypes get closer to complete functionality there are important constraints and considerations which lead some companies to limit their adoption of Agile methods to the early-stage activities, at least initially.

Being agile means applying previous knowledge while learning from current experience in order to deliver high-quality products, under budget constraints and in short time frames [13].

This research aims to implement the agile path method in food product innovation and how this approach can minimize risks which occur during disruptive condition.

2. Methodology

To manage riskin business activities, understanding risk is a starting point to help producersmake good management choices in situations where adversity and loss are possibilities then identifying the risk sources is a critical step in managing the risks[14].This research has three major stages. Firstly, classified risk factors in two categorize which are complexity and adaptiveness which identified from features in food and agriculture innovation process [8]. Secondly, the competences are important to be evaluated [15]. Competences scope on the industry's strength, opportunities, weakness, and threats. The SWOT analysis is a business analysis technique that organization can perform for each of its products, process, services, and

markets when deciding on the best way to achieve future growth. The process involves identifying the strengths and weaknesses of the organization, and opportunities and threats present in the market that it operates in[16]. Once this is completed, SWOT analysis determines what may assist the firm in accomplishing its objectives, and what obstacles must be overcome or minimized to achieve the desired results[17]. In this research, SWOT analysis built on risk perspective and actions to minimize risk rely on Agile Path to solve problems in development phase.

The phase-gate and Agile approaches are distinct in their implementation, and generally suited to different innovation objectives. Companies adopting two general approaches when trying to introduce Agile into an existing phase-gate process: (1) Integrating Agile into a single innovation process, and (2) Adding a partly parallel Agile path. Integrating Agile into a single innovation process typically involves using iterative loops within the existing phase-gate process, but with the overall structure retained as is. With this approach companies may be, in effect, deceiving themselves that they have embraced Agile principles, when nothing fundamental has changed[1].
Agile approaches start to be applied at the front end of the development process. There are clear benefits to be enjoyed from investigating concepts with substantial levels of uncertainty that need to be better understood and explored. These set the stage for the downstream development activities that include detailed design, market testing and launch as seen on Figure 1. To facilitate the hand off, the transition point between the Agile process and the existing phase-gate process needs to be carefully defined and managed especially if aspects of the detailed design have already been covered in the development of earlier-stage prototypes[1].Thirdly, as the last step, mitigation constructed in agile view to minimize risk product innovation especially on functional food industry which focused on lemongrass tea as a case study.

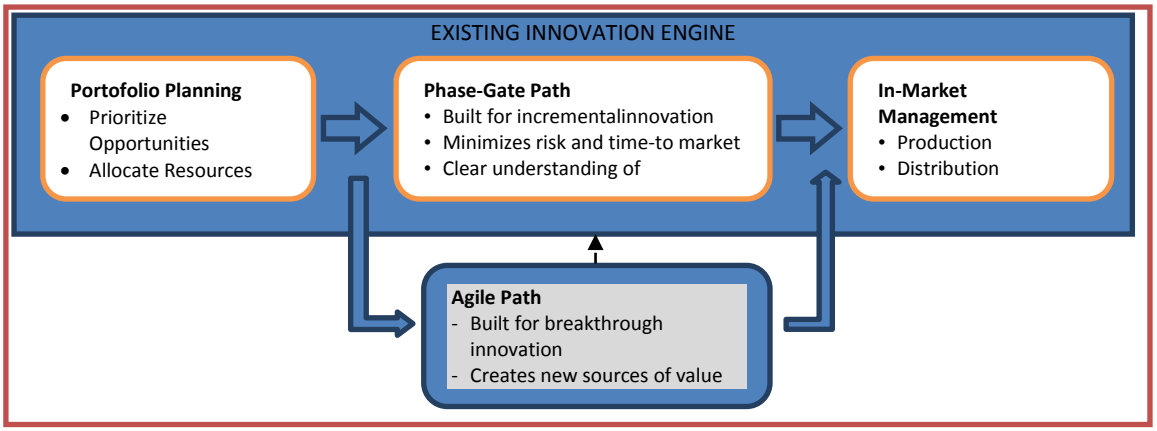

Figure 1: Agile Path

Interviews conducted to respondents whom produce lemongrass tea in KutaiKartanegara, East Kalimantan and respondents whom work at Agency of Industrial Research and Standardization Samarinda,Ministry of Industry Republic of Indonesia. Interviews are held to identify the risk factors in lemongrass tea product and to explore the perform of strength, opportunities, weakness, and threats in this industry. At the end, deep discussion with all respondents built for breakthrough innovation and create new sources of value developed as an agile process to minimize the risk in lemongrass tea product.

3. Result And Discussion

The risk factors of lemongrass tea industry classified as shown on table 1. Complexity faced by the lemongrass tea industry is complexity in supply chain. Even though the lemongrass as raw material available during all years, the supplier could not deliver on time, and sometimes the production quantity is not enough to fulfil the production demand.

Table 1: Complexity and Adaptiveness of Lemongrass Tea

Risk Factor	Risk Identification
Complexity	
1. Complexity in supply chains	- Supply delay for raw material - Lack of supplier for supporting material - Unstructured supply chain
2. High degree of regulation	- Lack of understanding for government regulation
3. Traceability and food safety requirement	- Undocumented process production - Undocumented procedure - Non-standard production floor
4. Quality standards	- Under qualified raw material - Unexpected product by market
Adaptiveness	
1. Volatility: a) Price b) Production conditions	Product price fluctuation - Defect product and material - Lack of human resource professionalism
2. Industry convergence	Failure to fulfill production target
3. Commodity nature of raw materials	Defect material
4. Increasing need for chain coordination	Miscommunication among chains

*Adapted [8]

Furthermore, the lemongrass tea has lack of supplier for supporting material such as tea bag packing, nor outer packing. Generally, the supply chain of the lemongrass tea industry is unstructured. Then, the regulation of food process production is quite complicated for small and medium size industry like lemongrass tea to fulfil the requirement. The lemongrass tea production could not be trace due to undocumented formal process production and procedures.Moreover, there are non-standard food safety requirement the production floor. For risk factor in quality standards, this research identify that the government does not have national regulation for lemongrass teabag, and the industry does not have a formal quality standard too.

In other aspect, there are under qualified raw material that could not identified by the production team. For an instance, the humidity level of raw material or the fungus which covered raw material. These condition cause unexpected product due to its bad input.

The adaptiveness risk factor for lemongrass tea industry is important to facing an agile and disruptive environment. First, the volatility of food creative industry base on the price and production condition. The price factors influenced by the price of supporting material and raw material. It causes product price fluctuation. The production condition influences the failure result of product and defect material. In general, there is an issue of human resources professionalism in this lemongrass tea industry. The capability and competency of their human resources are inferior. Second, risk in industry convergence. The machines and layout of floor production could process variation of product base on lemongrass, but it could cause failure to fulfil production target when line production is delay. Third, risk factor in commodity nature of raw material. Lemongrass is the only main raw material that this industry need. The nature of lemongrass is sensitive to the humidity level [10]. When the level of humidity is to high the lemongrass will get mildew and leads to defect material. Another risk factor which identified is the increasing need for chain coordination risk factor. As mention before that there is unstructured supply chain for lemongrass tea industry. These condition potentials to create miscommunication among chains in their supply path if they fail to manage the open coordination.

SWOT analysis applied in food creative industry where the environment is agile and competitive [18]. Industrial experts in strategically planning the growth, expansion, market research, environmental scanning and analysis in order to have a clearer picture of how their strengths can be reinforced by capitalizing on the opportunities and how weaknesses can slow the development and magnifying threats [19]. SWOT of lemongrass tea, KutaiKartanegara shown in table 2.

Table 2: SWOT Matrix of Lemongrass Tea

Strength: 1. Product Quality Assurance 2. Economic Pricing 3. Healthy lifestyle	*Weakness*: 1. Lack of professionalism 2. Supply in consistencies 3. Lack of legal, social & cultural knowledge
Opportunities: 1. Forward looking halal and healthy food creative industry 2. Rising functional food demand 3. Online Marketing 4. Global market	*Threats*: 1. Capacity to meet the demand 2. High energy and raw material cost 3. The competitor from global market 4. Global economic crisis

3.1 Strength

Product quality assurance became the first strength of lemongrass tea industry of KutaiKartanegara. The industry has strict requirement on raw lemongrass and in process production of the tea. In the processing lemongrass, the concoction temperature based on the research result of Agency of Industrial Research and Standardization Samarinda,Ministry of Industry Republic of Indonesia. Functional food in creative industry try to provide an affordable product for everyone as one of their strategy to introduce their product. They have to set their product in economical price. Fortunately, there are a big movement in society around the world of

changing lifestyle to become healthier. People want have a healthy body and habits, including the food they consumed.

3.2 Weakness

The lemongrass tea of KutaiKartanegara as a small medium size enterprise has problem in their professionalism of the human resources. There are no Standard Operation Procedure for their activities. With unprofessional worker, it would not be effective to run their business. Another problem is the availability of raw material. In some occasions, the raw materials which meet quality requirement are rare to find due to the changing weather. The last weakness in lemongrass tea product developments is the lack of legal, social & cultural knowledge. As a new product, many steps should be done. For an instance, paper work to do to complete legal administration include searching regulation which is connected to standard of food product to expand the market. Another example, create the way to educate potential market about benefit which brings inside the product.

3.3 Opportunities

Nowadays, the market of halal and healthy food creative industry is growing fast accordance with the regulation of halal product applied in Indonesia and the consumers not only Moslem but everyone who interested in halal and healthy life style [20]. These phenomena become opportunities for the lemongrass tea to enlarge their market. Besides, the healthy lifestyle rises functional food demand. People like instant and simple things but still want back to nature. Functional food can provide what customers need and contribute in market competition. Another opportunity is reaching many potential customers by information technology. Market places, social media, and website can be used to achieve better expansion.

3.4 Threats

The lemongrass tea industry facing some threats that risky to their sustainability. Firstly, the production capacity does not meet the demand. Secondly, the production cost is increasing especially in energy and material cost because of manual process and lack of supervise in process. Thirdly, high competition due to another functional food industries grow fast with variety function to offer. The last threat come from the global economic crisis that decrease the ability of people to buy functional food.

3.5 Agile Strategies

The researchers build four possible strategies in agile perspective.

SO Strategies – the lemongrass tea industry should focus on global marketing by product professional branding and online marketingsystem.

ST Strategies – the industry focus on the efficiency of process production to reduce cost and gain competitiveness through competitive product price.

WO Strategies – the industry constructs a robust supply chain form to enter global market.

WT Strategies – the industry target on standardize the process production and quality product by fulfil the government regulation. Production capacity must be plan correctively to meet between demand and production cost. Also, the industry needs to develop their human resource professionalism such as capabilities and integrities.

Refer to agile path in Figure 1, built for breakthrough innovation done by focus on Standard Operation Procedure and integrate all variables on process including its administration. New sources of value by minimize the risk in each factor in table 1 and time to market to win competition in disruptive era as an innovation product.

4. Conclusion

In risk perspective, WT strategies are the most fit strategies to applied based on Agile Path. These strategies accommodate to mitigate risk factor which might occur in industry. Agile Path built for breakthrough innovation in WT strategies by creates new sources of value.

In further, the research might focus to build procedure to standardize all process that will support agile condition in lemongrass tea process production. Also, the research might formulate capacity requirement planning in order to balance supply and demand based on production cost.

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