FACTORS INFLUENCING INNOVATIVE VALUE CREATION OF MILLED RICE BY AGRO PROCESSORS WITHIN THE RICE VALUE CHAIN IN MWEA IRRIGATION SCHEME

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DECLARATION

I, the undersigned declare that, this research project report is my original work and has not been submitted to any other college, institution or university.

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This research project has been submitted for examination with my approval as University Supervisor.

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DEDICATION

I dedicate this research project to my loving and caring family for their unwavering support and inspiration throughout the entire study period.

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ABBREVIATIONS AND ACRONYMS

BDS	Business Development Services
FAO	Food Agricultural Organization
MDGs	Millennium Development Goals
MIAD	Mwea Irrigation Agriculture Development
MIS	Mwea Irrigation Scheme
MOA	Ministry of Agriculture
MOALV&F	Ministry of Agriculture, Livestock, Veterinary and Fisheries
MOW&I	Ministry of Water and Irrigation
MRGM	Mwea Rice Growers Multi-purpose
MT	Metric Tonnes
NCPB	National Cereals and Produce Board
NGOs	Non-Governmental Organizations
NIB	National Irrigation Board
NRDS	National Rice Development Strategy
VCP	Value Chain Process

DEFINITION OF TERMS

The following is the meaning of terminologies as used in context of the study.

Agro processing is a transformation process of changing agricultural commodities from their original natural state to different products with anticipation of improving the value.

Innovation refers to an application of better solutions able to meet expected requirements in addressing existing market needs and unarticulated needs. It translates an invention and an idea into a product that creates customer value or for which they are willing to pay.

Intrinsic value is the inherent worth of a product. It is the underlying perception of the actual value of the product considering its true value. The market value is not the same as intrinsic value.

Proximate analysis means, partitioning of compounds in a produce based on its chemical properties for example; moisture content, ash, crude protein, crude lipids, crude fibre and free digestible nitrogen extracts.

Value addition is transforming agricultural produce which is raw to a new product through processing, cooling, extracting, processing, packaging, , drying or any other procedure that differentiates the product from the original raw commodity.

Value chain is a composition of activities which firms operating in a specific industry perform in delivery of their products to the market.

Value Creation refers to the increase of the worth of a product in the context of creating better value for the customer purchasing the product as well as producers who want to see if their stake appreciates in value

ABSTRACT

Firms must innovate in order to enhance the value of their processes with ultimate aim of generating affordable competitive products for the market. The challenge of producing consumer products that are safe from a health viewpoint with fair price consideration has pressurized firms to comply or be edged out from the market. Despite the importance of value creation of milled rice and by-products within Mwea Irrigation scheme, it has remained relatively low and with minimal growth. This therefore necessitated the evaluation of the influencing factors in order to devise the various value creation strategies to correct the situation. The researcher took a population of 139 rice agro-processors with a sample of 72 actors (50%) of the population occasioned due to oversampling. However, 67 actors (93.05%) of the sample responded. Descriptive cross sectional survey coupled with stratified random and judgmental sampling was used in identifying the survey elements. Closed structured questionnaires devised in Likert scale were administered in data collection. The study concludes that, agro-processing firms in Mwea irrigation scheme rarely improve the value of milled rice except through polishing and blending. The researcher further find that, value of blended and polished rice is only enhanced through, branding, packaging, standardizing, promotion and advertising. Products such as fortified feeds, whole rice cookies, rice flour, rice husk briquettes, rice biscuits, and deep fried baked products are rarely done by the agro-processors. Other conclusion is that, innovative value creation activities such as packaging, branding, blending, promotion, and advertising as well as standardization marks are fairly/moderately conducted while barcoding, feed fortification, diamond mark of quality, milling of rice flour, fortification logos are never practiced. This highlights major entrepreneurial gaps available worth exploiting. Moreover, firm size and stakeholders attributes is the most significant factor influencing innovative value creation of milled rice within Mwea irrigation scheme, followed by product attractiveness, market of the value added products, resource availability, customers' needs and expectations, corporate culture and environment, firm's age and maturity, product demand and technology availability. The study recommends that, rice processing firms need to frequently adjust their value created products in consistence with the customers' needs and expectations in order to create more entrepreneurial innovative opportunities. Further, capacity building with the aim of creating value creation skills, technology adjustment as well as promotion and advertising need to be emphasized. Moreover, adoption of inventory management systems to enable demand forecasting must be considered. The frequency with which market surveys are conducted must be improved so as to identify customers' needs and expectations and also asses their product's demand in the market. Other recommendations are such as, carrying out high promotions and advertising for the value created products in order to increase sales volume and hence general growth and improving staff skills through holding refresher training programmes for different value creation programmes. Moreover, the researcher advises on seeking alternative finance sources such as loans from banks, venture capital among others in order to meet firms finance demands and expand their value creation activities.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Innovation is not only a factor of economic efficiency but also a determinant of value creation in various entrepreneurial ventures and their sustainability (Evelina and Mykolas, 2013). It is a critical element that determines corporation's ability to create value over time (Ruben and Mercedes, 2012). According to Friday (2007), modern business operates in a world of continuous change where risks, problems and opportunities will always emanate hence forcing the enterprise to mobilize resources in order to mitigate the negative effect. No enterprise or entrepreneur however successful can continuously lead without risks. This influences the firm to innovate characterized by venture's innovation development speed based on the duration initiation, development and new product delivery across the value chain by entrepreneurs (Evelina and Mykolas, 2013). According to Miller and Friesen (1984) innovation leads to the development of unique products which is usually inspired by the knowledge intensive enterprise capability. However, though, the exceptional high value products enable a firm to create customer loyalty and improving firm's value due to enhanced competitive advantage, value creation for agriproducts has remained low coupled with a lot challenges.

Hansen and Birkinshaw, (2007) argue that, innovation success is seen as a process from the idea to the outcome and it focuses on the various product value chain stages. Despite innovating firm generating ideas, selecting the best ideas and developing new products which it can spread across the organization, local channel and customer groups, the sustainability of the products along the value chain has not been guaranteed. This therefore necessitates entrepreneurial venture's to put extra effort in order to deliver superior performance for the desired customers through updating their consumer products to meet the needs of customers more than existing ones with the preferable attributes (O'Cass and Ngo, 2012; O'Cass and Sok,2013). Moreover, firm's innovativeness must be enhanced through proper researched differentiated products that guarantees increase in the firm's market size.

Despite the many entrepreneurial opportunities underlying the unique value created products, innovative value creation has remained minimal with the majority of traded products being raw. Even though Companies can produce much more value added products for their customers and hence reduce the over-reliance on imported products, it has not been a priority for major rice milling enterprises. Since the contributing factors for the low value creation of the milled rice by agro-processors has not really been evaluated nor analyzed, it therefore necessitated an in depth evaluation with the aim of finding the solution to the above subject.

This study was based on Rodgers diffusion of innovation theory and Value chain theory as proposed by Porter (1985). Rodger's (2003) contends that, individuals will perceive an innovation as new even though invented a long time ago. He, postulated that, knowledge on the innovation process, decision and persuasion are related to innovation (Ismail, 2006). To minimize the uncertainities of innovation adoption, Ismail (2006) believes that, advantages and disadvantages on the innovation should be informed to the actors for awareness creation of the consequences. Value chain theory was developed upon the background that, a firm is more than a random composition of various actors including machinery, people, money, and equipment (Dagmar, 2001). Development of products which the customers will readily pay for can only be possible if these things are arranged into systematic activities to produce business systems. Porter argues that, the ability to undertake various activities and manage the linkages is the ultimate source of competitive advantage.

The focus of the study was agro-processing firms dealing with milled rice across the value chain and value creation experts within Mwea irrigation scheme. Despite the knowledge that, increased processed food is important for agricultural market development and can generate great benefits for the economy (Ann, 2014), there has been consistent perishability, bulkiness, wasted entrepreneurial opportunities beside low priced raw commodities of raw rice across the value chain within the scheme. This has led to unrealized incomes and wasted employment opportunities within the area (Cuts, 2014).

The eminence of raw materials in the scheme from the milled rice which can be used for agro-industrial processing can not only satisfy the highly growing urban market with the growing demand for processed products but will also transform the existing single raw product into a variety of high value products leading to variety of entrepreneurial ventures (Ann,2014).

1.1.1 Concept of Innovation

Drucker (1985) and O'Sullivan and Dooley (2009) describe innovation as a conduit of change. It is the means by which entrepreneurs take advantage of a change process by converting it to an opportunity of business or service. Aiken and Hage (1986) refers innovation as a generation, acceptance of new products and services at first instance, implementation of new processes and ideas within an organisation setting. According to Rasul (2003), innovation is a process where new products, processes and ideas are developed, commercialized as well as improved in the market place. Wang and Kafuoros (2009) recognize innovation as a value driver. However, Schumpeter (1934) argued that, innovation is the act of applying or adoption of invention. He defined technical change as an irreversible and historic in creative destruction and production method of commodities. The changes are related to small (increamental) and have a key impact on structural changes in respective industry and market segment as well as radical changes (these are large scale).

Innovation can be an introduction of high quality products to customers, new products, new methods to specific industry, new competition model that leads to structural changes in the industry to which its being implemented and new raw material source. Moreover, Godin (2008) contended innovation as a change in all spheres of life relating to social, cultural, organizational, political and technological change. This is supported by Vergragt (1988) and Cleraq (2004) who stipulates that, changes associated with innovation should be considered in a social context in terms of their users. Therefore innovation is associated with change that creates a new dimension of performance. It involves the exploitation of new ideas that bring the creation of new product, process or business system or management that has a significant impact on firms' productivity and growth.

Processes such as invention, innovation and diffusion must be managed efficiently if a firm will optimally realize its potential production value. The interlink with the actors within the product value chain need to be competitive in order to avoid the probable threats that may arise during implementation.

1.1.2 Concept of Value Creation

Adding value is a transformation process that results into changing a product to a more valuable state from its original state (Mike, 2009). Value also refers to, the perception of what a product is worth versus the possible alternatives (Gautam (2016). The customer must feel the benefit of the paid sum in acquiring the product. The customer pays not only the price but also non price terms such as effort, energy, inconvenience and time, (Gautam, 2016). The value the consumer perceives in the utilization of the product does influence the evaluation and perception of the decision maker or customer.

According to Adrian (2001), value creation process has key elements such as the value provided by the firm to its customers, value the firm receives from its clients and the value exchange. The total package of benefits exploited from added value which enhances the basic features of the product and the primary product is referred to as the total value derived by the customer from the supplier organisation. Adrian (2001) also posits that, competition exists between what companies add to their factory output in terms of delivery arrangement, financing, advertising services, packaging, warehousing and other things that people value but not what they produce in their factories.

In order to create superior product and customer value, the firm must evaluate the most profitable and suitable market segment in order to identify opportunities and (limitations) in each market segment. Where the offer made is technically identical to the competitor's product, differentiation of the total package in terms of market segment, price benefit opportunities as well as the customer must be evaluated. According to Mckinsey framework and company (2010), a firm must choose the value, provide and then communicate the value.

The component of choosing the value involves understanding the customer economics, forces driving the demand, how well the competition serves customer needs particularly in terms of their product, price charged and the buying prices (Adrian, 2001).

To develop a product that provides clear and superior value, the firm must focus on manufacturing cost and flexibility, channel structure and performance, product quality and performance, price structure as well as service cost and responsiveness. In persuading the customers that the value offered is better than the competitor's, the firm must engage in advertising, sales force and sales promotion but provide outstanding service in a way that is recognised and remembered by the target audience (Mckinsey, 2010).

Many raw commodities have intrinsic value in their original state (Mike, 2009). The process must be economically viable to produce a product either by changing the characteristics from one set to another, current place and time preferred by the market place. Oftenly, it may involve building processing plants in the producers' geographical regions to process locally produced agri-products wherever it is most feasible and profitable, such as closer to where the final products will be marketed. Customer value will be realized from the relationship between the price customers pay for the product and the benefits they receive (David and Charles, 2001). The value will be higher if benefits are more relative to price. This does not necessarily mean that, high value emanates from a low price. If associated benefits of a product are high in addition to its price, the customer will still perceive the value of the product. This interaction creates an opportunity to add value to the product and hence enhancing customer value. To build a profitable and substantial business, creating customer value is of utmost requirement. However, it is good to note that, producers will is not very critical compared to the customers perception of value. This perception of value will mainly emanate from the customer's expectation of quality, functionality for the customer's need, the useful form, location, ease of possession as well as the right place at the right time (David and Charles, 2001).

1.1.3 Concept of Value Chain

Value chain consists of activities necessary to develop a product from its conception, intermediate inputs, design, raw material sourcing, marketing and distribution to the final consumer (Kaplinsky and Morris, 2000). According to Dagmar (2001), value chain describes value adding activities interconnecting company's supply side (production processes, raw materials, and inbound logistics) with its demand side (sales and marketing, outbound logistics). Porter, (1980) also defined value chain as a representation of a firm's value adding activities based on its cost structure and pricing strategy. He argued that, firms have their own model chains instilled in their own value network which individually they have different roles within the sector or industry in which they have an influence or are impacted by other value actors in the network.

Value chain concept therefore, incorporates production, sourcing, distribution, and beyond recycling or disposal of a given product. Various levels have different actors who play a number of roles in meeting the consumer demand. These levels can either have internal or external linkages. The internal linkage incorporates either the intra- unit, inter-firm or intra-firm relationship while external has mainly inter-firm or network relationships (Prescott, 2001).The firm's ability to innovatively integrate the activities in the value chain greatly determines it's competitive advantage and hence sustained shareholders wealth.

In analyzing the value chain, a firm can assess the information on constraints that are currently present within the chain and the profitability of actors (Karl et al., 2009). This also helps in identifying arrangement of institutions for targeting in enhancing capacity distribution of remedy for distortions and increase in value added (Karl et al,. 2009). Moreover, the analysis also evaluates the points of upgrading and improvements needed within the chain. This improvement can be in diversification, access to new markets, quality and product design. Further upgrading also enhances the actors innovation capacity hence ensuring continuous improvement in product and process.

1.1.4 Concept of Agro-Processing

According to FAO (1997), agro processing is a value addition of products as well as transformation that originates from agriculture, forestry and fisheries industries. It's an onsite growing, harvesting, processing and packaging of agricultural products and then delivering to market as finished value added products.

UNIDO (2008) defines agro-processing as the" processing, preservation and preparation of agricultural production for intermediate and final consumption. Drawbacks such as low market concentration in agro-processing units, supply side constraints on (skills, technology, infrastructure), inadequate market development incentives, restrictive legislations, raw material supply challenges and proliferation of private standards (DAFF, 2012) highly affect the success of agro-processing units in an organisation. This therefore calls for value chain actors at micro and meso levels to improve their partnership in order to enhance information sharing, promoting good practice, market access, feedback mechanisms and inclusivity hence promoting innovativeness in product development (CUTs, 2012).With greater market integration and increase in the size of the middle class whose demand for processed value added products continue to increase, a thorough scrutiny of agro-processing is highly needed considering its contribution to the growth of the actors income, market development, food security and the economy at large.

1.1.5 Factors Influencing Innovative Value Creation

Process and product innovations are key manifestation of innovativeness by an organization. Even though process innovations refers to new procedures, knowledge, tools, devices in throughput technology which intermediate between output and inputs, product innovations relates more with the output usually introduced in order to benefit the customer (George, 2003). A number of factors do influence innovative value creation of products and processes within the value chain. These are either internal or external factors or a combination of both and may fall within the framework of organization demographics, power configuration and resource availability, product market orientation and demand as well as technology availability ,culture and business environment.

According to Nabotsa et al., (2008), the origin of ownership, industry maturity, investment attractiveness, technological opportunities, competition intensity, size of the company and orientation of export may have great trigger effect on innovative value creation of a firm.

Paulina and Kenneth (2013) also postulates that, rigorous attention to input parameters such as skilled capacity, technology, financing and quality control have a great influence on the firm's response to innovative value creation. How these factors internally or externally interact with each other within the business environment greatly determines whether the firm will successfully realize its goal sustainably, short termly or not. Ciprian (2002) stated that, Africa has low technological levels though it's an industrial reality where new production units are installed with old plants and machinery which are difficult to use for innovative production as well as slowing the processes. This therefore necessitated more careful analytical intrigues in order to correct the scenario.

1.1.6 Mwea Irrigation Scheme

Mwea irrigation scheme (MIS) is situated in Mwea East and Mwea West Sub-county, Kirinyaga County. It is approximately 116 kilometers, North east of capital city Nairobi under the slopes of Mt Kenya. According to Ngige (2004), the Scheme was first established in 1953 by the British Government and handed over to the Government of Kenya in 1963. Currently, the scheme water infrastructure is managed by the NIB (Government institution) while rice husbandry, marketing and other post husbandry practices are managed by Kenya's state department of agriculture in collaboration with other stakeholders depending on the value chain activity (NRDS, 2008-2018).

Though the demand for value added processed rice products have continuously grown, the supply side to meet this demand has been inflexible (Mike, 2009). The ever expanding retail sector and the highly increased urban consumers (Giner, 2009) requires ready to eat value added meals which provide convenience and lifestyle solutions. Currently, the unabated wastage of the milled rice by-products as well as the current low value creation status within the area need to be addressed with the aim of creating new entrepreneurial opportunities.

1.2 Research Problem

High market competition has intensified over the years caused by foreign firms due to the various economic blocs created by successive governments (Hebert, 2016). Opening markets implies, sharing the local market with global players who may have competitive advantage based on such factors like low production costs, better quality, large and consistent volumes among others (Herbert,2016). According to Tamil (2016) the turbulent market environment which is neither smooth, automatic nor uniform necessitate a high innovative value creation activities across value chain stages of production, processing and marketing for cost advantage over competing firms.

In Mwea irrigation scheme, milled rice has consistently been traded as raw product compared to the immediate international competitors like Pakistan, India, Thailand among others who value add their raw milled rice and by-products into exportable rice snacks, feeds, oil among other ready to eat products (Singaravadivel, 2016). Despite the many by-products like broken rice, bran, husks and rice germ, majority of these are sold raw and some are disposed as wastes hence an environmental menace.

Though branded packaging has been embraced by a majority of actors as a means to value creation, there is still a need for more innovative strategies to ensure competitiveness. The challenge of producing consumer products that are safe from a health viewpoint with fair price consideration, high nutrition value, origin of the product, convenience, quality as well as taste (Blandford, 2000) has pressurized firms to comply or be edged out from the market.

A number of research on factors influencing innovative value creation have been conducted on sectors such as leather industry, banking, information and communication technology, horticultural export sector and manufacturing. When Tamil (2016) carried out a study in identifying the various rice by products in India, he found their labour intensiveness and short shelf life as a major drawback. Ugwu et.al, (2014) in their study on the assessment of value addition in rice production and processing in India and Nigeria also concluded that, processing and value addition enterprises had shorter payback period compared to farm production as it would take five to six months.

Mwinyikione and William, (2016) in their study on factor influencing value creation in leather industry found that, price, technology, financing income, research and development, competitiveness were key factors hindering the success of the industry. Azetse (2016), in his evaluation of challenges affecting the industrial processing sector within East Africa found that, government policy, internal and external business environment, market access ,competency, productivity, technology initiatives, labour and skills as well as research and development were the general key factors affecting the manufacturing industry. The extent to which these factors apply to innovative value creation of milled rice by agro-processors within Mwea irrigation scheme has not been studied. This therefore necessitated the researcher to find out, "What are the factors influencing innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme?"

1.3 Research Objective

To assess the factors influencing innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme.

1.4 Value of the Study

The research aimed at determining the factors influencing innovative value creation of milled rice by agro-processors within the rice value chain in Mwea irrigation scheme. Various stakeholders in the cereal industry will benefit from the study since they can identify areas in need of change with reliance on the proposed specific actionable activities that could improve competitiveness of their enterprises.

For scholars, the study provides information and knowledge on influencing factors to innovations and innovative value creations of milled rice adopted within the value chain as well as identify areas of further study. Moreover, the Policy makers will also obtain knowledge of value creation in rice sector and hence design appropriate policies that regulate the sector. The evaluation of the competitiveness of innovated products may aid in assisting the agro-processing entrepreneurs develop result oriented competitive edge so as to create utility optimization for the customers and hence improve profitability.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter explores the theoretical framework of the study based on Value chain theory and Rodgers Diffusion of innovation theory. An insight on the factors influencing innovative value creation in relation to the research area within the value chain has also be covered ending with the conceptual framework of the study.

2.2 Theoretical Foundation of the Study

This study was informed by Rodgers Diffusion Innovation theory and Value chain theory as proposed by Porter (1985).

2.2.1 Rodgers Diffusion of Innovation Theory

This theory seeks to explain the how, why, and what rate of new ideas and technology spread. It was popularized by Everett Rodgers in 1962 (Ismail, 2006). According to Rodger's (2003), innovation diffusion is a process in which innovativeness is communicated across channels through members of a social system over time (Rodgers, 2003). The communication channel, time, social system and innovation itself were identified as four key elements of innovation diffusion. Rodger's, (2003) also argued that, an innovation being perceived as new by an individual may still be an innovation for them even though it may have been invented a long time ago. He contends that, innovation is highly related to the decision and persuasion of innovation process and knowledge (Ismail, 2006).

In minimizing the uncertainties of adopting the innovation, Rodgers (2003) believed in communicating to the actors on the innovation merits and demerits with the aim of creating awareness of the consequences, (Ismail, 2006). He classified consequences to be desirable or undesirable, functional or dysfunctional, direct or indirect and anticipated versus unanticipated.

According to Rodgers (1995), adopter characteristics of the innovators were such as (Slow process-2.5%), early adopters (gradual growth-13.5%), early majority (34%), late majority (34%) and the laggards (16%) as classified in the time element. The relevance of this model in relation to the study is greatly captured on Rodgers (2003) proposed innovation attributes which he earmarked to reduce diffusion uncertainty. These consisted of; observability, compatibility, innovation relative advantage, complexity, triability and adoption rate of the innovation.

2.2.2 Value Chain Theory as Proposed by Porter (1985)

Porter's (1985) theory is used to explore firm's competitive advantages through differentiation or cost leadership strategy. He breaks company's value chain down into individual activities with the aim of allowing the firm conceptualize which parts of its operation creates and doesn't create value (Ketchen and Hult, 2007). According to Herget and Morris (1989), goods and services will improve their worth as they go through the vertical streams of firm's production process. The profit or margin will be generated if improved value exceeds the costs.

Porter (1985) distinguished the firm's support activities and primary activities. Those involved in physical creation of the product, distribution and sales as well as after sales service were referred to as primary activities. They mainly consist of sales and after sales service, market interrelations, outbound logistics, marketing, inbound logistics, operations and product interrelations (Ireland et al. 2009; Mowen and Hansen, 2011). Moreover, primary activities are involved in value adding activities which are seen by customers as improving utility to the product which they purchase (Lanen et al. 2008). Support activities provide assistance necessary for primary activities. This mainly involves the technology interrelations (technology development), procurement interrelations (procurement) as well as infrastructure interrelations such as firms' infrastructure and human resource management (Lanen et al., 2008).

The relationship of this model with the proposed study is that, value chain is maximized with minimal costs while all the activities of the company are linked efficiently together, This has always been the ultimate target of a well-planned value chain (Lynch, 2003). The result of adding together the total value and the cost of creating value is according to Porter, (1985) the margin.

Total value is referred to as the price the customer is willing to pay (Macmillan and Tampoe, 2000). The organisation culture according to Johnson et al. (2008) has a great impact in creating value since culture is the way people perform their activities and should be difficult to copy especially by competitors. This model however, according to Morden, (1999), excluded certain key aspects such as market creation, strategy, customer service and distribution from the main service. The service can also not be stored as per Porter, (1985) recommendation.

2.3 Factors Influencing Innovative Value Creation

Various factors influence firms' incentive and ability to innovatively carry out various product value creation activities (Ebrd, 2014). Some of these factors are internal reflecting either characteristics of the firm (its size or age for instance) or the decisions made by the firm (for example, decision to compete in a regional market or to hire skilled workforce). Other factors are external which shape the general business environment in which the firm operates (such as customs and trade regulations).

2.3.1 Firm's Age or Maturity

Companies compete as per their product differentiation and strongly invest in product innovation soon after the birth of new industries (Aberinthy, 2000). They then shift the focus of competition to economies of investing more in a range of business processes and expenses in order to make them more effective and efficient as market matures. This happens as customer needs become more defined in a better way. Klepper (1996) argues that, there is more focus on processes innovation than product innovations for mature companies.

The development level and innovation model assist the managers to understand innovation category and measures for consideration at different times of their development and different competitive surrounding. However according to Christensen (2003), disruptive innovations may alter this hence forcing the company to start afresh since different aptitudes will be needed altogether.

According to EBRD (2014), innovative startups that grow very fast may run out of funding and exit the market. Moreover not all young small firms may be innovative value creators. Value creation may be high amongst large established firms compared to young ones due to financial capability, affordability to research and development as well as market promotion budgets (EBRD, 2014).

2.3.2 Firm's Size and Stakeholder Attributes

Upon the increase in size of an organization, it may lose its enthusiasm to innovate and hence require a more elaborate control mechanism (Miller et al., 1988). This Oftenly turns them from product innovation to process innovation (Gopalakrishnan et al., 1999). The stakeholder attribute becomes more pronounced in such a case hence affecting the management action which may lower the quest for product innovation in a complex and unpredictable business environment (George, 2003). However, large firms may put increased resources for value creation efforts. They may also venture in more elaborate research and development due to their financial capability hence promoting their level of value created products.

2.3.3 Customer Needs and Expectation

Firms with customer orientation are able to measure their customer satisfaction level through being responsive to their needs (Nebojsa et al., 2008). According to Hippel's (1988), the leading product users face the needs that will appear in the market months and years after others. They also have an aptitude to express future needs as the function of their experience (Hippel's, 1988). This aids the firms to consolidate important information that help them explore latent needs.

However, Christensen (2002) argued that, company's aptitude to innovate can be limited by consistent focus on existing customers hence managers deviating from being keen to serve new customers. Market oriented companies should focus on potential customers beside existing ones in addition to their latent needs. This is done by collecting market information anticipatively.

2.3.4 Resource Availability

Resource availability in terms of finances, Information, and expertise usually determine how a firm will react to various forces influencing it in creating value through innovative products. Centralized and systematically controlled budget, with clear defined job and technology exclusion contributes negatively to innovation and value creation (Hardy and Dougherty, 1997). If information is made available with intimate sharing and contributors to innovations being well rewarded, the firm's employees will be more than willing to add value to the firm's product and processes.

2.3.5 Product Attractiveness

Product attractiveness to investors will pull support from investors depending on whether they will recoup returns on the investment or not (Nebojsa et al., 2008). This influences the type of innovation to adopt in order to guarantee market acceptability and sustainable income generation. Investors will be wary of making huge investments to process innovations, information technology, organization structuring, training programs and consultancy services to avoid disappointments and failures' hence necessitating risk assessment before resource commitment is done.

2.3.6 Product Demand

Product demand is also a key determinant of value creation. It determines the rate and activities of an invention because each rational company that intends to make profit margin is responsive to economic stimuli (Nebojsa et al., 2008). The demand characteristics such as; selling potential, demand growth, demand duration, indefiniteness and elasticity are very core in demand consideration.

Customer needs and demand usually determines the variety of innovation to be adopted. The benefits that innovation brings are proportionate to market size (Cohen, 1995). A company can influence a great deal of innovation decision if it estimates that, sale potential will be small and a considerable growth rate cannot be expected.

2.3.7 Market of the Value Created Product

According Guerzone (2007), companies find it profitable to invest in process innovation when mass markets are in question. This can be mass market for consumer goods or standardized products. Due to low level of product sophistication, they find it better to carry out process innovation and use the market size than follow the much complicated strategies of product differentiation (Nebojsa, 2008). Innovation is also oriented towards creation of varieties especially in niche markets. The smallness in size for such markets do not allow process innovation due to its costly nature and inability to recover fixed costs involved to process products.

Value created products users are conscious of their needs and frequently assists the processors with feedback on designs which results to innovative solutions. This also increasingly leads to increamental radical innovations within the responsible firms. Firms must collect regular market information with the anticipation of analyzing probable market sources, current customer requirement and future customer orientation.

2.3.8 Technology Availability

Schumpeter (1934) argued that, entrepreneurs are led by technological opportunities. However, the direction and the rate of technology change due to technology push is defined by appropriateness of technology in special industry usage but not by demand (Cohen, 1995; Goldenberg et al, 2001). The dimension of technological opportunity are; technological importance, technological performances and technically feasibility. The latter is technological correctness and completeness on an invention as well as technology indefiniteness that present research and development future planned actions in solving the current problem (Astebro and Dahlin, 2005).

Technology drives scientific knowledge which influences research and innovation. Importance and performance of these dimensions may lead to disruptive radical innovations usually a very high return area for entrepreneurs (Scott, 2015). Technology can also be critical, enabling and strategic Research and development drives technology which in turn drives innovative measures within a company.

2.3.9 Corporate Culture and Environment

Business climate and culture determines the leadership style, typical behavior, values and norms which drives or limits the performance of value added products (Scott, 2015). The major setback is ensuring a balance between judgment and flexibility, focus and discipline and managing cross functional teams while driving the project to successful completion (for example; gaps in required skills and experience, inadequate professional project leaders and turnover of staff). The Belief structures, culture and nature of specialization may affect top managers in carrying environmental business intelligence that may have an implication on test marketing its products. According to Hambrick and Finkelstein (1987), the nature of business environment in which the organization operate is perceived to restrict or constrain choices available to top managers' discretion hence affecting how a firm treats its innovativeness.

2.4 Empirical Review of Innovative Value Creation

Scania (2016) found that, putting the customer first, high level investment in research and development, efficiency production as well as stakeholder value are core attributes to great profitability. Jozsef (2015) in studying value creation and capturing within agro-food small medium enterprises in Hungary observed that, receipt of more improved goods or services by consumers will contribute to high purchases of the respective goods and services. Moreover, improved productivity with less cost by producers contributes to enhanced supply of the respective goods and if both conditions apply simultaneously, it contributes to increased competitiveness of the enterprise.

According to Mwinyikione and William (2016) in their study on the same subject but in the leather industry in Kenya concluded; price, technology, financing income, research and development, competitiveness were key factors hindering the success of innovative value creation in the industry. When evaluating the challenges affecting the industrial processing sector within East Africa, Azestse (2016) placed government policy, financing, internal and external business environment, market access in terms of international, regional and local, management competency, productivity, technology initiatives, labour and skills, research and development, political climate, ethics and integrity as core general factors affecting the manufacturing industry.

Though a number of research have been conducted on innovative value creation within a number of value chains, this has not been carried out within the context of the study. The recommendations such as the interdependence of final users, multiple buyers of the firm's products, optimized beneficiaries through collaboration, enhanced regulations and standards through certifications and infrastructure by Milena etal., 2015 need to be evaluated in order to see their success effect on innovative value creation of milled rice by agro-processors within the rice value chain.

2.5 The Conceptual Framework

The study objective was to determine the factors influencing innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme. Conceptual framework postulates how the independent variables which falls within the firm's age or maturity, firm size, stakeholder attributes, customer needs and expectations, resource availability, product attractiveness, product demand, market of the value created product, technology availability as well as corporate culture and environment influences the value creation of milled rice by improving either the form, location, time, possession and information value. The value created can also be basic or advanced.

The below figure shows researcher's own conceptualization of the study area.

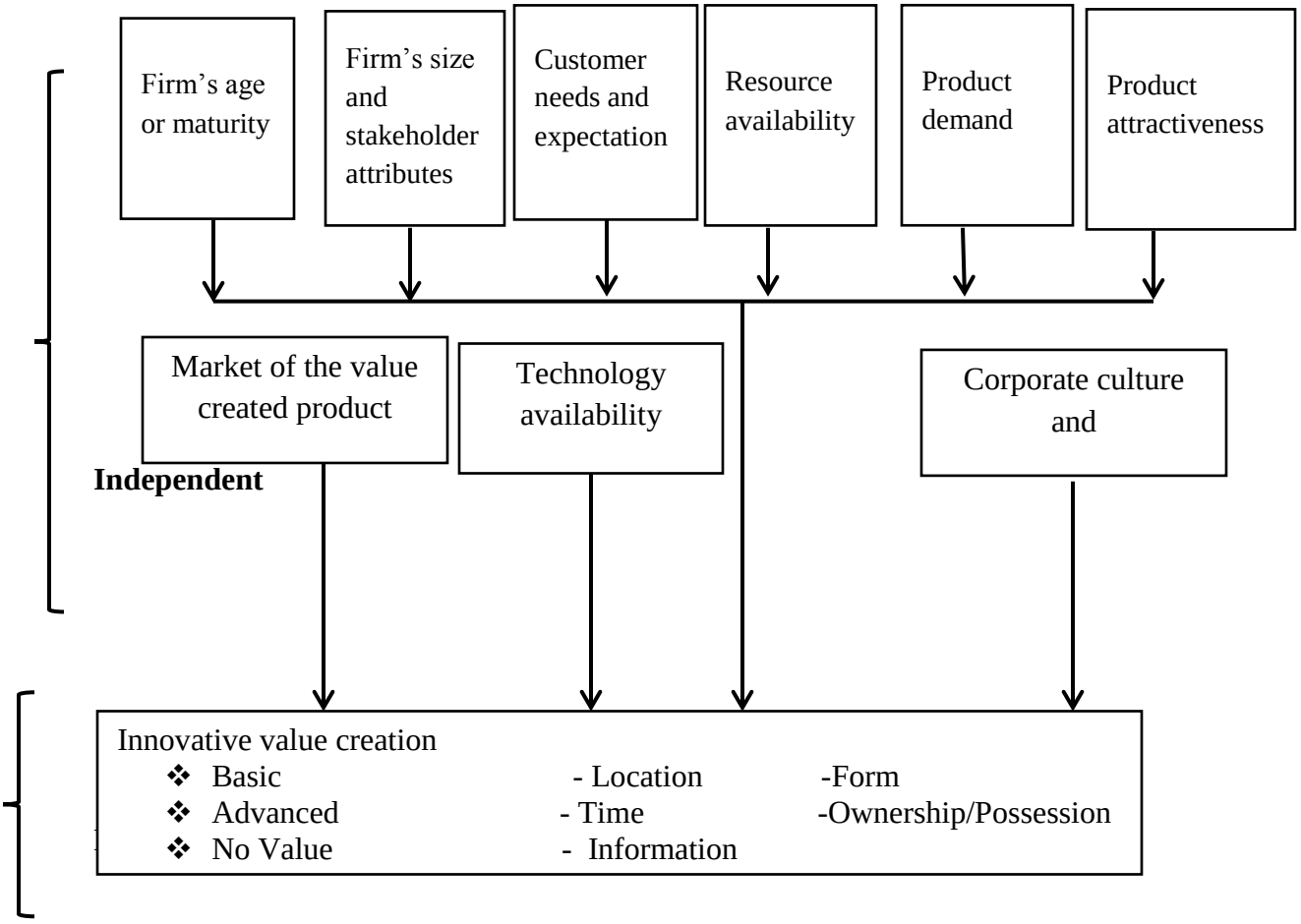

Figure 2.1: Conceptual Framework

Source: Researcher's Own conceptualization

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the methodology that was used by the researcher in answering the research questions. It features the area of study, research design, and target population, sampling procedures, sample size, data collection instruments as well as the validity and reliability of instruments. Moreover, it shows the researcher's data collection procedures, analysis techniques and ethical considerations.

3.2 Research Design

Research design is a framework, plan and a structure to carry out investigation in order to get a relationship and answers among study variables or phenomena (Coopers & Schindler, 2005). In this study, the researcher used a descriptive cross section survey where data was collected at one point in time from a sample to depict a population. The researcher's intention to use this design was mainly based on factors such as the design's economic considerations, rapid data collection and its ability to understand a population from a sample as well as its suitability to support extensive research (Oso and Onen, 2009). Both qualitative and quantitative data were collected to aid in analyzing the factors that influence value creation of milled rice within rice value chain in Mwea irrigation scheme.

3.3 Target Population

Target population is that population to which the researcher wants to generalize the results of the study (Odoyo, 2013). However, due to resource or logistical constraints, researchers sometimes draw samples from "accessible populations" as long as the validity of target population is maintained (Mugenda and Mugenda, 2003). The researcher's target population consisted of 139 rice agro-processing value chain actors within Mwea irrigation scheme as per MOA et al., (2017) updated inventory.

3.4 Sampling Design

Sampling design is a definite plan for obtaining a sample from a given population. It lays out the confidence level for the estimate, total number of items for inclusion into the sample, population parameters interested on for consideration prior to determining the methods of data collection. The researcher used a mixture of proportionate stratified sampling and purposive, judgmental technique to determine the agro-processing actors in this research so as to yield a balanced and a more generalized outcome. According to Mungai (2013), sample size may not necessarily be calculated but is a matter of judgment. Judgmental sampling was used in selecting the respondents. The required sample size is dependent on the statistical analysis employed (Mendenhall & Sincich, 2003) and has a direct impact on the power of research. The researcher proposed a sample size of 50% of the total population in order to have full representation. However oversampling of all the 5 large scale processors were considered hence resulting to a sample size of 72 rice agro-processing actors.

Table 3.1: Target Sample Size

Agro-processing units	**Target population**	**Percentage (%)**	**Sample**
Large scale processors (>1000 Tonnes/per year	5	100	5
Medium scale processors (100 -1000Tonnes/per year	10	50	5
Small scale processors < 100 tonnes per year	100	50	50
Individual group members	4	50	2
Technical experts	20	50	10
Total	**139**		**72**

Source: Developed by the researcher as per MOA, ASDSP, and RiceMAPP agro-processors inventory year 2017.

3.5 Data Collection

The researcher used primary data collection method. Due to their simplicity in administering and cost efficiency (Kothari, 2004), structured questionnaires with closed questions were used to collect data. In data capturing, the researcher administered the questionnaire through face to face.

The questionnaire was structured into three sections. The first section was the general demographic information of the agro-processor. Section B indicated the value creation activities which the agro-processors undertake in his or her firm. Section C outlined the various factors influencing innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme. The responses were devised in terms of Likert scale where scale 1 was the least preferred and 5 as the most preferred.

3.6 Data Analysis

Data analysis is the manipulation, summarizing, ordering and categorizing data with the aim of answering research question (Odoyo, 2013). The collected data was analyzed using descriptive statistics techniques and factor analysis method through a Statistical package for social Sciences (SPSS) computer programme.

Numbers, tables, graphs and figures were used to organize, describe, summarize and present raw data (Kothari, 2004). These helped in examining the central tendency, variability (Dispersion), skewness of data and kurtosis. Factor analysis was then conducted in order to conclusively analyze the factors influencing innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the findings, interpretation of results based on the study objective, and discussion of the findings. The objective of the study was to assess the factors influencing innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme. The chapter begins with general information, followed by value addition activities and factors influencing innovative value creation of milled rice, factor analysis and discussion of the finding.

The sample size of this study was 72 rice agro-processing actors, who included large scale processors, medium scale processors, small scale processors, group representatives and technical experts. Out of 72 rice agro-processing actors, 67 responses were obtained, which accounted a response rate of 93.05%. According to Bryman and Bell (2011), a 50% and above response rate is adequate for analysis and the results can be used in making inferences and conclusions.

4.2 General Information

The general information of the rice agro-processing actors comprised of category of agro-processor, age bracket, gender, level of education and registration status of the business.

4.2.1 Respondents' Category of Agro-Processor

When the rice agro-processing actors were asked to indicate their category of agro-processing, the results are as shown in table 4.1.

Table 4.1: Respondents' Category of agro-processor

	Frequency	Percent (%)
Large Scale	5	7.5
Medium Scale	7	10.4
Small Scale	42	62.7
Group	2	3.0
Technical expert	11	16.4
Total	**67**	**100.0**

From the findings, 62.7% of the rice agro-processing actors indicated that, they were small scale processors, 16.4% technical experts, 10.4% medium scale processors, 7.5% large scale processors and 3.0% were groups. This implies that most of the rice agro-processing actors in this study were small scale processors and hence small medium enterprises.

4.2.2 Age bracket of the Respondents

The rice agro-processing actors were also requested to indicate their age bracket. The results were as presented in table 4.2.

Table 4.2: Age bracket of the Respondents

	Frequency	Percent (%)
20 to 29 years	10	14.9
30 to 39 years	27	40.3
40 to 50 years	25	37.3
Over 50 years	5	7.5
Total	**67**	**100.0**

From the findings, 40.3% of the rice agro-processing actors indicated that they were aged between 30 and 39 years, 37.3% were between 40 and 49 years, 14.9% indicated between 20 and 29 years and 7.5% indicated above 50 years. This shows that, majority of the rice agro-processing actors in Mwea irrigation scheme were actually youth. This is the most critical stage in creating new ideas and commercializing them.

4.2.3 Respondents' Gender

The rice agro-processing actors were further requested to indicate their gender. The results were as presented in table 4.3.

Table 4.3: Respondents' Gender

	Frequency	Percent (%)
Male	36	53.7
Female	31	46.3
Total	**67**	**100.0**

According to the findings, 53.7% of the respondents were male while 46.3% indicated they were female. This implies that, most of the rice agro-processing actors within the scheme were of the male gender. However the difference was very insignificant and may have been inflicted by the barriers women face in enterprise management and operations.

4.2.4 Respondents' Level of Education

The rice agro-processing actors were also requested to indicate their level of education. The results were as shown in table 4.4.

Table 4.4: Respondents' Level of education

	Frequency	Percent(%)
Primary	2	3.0
Secondary	29	43.3
Certificate	18	26.9
Diploma	9	13.4
Degree	9	13.4
Total	**67**	**100.0**

According to the findings, 43.3% of the respondents reported that they had secondary education, 26.9% had certificates, 13.4% had diplomas, 13.4% again had degrees and 3% indicated that they had primary education. This shows that, most of the rice agro-processing actors in Mwea irrigation scheme had secondary education as their highest level of education. It also inferenced that, majority of higher education graduates had not embraced entrepreneurship despite more education skills being related to good business management.

4.2.5 Registration Status of the Business

The rice agro-processing actors were also requested to indicate the registration status of their businesses. The results were as shown in table 4.5.

Table 4.5: Registration status of the business

	Frequency	Percent (%)
Social Services	11	16.4
Registrar of companies	13	19.4
Not registered	2	3.0
County government	41	61.2
Total	**67**	**100.0**

According to the findings, 61.2% of the respondents indicated that their businesses had been registered by the County Government, 19.4% indicated registrar of companies, 16.4% indicated social services and 3% indicated that their businesses had not been registered. This implies that, most of the businesses dealing with rice agro-processing in Mwea irrigation scheme were registered with the County government and hence are compliant with the legal requirement in doing business activities.

4.2.6 Number of Years Worked in Rice Agro-Processing/Value Creation

The rice agro-processing actors were asked to indicate the number of years they had worked in rice agro-processing/value creation. The results were as shown in table 4.6.

Table 4.6: Number of Years Worked in Rice Agro-Processing/Value Creation

	Frequency	**Percent (%)**
Less than 2 years	7	10.4
2 to 3 years	15	22.4
4 to 5 years	20	29.9
More than 5 years	25	37.3
Total	**67**	**100.0**

From the findings, 37.3% of the respondents indicated that they had been in rice agro-processing/value creation businesses for more than 5 years, 29.9% indicated for between 4 and 5 years, 22.4% indicated for between 2 and 3 years and 10.4% indicated for less than 2 years. This implies that most of the rice agro-processing actors were experienced and had been in the industry for more than 5 years. The learned business pitfalls as a result of experience gained for 5 years could have contributed to the sustained value creation operations (Swartz, 1976).

4.2.7 Continuous Engagement in Value Creation Activities

The respondents were asked to indicate whether their enterprises had continuously engaged in value creation activities. The results were as presented in table 4.7.

Table 4.7: Continuous Engagement in Value Creation Activities

	Frequency	**Percent (%)**
Yes	42	62.7
No	25	37.3
Total	**67**	**100.0**

According to the findings, 62.7% of the rice agro-processing actors indicated that, their businesses had continuously engaged in value creation activities because of raw material availability (husks, bran and rice), clients availability to purchase products, increased revenue, utilization of other rice by products, financial capability, availability of machine and equipment and good managerial skills.

However, 37.3% indicated that their businesses had not been continuously engaged in value creation activities for the last three months due to machine breakdown, financial difficulties, lack of operators to undertake processing activities, lack of licenses, lack of processing equipment and poor group integration.

4.2.8 Growing Status of the Enterprise

The rice agro-processing actors were further asked to indicate the current growing status of their enterprises. The results were as shown in table 4.8.

Table 4.8: Growing Status of the Enterprise

	Frequency	**Percent (%)**
Increasing	52	77.6
Decreasing	3	4.5
Static	12	17.9
Total	**67**	**100.0**

From the findings, 77.6% of the rice agro-processing actors indicated that their businesses had been increasing hence growing, 17.9% indicated that they were static hence neither growing nor declining and 4.5% indicated that the business was declining. This finding imply that, though the majority of enterprises were actually growing, most of this growth was actually from the basic value creation but not through secondary or advanced value. Most of these were actually not done despite their entrepreneurial value.

4.3 Innovative Value Creation Activities

The rice agro-processing actors were requested to indicate the types of value creation activities undertaken or processed by their firms/ groups. The value creation activities provided included packaging, branding, blending, promotion and advertising, standardization marks, fortification logos, barcoding, diamond mark of quality, flour, baking, feed formulation and briquette making.

Packaging in this study refers to the wrapping material around the value created rice product and byproduct that serves to identify, display, contain, promote, protect, describe, or otherwise make the product marketable and keep it clean (Baker, 1985). Blending is mixing or combining different value created rice varieties, grades and byproducts in order to obtain a product specific of character, quality and consistency as per the customer or seller requirement (Kotler, 2000).

Advertising is bringing the value created rice product to the attention of potential and current customers while promotion aims at keeping the product in the minds of the customer and help to stimulate the demand (Schewe et al., 1983). Signs, brochures, commercials, direct mailings or email messages as well as personal contacts are the ways used in advertising. Publicity (media and press releases), advertising, sales and public relations are some of promotion activities.

Standardization mark is a mandatory mark of quality on all locally manufactured goods complying with the relevant standards (Kebs, 2016). Moreover, rice flour is a value created rice product ground from white polished and brown rice (MOA, 2016). It is free from gluten and is non-allergenic. This flour is used to produce rice pasta, cookies and other baked products once blend. The barcodes are machines readable codes in the form of numbers and pattern of parallel lines of varying widths printed on the product and used especially for stock control (James, 2016).These enable the retail value creation enterprises to supply their products to supermarkets.

White rice is milled rice whose husk, bran and germ have been removed. This changes the texture, appearance, flavor of the rice, prevents spoilage and prolongs the shelf life. The polished rice result to a seed with a bright, white, shiny appearance (Ukr, 2016).

4.3.1 Polishing Rice/White Rice Processing

Table 4.9: Polished/white rice

Value addition activities	Frequency	Percent (%)
	Yes	Yes
Baking	4	6.0
Packaging	47	70.1
Branding	45	67.2
Diamond mark of quality	8	11.9
Promotion and advertising	23	34.3
Standardization marks	18	26.9
Barcoding	8	11.9
Blending	2	3.0

In regard to polished/white rice, the only value creation activities done within the scheme were packaging (70.1%), branding (67.2%), promotion and advertising (34.3%) and standardization marks (26.9%). Diamond mark of quality (11.9%), barcoding (11.9%), baking (6.0%) and blending (3.0%) were rarely done. This implies that, only a few basic value creation activities were done to polished rice within the scheme.

4.3.2 Baking

Table 4.10: Baked products

Value addition activities	Frequency	Percent
	Yes	Yes
Baking	7	10.4
Packaging	7	10.4
branding	7	10.4
Promotion and advertising	2	3.0
Standardization marks	1	1.5

These results of, baking (10.4%), packaging (10.4%), branding (10.4%), promotion and advertising (3.0%) and standardization marks (1.5%) as value creation activities to baked products by agro-processors within Mwea irrigation scheme indicate that, baking was rarely done despite its value in raising enterprise income and dietary levels.

4.3.3 Whole Rice Cookies Preparation

Table 4.11: Whole rice cookies

Value addition activities	**Frequency**	**Percent**
	Yes	**Yes**
Baking	4	6.0
Flour	2	3.0
Packaging	4	6.0
Branding	4	6.0
Promotion and advertising	2	3.0
Standardization marks	1	1.5

In regard to whole rice cookies, the results of value creation activities such as, baking (6.0%), packaging (6.0%), branding (6.0%), flouring (3.0), promotion and advertising (3.0%) and standardization marks (1.5%) show that, rice cookies were not done within the scheme by the agro-processors and hence the low percentages in value creation activities.

4.3.4 Rice Flour Processing

Table 4.12: Rice flour

Value addition activities	**Frequency**	**Percent**
	Yes	**Yes**
Baking	4	6.0
Flour	2	3.0
Packaging	3	4.5
branding	3	4.5
Promotion and advertising	2	3.0
Standardization marks	1	1.5

The response on value creation activities relating to rice flour processing such as, baking (6.0%), packaging (4.5%), branding (4.5%), flour processing (3.0%), promotion and advertising (3.0%) and standardization marks (1.5%) imply that, rice flour processing was not done within the scheme despite the probable innovative baked products that can be derived from it.

4.3.5 Rice Blending

Table 4.13: Blended rice

Value addition activities	Frequency	Percent
	Yes	Yes
Baking	2	3.0
Packaging	24	35.8
branding	21	31.3
Diamond mark of quality	1	1.5
Promotion and advertising	5	7.5
Standardization marks	3	4.5
Barcoding	5	7.5
Grading	1	1.5

In regard to blended rice, packaging (35.8%) and branding (31.3%) were the most common value creation activities done within the scheme. Promotion and advertising (7.5%), barcoding (7.5%), standardization marks (4.5%), baking (3.0%), diamond mark of quality (1.5%) and rice grading (1.5%) were rarely carried out as evidenced by the low percentages.

4.3.6 Feeds Formulation

Table 4.14: Feeds

Value addition activities	Frequency	Percent
	Yes	Yes
Packaging	5	7.5
Branding	5	7.5
Fortification logos	8	11.9
Standardization marks	1	1.5
Barcoding	1	1.5

The results of value creation activities relating to feeds such as, installing fortification logos (11.9%), packaging (7.5%), branding (7.5%), standardization marks (1.5%) and barcoding (1.5%) indicate that, rice feeds formulation was rarely practiced within the scheme.

4.3.7 Rice Husk Briquetting

Table 4.15: Rice husk briquettes

Value addition activities	Frequency	Percent
	Yes	Yes
Packaging	2	3.0
Branding	1	1.5
Diamond mark of quality	1	1.5
Promotion and advertising	2	3.0

In relation to rice husk briquettes, value creation activity results of , packaging (3.0%), promotion and advertising (3.0%), branding (1.5%) and diamond mark of quality (1.5%) implies that, rice husk briquetting was not done within Mwea irrigation scheme despite its entrepreneurial importance in providing energy to the various valuable activities.

4.3.8 Making of Rice Biscuits

Table 4.16: Rice biscuits

Value addition activities	Frequency	Percent
	Yes	Yes
Baking	3	4.5
Packaging	4	6.0
Branding	2	3.0
Promotion and advertising	2	3.0
Standardization marks	1	1.5

The results of value creation activities like, packaging (6.0%), baking (4.5%), branding (3.0%), promotion and advertising (3.0%) and standardization marks (1.5%) indicate that, rice biscuits were rarely done within the scheme.

4.3.9 Deep Frying of Baked Products

Table 4.17: Deep fried products, Body Powder and Rice Bran Oil

Value addition activities	Frequency	Percent
	Yes	Yes
Deep fried products		
Baking	9	13.4
Packaging	5	7.5
Branding	3	4.5
Promotion and advertising	2	3.0
Body powder		
Fortification logos	1	1.5
Rice bran oil		
Promotion and advertising	2	3.0
Rice bran oil: Standardization marks	1	1.5

In regard to deep fried products, the value creation activity results of Baking (13.4%), packaging (7.5%), branding (4.5%), promotion and advertising (3.0%) implies that, there is no deep frying of any baked products within the scheme. In relation to body powder, the value creation activity result of, fortification logos (1.5%) indicate that, body powder was also not done by agro-processors within Mwea irrigation scheme. Regarding rice bran oil, value creation activity result of, promotion and advertising (3.0%) and standardization marks (1.5%) indicate that, rice bran oil was not done within the scheme and was still at promotion stage despite its organic properties and entrepreneurial value.

4.4 Factors Influencing Innovative Value Creation of Milled Rice

4.4.1 Firms Age of Maturity

The respondents were asked to indicate the extent to which they agreed with the following statements on firm's age or maturity. Where 5 was very great extent, 4 was great extent, 3 was moderate extent, 2 was low extent and 1 was no extent at all.

Table 4.18: Firms Age or Maturity

	Mean	Std. Deviation
I have introduced more products since the start of the enterprise	3.0448	.78688
I have introduced more packaged products since start of the enterprise	3.1045	.85519
I have introduced more blended products since the start of the enterprise	2.9851	.72806
I have introduced more branded products since the start of the enterprise	3.1791	.85148
Total processing expenses increased with growth of the enterprise	3.4328	3.78683
Method of processing has become more complex with more new products made	2.8507	1.13155
Overall Mean	**3.0995**	

From the findings, the rice agro-processing actors agreed to a moderate extent that total processing expenses had increased with growth of the enterprise as shown by a mean of 3.4328. They also indicated with a mean of 3.1791 that, more branded products had moderately been introduced since the start of the enterprise. The rice agro-processing actors also indicated with means of 3.1045 and 2.9851 that, they had moderately introduced more packaged products since start of the enterprise and had introduced more blended products since the start of the enterprise. The method of processing as indicated with a mean of 2.8507 had also become more complex as more new products were made. It therefore means that, with an overall increament mean of 3.0995, firm's coming of age or maturity sometimes influenced such value creation activities like packaging, blending, branding on various products within the scheme though it did not in other times.

4.4.2 Firm Size and Stakeholders Attributes

Upon asked on the extent to which they agreed with various statements on firm size and stakeholders attributes, the respondents answered as follows.

Table 4.19: Firm Size and Stakeholders Attributes

	Mean	Std. Deviation
Increased size of the enterprise has caused an increase in products added value	2.7313	.91423
Increased size of the enterprise has caused an increased branded products	2.8209	.99887
Increased size of the enterprise has caused an increased promotion and advertising	2.8060	1.06228
Increased size of the enterprise has caused increased amount of per product made	2.7313	.91423
Overall Mean	**2.7724**	

From the findings, the rice agro-processing actors moderately agreed with a mean of 2.8209 that increased size of the enterprise has caused increased branded products. They also moderately agreed with a mean of 2.8060 that increased size of the enterprise has caused an increased promotion and advertising. In addition, the respondents moderately agreed with a mean of 2.7313 that increased size of the enterprise has caused an increase in value created products and the amount of per product made. The overall mean of 2.7724 therefore indicate that, increase in the firm size would have sometimes improved the pooling of resources hence resulting to an enhanced value creation activities. However, this was not always the case since it could also have had a negative impact.

4.4.3 Customer Needs and Expectations

When asked on their level of agreement with various statements on Customer needs and expectations, the agro-processors answered as shown in table 4.20.

Table 4.20: Consideration of Customer Needs and Expectations

	Mean	Std. Deviation
New value added products are made with consideration of suggestions from potential customers	2.9701	.92064
Customers liked buying the new baked products when they were first manufactured	2.6418	.62040
Customers liked the new packaged products when they were first manufactured	2.6418	.77267
Customers liked new branded products when they were first manufactured	2.5970	.83593
Customers liked the new products when they were first manufactured	2.6119	.81567
Overall Mean	**2.6925**	

From the findings the rice agro-processing actors moderately agreed with a mean of 2.9701 that new value added products are made with consideration of suggestions from potential customers. They also moderately agreed with means of 2.6119 and 2.6418 that customers liked the new products when they were first manufactured and customers liked the new packaged products when they were first manufactured, respectively. They further moderately agreed with a mean of 2.6418 that customers liked buying the new baked products when they were first manufactured. Also, rice agro-processing actors moderately agreed with a mean of 2.5970 that customers liked new branded products when they were first manufactured. Therefore, overall mean of 2.6925 implies that, aligning the product to the customer needs and expectations may have enhanced the likeness and demand of the product hence making it an influencing factor to value creation. However, this was not always the case if this situation was not adhered to.

4.4.4 Customer Needs' Consideration in the Value Creation Process

The rice agro-processing actors were requested to indicate the extent to which the needs of the customers were considered before developing the value creation process. The results were as presented in table 4.21.

Table 4.21: Customer Needs' Consideration in the Value Creation Process

	Mean	Std. Deviation
Branding and packaging	3.1045	.90678
Baking the product into e.g. cookies	3.0000	.71774
Carrying out Promotion/advertising	3.1493	1.01882
Overall mean	**3.0846**	

According to the findings, the rice agro-processing actors indicated with a mean of 3.1493 that the needs of the customers were considered before carrying out promotion/advertising. They also indicated with a mean of 3.1045 that the needs of the customers were considered before branding and packaging. Rice agro-processing actors also agreed with a mean of 3.0000 that, the needs of the customers were considered before baking the products such as cookies. These findings show that, the needs of the customers were moderately considered before carrying out promotion/advertising, branding, packaging and baking the products.

Since these are customer needs consideration indicators, the overall mean of 3.0846 means that, customer needs consideration within the value creation process may sometimes influence the value creation process of milled rice but sometimes may not if the prevailing business environment was not conducive.

Changing Products to meet the needs and expectations of the customers

The rice agro-processing actors were asked to indicate their level of agreement on various statements on changing Products to meet the needs and expectations of the customers. The results were as presented in table 4.22.

Table 4.22: Changing Products to meet the needs and expectations of the customers

	Mean	**Std. Deviation**
The baked products had to be changed several times to meet the needs and expectations of the customers	2.7313	1.12253
The branded products had to be changed several times to meet the needs and expectations of the customers	3.2239	1.12574
The packaged products had to be changed several times to meet the needs and expectations of the customers	3.5522	.98909
The bar coded products had to be changed several times to meet the needs and expectations of the customers	3.7313	.91423
Overall mean	**3.3097**	

From the findings, the rice agro-processing actors agreed with a mean of 3.7313 that the bar coded products had to be changed several times to meet the needs and expectations of the customers. They also agreed with a mean of 3.5522 that the packaged products had to be changed several times to meet the needs and expectations of the customers. Also, with a mean of 3.2239, they moderately agreed that, branded products had to be changed several times to meet the needs and expectations of the customers. These findings imply that, there was a necessity to change the various value creation activities like, barcoding, packaging, branding as indicated with the overall mean of 3.3097 in order to align them with the customer needs and expectations which would also keep on changing. However, there was a possibility of this situation to reverse.

4.4.5 Demand of the Value Added Products

The rice agro-processing actors were asked to indicate their level of agreement with various statements on the demand of the value added products. The results were as shown in table 4.23.

Table 4.23: Demand of the value added products

	Mean	Std. Deviation
Demand of the value added products is currently more than when product was first launched	2.8955	.93961
Demand of feeds is currently more than when they were first launched	3.0746	.89296
Demand of bar coded is currently more than when they were first launched	3.2836	.95037
Demand of packaged is currently more than when they were first launched	3.3731	1.01258
Demand of baked is currently more than when they were first launched	3.4627	1.10547
Demand of branded is currently more than when they were first launched	3.4627	1.11910
Demand of the briquettes is currently more than when they were first launched	2.7612	.95488
Overall Mean	**3.1876**	

The rice agro-processing actors moderately agreed with means of 3.4627 and 3.4627 that demand of baked and branded products respectively was more than when they were first launched. The respondents also moderately agreed with means of 3.3731 and 3.2836 that demand of packaged and bar coded products, respectively, were more than when they were first launched. Further, the respondents moderately agreed with means of 3.0746, 2.8955 and 2.7612 that demand of feeds, other value added products and briquettes was more than when they were first launched.

These findings with an overall mean of 3.1876 imply that, despite demand for value added products such as bar coded products, baked, branded, feeds and packaged product being currently more than when the products were first launched, their supply probably could have been inadequate. This actually brings out the demand and entrepreneurial gap which could have been addressed if good estimation of product market size, customer needs, probable sales and creation of better business environment were ensured. Therefore, demand consideration of value created products was a key influence to value creation activities.

4.4.6 Product Attractiveness

The rice agro-processing actors were requested to indicate the extent to which the named value creation processes had contributed towards attracting potential customers.

Table 4.24: Value Creation Processes in Attracting Potential Customers

	Mean	Std. Deviation
Branding	3.2239	.79431
Packaging	3.2090	.72900
Baking	3.0299	.49145
Promotion/advertising	3.3881	.73763
Standardization mark	3.2090	.59128
Diamond mark of quality	3.1343	.57460
Bar coding	3.2090	.59128
Flour milling	3.0746	.40126
Blending	3.0299	.57657
Overall Mean	**3.1675**	

According to the findings, the rice agro-processing actors indicated with a mean of 3.3881 that promotion/advertising contributed towards attracting potential customers for the value created product to a moderate extent. In addition, they indicated with a mean of 3.2239 that branding contributed towards attracting potential customers for the value created product to a moderate extent.

Further, the rice agro-processing actors indicated with a mean of 3.2090 that standardization mark, bar coding and packaging contributed towards attracting potential customers for the value created product to a moderate extent. Also, the rice agro-processing actors indicated with a mean of 3.1343 that diamond mark of quality contributed towards attracting potential customers for the value created product to a moderate extent.

These finding with an overall mean of 3.1675 imply that, though promotion/advertising, branding, standardization mark, bar coding and packaging and diamond mark of quality, baking, blending and flour milling moderately contributed towards attracting potential customers for the value created product, the earlier frequencies had showed it was only packaging, branding, blending and some promotion and advertising that were actually practiced. Therefore, other value creation activities needed further consideration since their mean was also indicating their moderate potential to create product attractiveness. This means that, product attractiveness may sometimes influence innovative value creation of milled rice within the scheme though dependence on the value created product.

4.4.7 Market of the Value Created Products

When asked to indicate how often market surveys for value created products were conducted, the agro-processors response results were as presented in table 4.25.

Table 4.21: Market of the Value Created Products

	Mean	**Std. Deviation**
How often is market survey carried out for baked products	3.4627	1.47019
How often is market survey carried out for bar coded products	3.7910	1.09458
How often is market survey carried out for Packaged and branded products	3.8060	1.18371
How often is market survey carried out for refined bran	3.7910	1.32044
Overall mean	**3.7127**	

From the findings, the respondents indicated with a mean of 3.8060 that market survey for packaged and branded products was often carried out. In addition, they indicated with a mean of 3.7910 that market survey for bar coded products and refined bran was often carried out. However, the respondents indicated with a mean of 3.4627 that market survey for baked products was occasionally carried out. These findings imply that market surveys for packaged, branded products, bar coded products and refined bran were often carried out while market surveys for baked products were occasionally carried out.

These results are also reflected on the extent to which packaged and branded products have been adopted in the market. The occasional survey is reflected on the absence of baked value created products in the market. Overall mean of 3.7127 therefore means that, market survey of the value created products may positively influence value creation processes of milled rice but sometimes may impact negatively if not frequently and objectively done.

Market Promotion for Value Added Products

When asked to indicate how frequent market promotion was conducted for various value created products, the rice agro-processing actors responded as shown in table 4.26.

Table 4.22: Market Promotion for Value Added Products

	Mean	**Std. Deviation**
How frequent is market promotion done for baked products	3.5075	1.65487
How frequent is market promotion done for Deep fried products	3.0896	1.56410
How frequent is market promotion done for packaged and branded products	3.2239	1.50576
How frequent is market promotion done for bar coded products	3.1343	1.54621
How frequent is market promotion done for polished rice	3.2687	1.48306
Overall Mean	**3.2448**	

From the findings, the rice agro-processors indicated with a mean of 3.5075 that market promotion for baked products was done frequently. They also indicated with a mean of 3.2687 that market promotion for polished rice was occasionally done. Moreover, a mean of 3.2239 and 3.1343 indicated that, market promotion for packaged and branded products as well as bar coded ones respectively, was done occasionally. Further, they indicated with a mean of 3.0896 that market promotion for deep fried products was also done occasionally.

These finding imply that, there was an occasional market promotion for packaged, branded, bar coded and deep fried products even though that for baked products was frequently done. The occasional market promotions is a direct reflection on the low and non-adoption of the value created product within the scheme compared to those whose promotions was done frequently. Therefore, the overall mean of 3.2448 indicates that, market promotion may fairy influence value creation of milled rice if well done but may fail to do so if not emphasized.

Price of Value created products and Target Market

The rice agro-processing actors were asked to indicate whether the price of value added products depended on target market. The results were as shown in table 4.27.

Table 4.23: Price of value added products and Target Market

	Mean	**Std. Deviation**
Price of baked products depends on target market which can be Niche or Mass market	2.2985	1.11484
Price of new packaged depend on target market which can be Niche or mass market	2.2687	1.14920
Price of bar coded products depends on target market which can be Niche or Mass market	2.8209	1.17969
Price of branded products depends on target market which can be Niche or Mass market	2.8657	1.16639
Overall mean	**2.5635**	

According to these finding, rice agro-processing actors agreed to a low extent with a mean of 2.2985 that the price of baked products depends on target market which can be niche or mass market. Moreover, price of branded products depends on target market which can be Niche or Mass market as shown by a mean of 2.8657.

In addition, the rice actors moderately agreed with a mean of 2.8209 that, price of bar coded products depends on target market which can be Niche or Mass market. Also, they disagreed to a low extent with a mean of 2.2687 that, price of new packaged products depend on target market which can be Niche or mass market.

These findings show that, the price of branded and bar coded products sometimes depend on target market which can be niche or mass market. However, the price of baked and packaged was not dependence on target market which can be Niche or mass market. This implies that, price is fairly a key determinant of value creation activities within the scheme but sometimes may have a negative influence.

4.4.8 Human Resource Availability

The rice agro-processing actors were asked to indicate their level of agreement with various statements on the adequacy of skilled staffs. The results were as shown in table 4.28.

Table 4.24: Adequacy of Human Resource

	Mean	**Std. Deviation**
There is adequate skilled staffs for training/carrying out feed fortification	2.6716	.97527
There is adequate skilled staffs for training/carrying out Baking activities	2.5075	.95937
There is adequate skilled staffs for training/carrying out Packaging and branding	3.0000	.96922
Overall mean	**2.7264**	

The respondents moderately agreed with a mean of 3.0000 that there are adequate skilled staffs for training/carrying out packaging and branding. The respondents also moderately agreed with a mean of 2.6716 that there are adequate skilled staffs for training/carrying out feed fortification. Also, the respondents moderately agreed with a mean of 2.5075 that there are adequate skilled staffs for training/carrying out baking activities.

These findings imply that there were inadequate skilled staffs for training/carrying out packaging, branding, feed fortification and baking activities. Since skilled staffs are indicators of more value creation activities, the inadequacy of human resource skills and staff therefore had a negative influence on value creation activities within the scheme.

Table 4.25: Offering of capacity/Training by value addition experts

	Frequency	**Percent**
No training at all	22	32.8
Quarterly	19	28.4
Two months span	6	9.0
Monthly	17	25.4
Always	3	4.5
Total	**67**	**100.0**

From the findings, 32.8% of the rice agro-processing actors indicated that capacity/training was not offered by value addition experts to their enterprises, 28.4% were offered on quarterly basis, 25.4% on monthly basis, 9.0% on two months span and 4.5% indicated always. These findings imply that, capacity/training was minimally or not offered to processors by value addition experts within the scheme.

Adequacy of Financial Capability

The respondents were requested to indicate their current financial capability in various value addition activities. The results were as presented in table 4.30.

Table 4.26: Financial Capability for value Addition Activities

	Mean	Std. Deviation
The current financial capability of the enterprise is enough to support deep frying activities	1.7910	.87969
The current financial capability of the enterprise is enough to support New baking activities	1.8209	.85148
The current financial capability of the enterprise is enough to support promotions and advertising	1.8209	.90328
The current financial capability of the enterprise is enough to support promotions and advertising	1.9552	.80590
The current financial capability of the enterprise is enough to support bar coding	2.1940	.87454
The current firm's financial resource is enough to support successful marketing of formulated feeds	1.8358	.93090
Overall mean	**1.9030**	

From the findings, the rice agro-processing actors disagreed with the statement that the current financial capability of their enterprises were enough to support bar coding as shown by a mean of 2.1940. They also disagreed with the statement that the current financial capability of their enterprises was enough to support promotions and advertising as indicated by a mean of 1.9552. With a mean of 1.8358 the rice agro-processing actors disagreed with the statement that the current firm's financial resource was enough to support successful marketing of formulated feeds. In addition, they disagreed with the statement that the current financial capability of their enterprises was enough to support new baking activities and promotions and advertising as shown by a mean of 1.8209.

The rice agro-processing actors also disagreed with a mean of 1.7910 that the current financial capability of their enterprises was enough to support deep frying activities. With an overall mean of 1.9030 and the above being indicators of value creation activities, these findings imply that, the current financial capability of the enterprises was not enough to support value creation activities and hence had a negative influence.

4.4.9 Technology availability

When asked to indicate how often their firm's change their value creation techniques/ machinery/Equipment, the following were results as shown in table 4.31.

Table 4.27: Frequency of changing value creation machinery/Equipment

	Frequency	Percent
Not at all	14	20.9
Frequent	13	19.4
Less frequent	24	35.8
Moderately frequently	12	17.9
Highly frequently	4	6.0
Total	**67**	**100.0**

From the findings, 35.8% of the respondents indicated that their firm's change their value creation techniques/ machinery/equipment less frequently, 20.9% indicated to no extent at all, 19.4% indicated frequently, 17.9% indicated moderately frequently and 6% indicated highly frequently.

These findings imply that most of the rice processing firms change their value creation techniques/ machinery/equipment less frequently. Therefore, rice processing firms need to increase the frequency of changing their value creation techniques/ machinery/ equipments in order to enhance their efficiency and performance.

Level of Technology

The rice agro-processing actors were also asked to indicate how they would averagely rate the processing facilities/Machineries/equipment. The results were as presented in table 4.32.

Table 4.28: Rating of the processing facilities/Machineries/equipment

	Frequency	Percent
Nothing at all	10	14.9
Old and inefficient	6	9.0
Old and efficient	27	40.3
Moderately old and efficient	16	23.9
Latest and efficient	8	11.9
Total	**67**	**100.0**

From the findings, 40.3% of the respondents rated their processing facilities/ machineries/ equipment as old and efficient, 23.9% rated them moderately old and efficient, 11.9% rated them as latest and efficient and 9% rated them as old and inefficient. These findings imply that processing facilities/ machineries/ equipment in most of the rice processing firms in Mwea Irrigation scheme were old and efficient. Therefore, rice processing firms in Mwea Irrigation scheme should boost their financial resources invested in acquisition of latest and more efficient processing facilities/ machineries in order to improve their performance.

4.4.10 Corporate Culture and Environment

The respondents were asked to rate their enterprises in terms of corporate culture and environment. The results were as shown in table 4.33.

Table 4.29: Corporate Culture and Environment

	Mean	**Std. Deviation**
Please rate the talent management strategy for the processing firm/group	2.0299	1.19304
Rate the firm's/group's Employee retention scheme	2.4328	1.22132
Rate the firm's/group's Reward scheme	2.1343	1.16639
Rate the Job progression level for employees of the firm/group	2.1343	1.14012
Rate the Performance based deployment for employees in the firm	3.2388	1.15588
Overall mean	**2.3940**	

According to the findings, the respondents indicated with a mean of 3.2388 that the performance based deployment for employees in the firm was good. In addition, the respondents indicated with a mean of 2.4328 that the firm's/group's employee retention scheme was poor. In addition, the respondents indicated with a mean of 2.1343 that the firm's/group's Reward scheme and job progression level for employees of the firm/group was poor.

Further, the respondents indicated with a mean of 2.0299 that the talent management strategy for the processing firm/group was poor. This implies that, performance based deployment for employees in the firm were good but still needed more improvement. The findings also imply that employee retention schemes, reward schemes and job progression level in most of the rice processing firms in Mwea Irrigation scheme were poor. Therefore, more robust measures and strategies were needed if the value creation of rice was to improve. Since these are corporate culture indicators, the overall mean of 2.3940 shows a negative situation and hence a need for re-evaluation.

4.5 Factor Analysis

Factor analysis is a technique that is used for data reduction. It attempts to identify the underlying variables that explain a given pattern of correlations within a set of observed variables. This study used factor analysis to reduce data so as to identify a small number of factors that explain most of the variance that is observed in a much larger number of manifest variables or constructs.

The study used Eigen value of one as the initial solution and found the communalities as shown in appendix III. The study used communalities to indicate the amount of variance in each variable that is accounted for. The Eigen value of one is the initial communalities that give the estimate of the variance in each variable accounted for by all components or factors.

Table 4.30 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17.296	23.062	23.062	17.296	23.062	23.062
2	5.848	7.797	30.859	5.848	7.797	30.859
3	4.430	5.906	36.766	4.430	5.906	36.766
4	4.105	5.474	42.239	4.105	5.474	42.239
5	3.641	4.855	47.094	3.641	4.855	47.094
6	3.227	4.303	51.397	3.227	4.303	51.397

7	2.948	3.931	55.329	2.948	3.931	55.329
8	2.539	3.385	58.714	2.539	3.385	58.714
9	2.338	3.117	61.831	2.338	3.117	61.831
10	2.192	2.923	64.754	2.192	2.923	64.754
11	2.002	2.670	67.424	2.002	2.670	67.424
12	1.796	2.395	69.819	1.796	2.395	69.819
13	1.619	2.158	71.978	1.619	2.158	71.978
14	1.519	2.026	74.003	1.519	2.026	74.003
15	1.403	1.870	75.874	1.403	1.870	75.874
16	1.258	1.678	77.552	1.258	1.678	77.552
17	1.167	1.556	79.108	1.167	1.556	79.108
18	1.119	1.492	80.600	1.119	1.492	80.600
19	1.042	1.389	81.989	1.042	1.389	81.989
20	.969	1.292	83.281			
21	.925	1.233	84.514			
22	.852	1.137	85.651			
23	.770	1.026	86.677			
24	.751	1.001	87.678			
25	.675	.901	88.579			
26	.649	.865	89.444			
27	.609	.812	90.256			
28	.582	.776	91.032			
29	.563	.751	91.784			
30	.507	.676	92.459			
31	.475	.634	93.093			
32	.437	.582	93.675			
33	.419	.558	94.233			
34	.383	.510	94.743			
35	.352	.469	95.212			
36	.331	.441	95.654			
37	.317	.423	96.076			
38	.310	.413	96.489			
39	.281	.375	96.864			
40	.253	.337	97.201			
41	.221	.295	97.496			
42	.214	.285	97.781			
43	.185	.247	98.028			
44	.168	.224	98.252			
45	.153	.205	98.457			
46	.144	.192	98.649			

47	.132	.177	98.825
48	.118	.157	98.982
49	.104	.139	99.122
50	.089	.119	99.241
51	.085	.113	99.354
52	.080	.107	99.461
53	.072	.095	99.556
54	.062	.082	99.639
55	.056	.074	99.713
56	.047	.062	99.775
57	.034	.045	99.820
58	.030	.040	99.860
59	.025	.033	99.893
60	.021	.028	99.921
61	.020	.026	99.947
62	.014	.019	99.966
63	.012	.015	99.982
64	.007	.009	99.990
65	.004	.005	99.996
66	.003	.004	100.000
67	1.317E-015	1.756E-015	100.000
68	9.928E-016	1.324E-015	100.000
69	7.936E-016	1.058E-015	100.000
70	5.945E-016	7.927E-016	100.000
71	5.632E-016	7.510E-016	100.000
72	1.538E-016	2.050E-016	100.000
73	2.200E-017	2.934E-017	100.000
74	-4.807E-016	-6.409E-016	100.000
75	-6.807E-016	-9.075E-016	100.000

Extraction Method: Principal Component Analysis.

Since the independent variables in this study were nine (9), nine (9) factors were extracted by use of principal component analysis. The nine factors were found to explain 81.989% of the innovative value creation of milled rice by agro-processors in Mwea Irrigation Scheme. The first component was explaining 23.062% of the innovative value creation of milled rice. This was followed by 7.797%, 5.906%, 5.474%, 4.855%, 4.303%, 3.931%, 3.385%, 3.117%, 2.923%, 2.670%, 2.395%, 2.158%, 2.026%, 1.870%, 1.678%, 1.556%, 1.492% and 1.389%. This shows that by using these factors we can reduce the complexity of the data set by using 18 components since only 18.011% of information is lost.

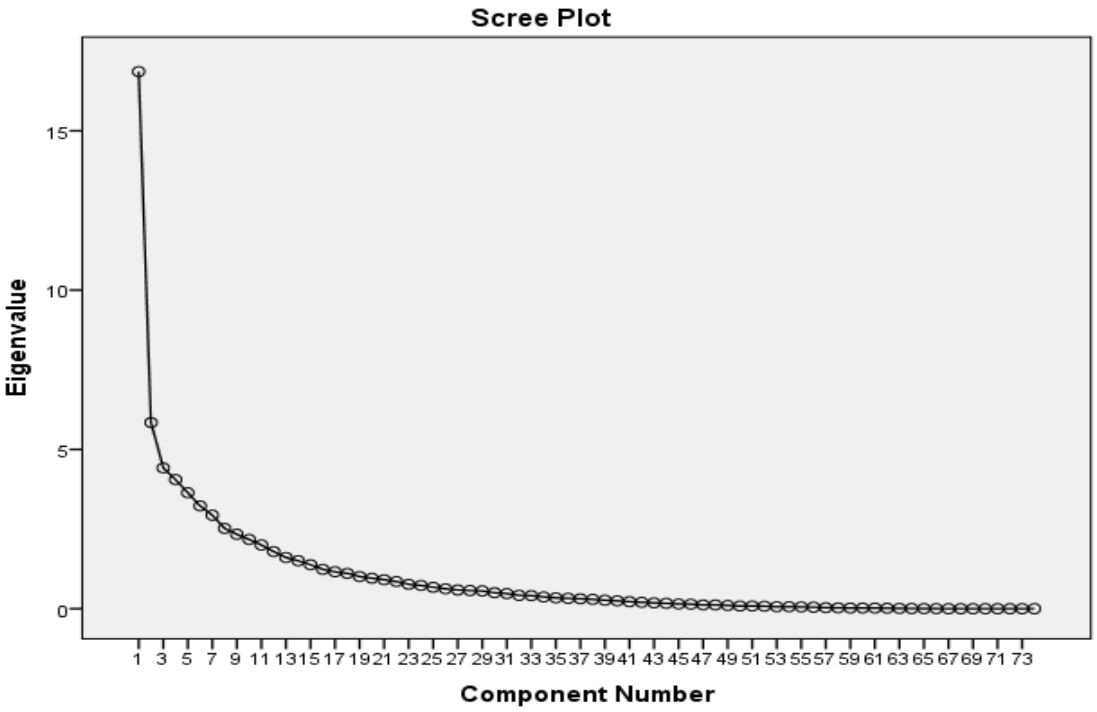

Figure 4.1: Scree plot for the Perceived factors Influencing Value Creation

These finding are supported by the scree plot shown in figure 4.1. The scree plots the eigen value of each component thus it helps in determining the optimal number of components. From the findings, 19 components were extracted as per the number of the independent variables.

Kaiser Varimax rotation scheme was implemented to evaluate factor loadings that correlate the factors and the variables. The rotated factor matrix of the nine factor model was created as shown in Appendix II.

The factor loadings were used to group the factors that influence the innovative value creation in milled rice. Based on the factor loadings of the individual variable; each factor was given a descriptive name as follows; Factor 1 - firm size and stakeholders attributes, Factor 2 – product demand, Factor 3 – customers need and expectations, Factor 4 – market of the value created products, Factor 5 –product attractiveness, Factor 6 – customers need and expectations, Factor 7 –resource availability, Factor 8 –resource availability, Factor 9 – customers need and expectations, Factor 10 – customers need and expectations, Factor 11 – product attractiveness, Factor 12 –product demand.

Further, factor 13 was given –product demand, Factor 14 - customers need and expectations, Factor 15 – technology availability, Factor 16 –product demand, Factor 17– market of the value created products, Factor 18 – product attractiveness and Factor 19 – firms' age and maturity.

These findings imply that, firm size and stakeholders attributes was the most significant factor influencing innovative value creation of milled rice, followed by product demand, customer needs and expectations, market of value created products, product attractiveness, resource availability, corporate culture and environment, technology availability and firms age and maturity.

4.6 Discussion of the Findings

The aim of the study was to assess the factors influencing innovative value creation of milled rice by agro-processor within rice value chain in Mwea irrigation scheme. The study found that, despite the importance and entrepreneurial value of processed value created milled rice products in terms of increament of venture's turnover and returns, agro-processing firms in Mwea irrigation scheme only carried out, basic value creation of polished rice through packaging, branding, advertising and standardization marks. These were also the only activities done to blended rice. However, there was rare to no secondary or advanced value created products like baking, formulated feeds, rice flour, rice husk briquettes, rice biscuits, baked deep fried products ,whole rice cookies, body powder and rice bran oil that were processed within the scheme.

This hence indicates that, there was also no value creation activities like, standardization marks, barcoding, fortification logos, diamond mark of quality, milling of rice flour, baking, feed formulations and briquetting that were done to the above products.

Based on the factor loadings of individual variable, firm size and stakeholders attributes was the most significant factor influencing innovative value creation of milled rice, followed by product attractiveness, market of the value added products, resource availability, customers' needs and expectations, corporate culture and environment, firm's age and maturity, product demand and technology availability

The results deduced that, firm's size (increased size) would sometimes cause an increase in the value created products within the scheme. These findings are contrary to Miller et al., (1988) findings that, upon increase in size of an organization, it may lose its enthusiasm to innovate and hence require a more elaborate control mechanism. However, the moderateness also indicated a probable negative influence to value creation.

It was found that, branding, packaging, promotion/advertising, standardization marks, diamond mark of quality, bar coding, flour milling and blending would contribute towards attracting potential customers for the value created product to a moderate extent. These findings are in line with Nebojsa et al. (2008) argument that product attractiveness influences the type of innovation to adopt in order to guarantee market acceptability and sustainable income generation

The study revealed that, market surveys for packaged, branded products, bar coded products and refined bran were often carried out while market surveys for baked products were occasionally carried out. This was reflected on the extent to which packaged and branded products had been adopted in the market. The occasional survey was reflected on the absence of baked value created products in the market. According to Nebojsa (2008), market survey plays a major role in innovation and value creation.

Moreover, the researcher discovered that, most rice processing firms in Mwea Irrigation Scheme, had inadequate skilled staffs for training/carrying out packaging and branding, feed fortification and baking activities.

There was further revelation that, capacity/training was not adequately offered by value addition experts to rice processing firms within the scheme hence the low adoption of value creation activities. The financial capability of most enterprises was also not enough to support value creation activities such as bar coding, promotions and advertising, new baking activities, promotions and advertising and deep frying activities. EBRD, (2014) had earlier indicated that, value creation may be high amongst large established firms compared to young ones due to financial capability, affordability to research and development as well as market promotion budgets). The centralization of budgets by the agro-processors could have also hindered innovativeness to value creation.

Hardy and Dougherty (1997) had earlier indicated that, centralized and systematically controlled budget, with clear defined job and technology exclusion contributes negatively to innovation and value creation.

Other deductions were such that, new value created products were sometimes made in consideration of feedback from potential customers though this could either have a positive or negative influence. These findings agree with Nebojsa et al. (2008) argument that, firms with customer orientation are able to measure their customer satisfaction level through being responsive to their needs. This is evidenced by moderate consideration of customer needs before branding and packaging, baking and carrying out promotion/advertising. These findings agree with Christensen (2002) findings that, company's aptitude to innovate can be limited by consistent focus on existing customers hence managers deviating from being keen to serve new customers.

Other deduction was such that, value created products need to be changed several times in order to meet the needs and expectations of the customers. According to Hippel's (1988), the leading product users face the needs that appear in the market months and years after others. They also have an aptitude to express future needs as the function of their experience.

Firm's age or maturity was also realized to influence the value creation processes within the scheme This was evidenced by the introduction of more value added products since the start of the enterprises and the method of processing had become more complex with more new products made. These findings agree with Klepper, (1996) argument that there is more focus on process innovations than product innovations as the firm age or mature. The study established that, demand of the value created products was currently more than when the products were first launched. These findings agree with Nebojsa (2008) findings that, demand of value created products increases as businesses grow. However, this demand could only be met by the packaged, branded, blended products of the polished and blended rice. This showed an entrepreneurial gap which needed to be filled through value creating more products to enhance supply and meet the demand.

According to Scott (2015), technology can also be critical, enabling and strategic in value creation. The study established that most of the rice processing firms change their value creation techniques/ machinery/equipment less frequently. In addition, processing facilities/ machineries/ equipment in most of the rice processing firms in Mwea Irrigation scheme were old, but efficient.

It was discovered that, majority of those who carried out agro-processing and value creation activities were actually the youth ranging from 30-39 years of age. This is the most critical stage in creating innovative ideas and commercializing them. Moreover, majority of the agro-processors were actually of the male gender (53.7%) though the difference was very insignificant and may have been inflicted by the barriers women face in enterprise management and operations (Swartz, 1976).

The study also revealed that, rice agro-processing actors in Mwea irrigation scheme had secondary education as their highest level of education. This was an indicator of higher education graduates having not embraced value creation activities as entrepreneurial opportunities despite more education skills being related to good business management.
It was discovered that, most businesses dealing with rice agro-processing in Mwea irrigation scheme had complied with the registration as a legal requirement and majority (61.2%) had business permits issued by the county government.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the findings, conclusion, recommendations and areas for further study. The main objective of the study is to evaluate the factors influencing innovative value creation of milled rice by agro-processors within rice value chain in Mwea Irrigation Scheme.

5.2 Summary of the Key Findings

The study found that, despite the importance and entrepreneurial value of processed value created milled rice products in terms of increament of venture's turnover and returns, agro-processing firms in Mwea irrigation scheme only carried out, basic value creation of polished rice through packaging, branding, advertising and standardization marks. These were also the only activities done to blended rice. There was also rare to no secondary or advanced value created products like baking, formulated feeds, rice flour, rice husk briquettes, rice biscuits, baked deep fried products ,whole rice cookies, body powder and rice bran oil that were processed within the scheme.

The results deduced that, firm's size (increased size) would sometimes cause an increase in the value created products within the scheme. However, the moderateness indicated a probable negative influence to value creation.

It was inferenced that, products whose market surveys were oftenly carried out, had a high adoption rate compared to the ones whose survey was occasionally done. This was evidenced by the often surveys done on packaged, branded products, bar coded products and refined bran compared to occasional one on baked products.

Other discoveries were such that, most rice agro-processing firms within the scheme, had inadequate skilled staffs for training/carrying out packaging and branding, feed fortification and baking activities. Further revelation was that, capacity/training was inadequately offered by value addition experts hence the low adoption of value creation activities.

The financial capability of most enterprises was also not enough to support value creation activities like bar coding, promotions and advertising, new baking activities, promotions and advertising and deep frying activities

Consideration of feedback from potential customers was realized to sometimes have a positive or negative influence on value creation activities within the scheme. This was evidenced by moderate consideration of customer needs before branding and packaging, baking and carrying out promotion/advertising. However, innovated value created products, sometimes needed to be changed several times in order to meet the needs and expectations of the customers.

Firm's age or maturity was also realized to influence the value creation processes within the scheme as evidenced by the introduction of more value added products since the start of the enterprises and the method of processing becoming more complex with more new products made.

The study also established that, demand of the value created products was currently more than when the products were first launched. However, this demand could only be met by the packaged, branded, blended products of the polished and blended rice. This showed an entrepreneurial gap which needed to be filled through value creating more products to enhance supply and meet the demand. Other inferences were such that, most of the rice processing firms changed their value creation techniques/machinery /equipment less frequently. In addition, their processing facilities/machineries/ equipment were old, but efficient.

There was also deduction that, majority of those who carried out agro-processing and value creation activities were actually the youth ranging from 30-39 years of age. However, most of them were of the male gender (53.7%). Moreover, secondary was realized to be their highest level of education (43.3%) an indicator of higher education graduates having not embraced value creation activities as entrepreneurial opportunities despite more education skills being related to good business management. Many businesses had also complied with registration as a legal requirement (61.2%) and had business permits issued by the county government as evidence.

5.3 Theoretical Relationship with the Results of the Study

This study was informed by Rodgers Diffusion Innovation theory and Value chain theory as proposed by Porter (1985). The study deduced that, it was only the basic innovative value creation activities and products that had been adopted by the agro-processors within the scheme and rare on the secondary and advanced value created products and activities. The adoption depended on the activity or product relative advantage, information availability, complexity and triability. These are attributes to diffusion of technology and uncertainty (Rodgers, 2003). Moreover, targeting of the simple or basic value created products and activities aimed at minimizing the costs of primary and support activities in order to increase the firm's ultimate profit margin. This agrees with Porter (1985) version of identifying enterprise sections that have cost leadership strategies in differentiated products throughout the value chain.

5.4 Conclusion

Based on the research findings, the study concludes that, agro-processing firms in Mwea irrigation scheme rarely improve the value of milled rice except through polishing and blending. The value of blended and polished rice is only enhanced through, branding, packaging, standardizing, promotion and advertising. Moreover, products such as fortified feeds, whole rice cookies, rice flour, rice husk briquettes, rice biscuits, and deep fried baked products are rarely done by the agro-processors. Other conclusion is that, innovative value creation activities such as packaging, branding, blending, promotion, and advertising as well as standardization marks are fairly/moderately conducted while barcoding, feed fortification, diamond mark of quality, milling of rice flour, fortification logos are never practiced.

The study further concludes that, firm size and stakeholders attributes is the most significant factor influencing innovative value creation of milled rice within Mwea irrigation scheme, followed by product attractiveness, market of the value added products, resource availability, customers' needs and expectations, corporate culture and environment, firm's age and maturity, product demand and technology availability.

5.5 Recommendations

The study found that, needs and expectation of the customers in regard to the value added products kept on changing. The study therefore recommends that, rice processing firms should frequently adjust their value created products in consistence with the customers' needs and expectations. This will significantly improve their customer loyalty and hence increase repurchases.

Moreover, researcher discovered that, innovative values created products were minimally processed but value creation activities were being carried out fairly within the scheme. The study therefore recommends more capacity building to create value creation skills, technology adjustment as well as promotion and advertising with the aim of improving the situation.

The study also found that most of the firms frequently experienced run out stocks. The study therefore recommends the adoption of inventory management systems to enable demand forecasting. This will help in ensuring that, there is enough inventories while at the same time preventing overstocking.

The study also found that, some rice processing firms were not carrying out market surveys for their value added products. The study therefore recommends frequent carrying out of market surveys so as to identify customers' needs and expectations and also asses their product's demand in the market.

The study established that, rice processing firms were moderately conducting promotions and advertising for their products. Promotions and advertising provides information to the current customers and the potential customers highlighting the benefits of the products. This study therefore recommends that rice processing firms should conduct promotions and advertising at high rate for their value created products so as to increase sales volume and hence general growth.

The study found that, there were inadequate skills for carrying out, innovative value creation activities in Mwea Irrigation Scheme. The researcher therefore recommends that, rice processing firms should consider improving their staff skills through holding refresher training programmes for different value creation programmes.

The study revealed that, financial capability was one of the major hindrances to the adoption of some value creation activities. The study recommends that, rice processing firms should seek for other alternative finance sources such as loans from banks, venture capital among others in order to meet their finance demands and expand their value creation activities.

The study also found that, most of the rice processing firms changed their value creation techniques/ machinery/equipment less frequently and rated them as old, but efficient. As technology advances techniques/ machinery/equipment increase in efficiency and effectiveness. This study therefore recommends that rice processing firms should consider improving and changing their techniques/ machinery/equipment frequently.

5.6 Areas for Further Research

This study was limited to innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme. The study therefore suggests further studies on innovative value creation in other types of products such as on horticulture and other cereal product. This will help in identification of more entrepreneurial gaps worth venturing especially by the various small medium enterprises. It also suggests further research on why capacity and training on innovative value creation activities is inadequate and probable measures necessary to address the situation.

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APPENDICES

Appendix I: Questionnaire

Research Topic: Factors influencing Innovative value creation of milled rice by agro-processors within rice value chain in Mwea irrigation scheme

Kindly answer the following questions freely and honest. You can tick where appropriate or write incase required to do so. Your answer and time will be highly appreciated.

SECTION A

1. General Demographic information

i) Category of the Agro-processor

a) Large scale [ ] b) Medium scale [ ] c) Small scale [ ]

d) Group [ ] e) Technical Expert [ ]

ii) What position do you hold in the firm/group……

iii) What is your age bracket

a) Less than 20 yrs. [ ] b) 20 to 29yrs [ ] c) 30 to 39yrs [ ]

d) 40 to 50yrs [ ] e) Over 50yrs [ ]

iv) Gender [ ] (1=Male 2=Female) [ ]

v) Level of Education a) primary [ ] b) Secondary [ ] c) Certificate [ ]

d) Diploma [ ] e) Degree [ ] f) Others [ ]

vi). Registration status of the business-Tick a) Social services b) Registrar of companies c) Not registered d) Others-Specify

If Technical staff, leave it blank

SECTION B

Value creation activities

1. Please write what types of value creation activities are undertaken or what products are processed by your firm/ group. e.g. packaging, branding, Blending, promotion and advertising, standardization marks, Fortification logos, Barcoding, Diamond mark of quality, Flour, baking, feed formulation, Briquette making e.t.c

Name of Innovated Product/Value added product	Value creation made e.g. Baking, Flour, packaging, Branding, fortification logos, diamond mark of quality, Promotion and advertising, Standardization marks etc.
Polished/ White rice	
Baked products. e.g. cake, Buns, Rice milk	
Whole rice cookies	
Rice flour	
Blended rice	
Feeds	
Rice husk briquettes	
Rice husk boards	
Rice biscuits	
Deep fried products e.g. Mandazi, doughnuts, spring rolls, crackies	
Body powder	
Rice bran oil	
Rice starch/binding agent	
Others.	

2. Indicate the number of years you have been in rice agro-processing/Value creation/training

a) Less than 2 yrs. b) 2 to 3 yrs. c) 4 to 5yrs d) More than 5 yrs

3. i) Have the enterprise continously engaged in value creation activities to milled rice within that period? Yes / No……..

ii) If yes, how long and why

iii)If No, how long and why

4. What do you think is the current growth status of the enterprise units dealing with value creation/Value addition of rice and by products

i) increasing ii) Decreasing iii) Static iv) Others-Specify

Section C

Factors influencing Innovative value creation of milled rice

5) Rate the extent to which the above factors have contributed to innovative value creation of milled rice products. Please circle or strike through as per the scale: **Very great extent =5 Great extent=4 Moderate extent =3 low extent =2 No extent=1**

a) Firm's age or maturity

No.	Statement	Very great extent 5	Great extent 4	Moderate extent 3	Low extent 2	No Extent 1
1.	I have introduced more Baked products since the start of the enterprise					
	I have introduced more whole rice cookies since start of the enterprise					
	I have introduced more packaged products since start of the enterprise					
	I have introduced More blended rice brands since the start of the enterprise					
	I have introduced more branded products since the start of the enterprise					
	Others :					
2.	Total processing expenses increased with growth of the enterprise					
3.	Method of processing has become more complex with more new products made					

b) Firm size and stakeholder attributes

No.	Statement	Very great extent 5	Great extent 4	Moderate extent 3	Low extent 2	No Extent 1
1	Increased size of the enterprise has caused an increase in baked products					
	Increased size of the enterprise has caused an Increased branded products					
	Increased size of the enterprise has caused an Increased promotion and advertising					
	Increased size of the enterprise has caused Increased amount of rice briquettes made					
	- Increased size of the enterprise has caused an increased deep fried products made					

ii) If so, has the number of permits and licenses regulating enterprise increased or decreased?

iii) Specify the licenses.

c) Customer needs and expectation

No.	Statement	Very great extent 5	Great extent 4	Moderate extent 3	Low extent 2	No Extent 1
1.	New value added products are made with consideration of suggestions from potential customers					

No.	Statement	Very great extent 5	Great extent 4	Moderate extent 3	Low extent 2	No Extent 1
1	Customers liked buying the new baked products when they were first manufactured					
	Customers liked the new packaged products when they were first manufactured					
	Customers liked new branded products when they were first manufactured					
	Customers liked the new briquettes when they were first manufactured					
	Customers liked the new feeds when when they were first manufactured					
	Others:					
2	Demand of the baked products is currently more than when product was first launched					
	Demand of feeds is currently more than when they were first launched					
	Demand of the briquettes is currently more than when they were first launched					
	Others –specify					
3	The new Baked products had to be changed several times to meet the needs and expectations of the customers					
	Others….					

d) Product attractiveness

What is the extent to which the named value creation processes have contributed towards attracting potential customers for the value created product.

No.	Statement	Very great extent 5	Great extent 4	Moderate extent 3	Low extent 2	No Extent 1
1.	Branded					
2.	Packaging					
3.	Baking					
4.	Promotion/advertising					
5.	Standardization mark					
6.	Diamond mark of quality					
7.	Bar conding					
8.	Flour milling					
9.	Blending					
10	Others –specify					
11	Has the features contributed to increase in turnover of the value created product?					

e) Product Demand

No.	Statement	Highly frequently 5	Moderately frequently 4	Less frequent 3	Frequent 2	Not at all 1
1	How frequent do the stocks of the new rice flour run out when promoted or advertised					
	How frequent do the stocks of the new packaged and branded products run out					

	Others-specify					
2	Has there been demand fluctuations for the new packaged and branded products					
	Has there been Demand fluctuation for the new baked products					
	Has there been Demand fluctuation for newly blended rice					
	Others-specify					

iii) Was the need of the customer considered before developing the value creation process?

No.	Statement-Specify the process	Very great extent 5	Great extent 4	Moderate extent 3	Low extent 2	No Extent 1
1	e.g. Branding and packaging					
2	Baking the product into e.g. cookies					
3	Carrying out Promotion/advertising					
4	Others-Specify					
5						
6						

f) Market of the value Created Products

No.	Statement	Always 5	Monthly 4	Quarterly 3	Yearly 2	None at all 1
1	How often is market survey carried out for baked products					
	How often is market survey carried out for Packaged and branded products					
	Others-Specify					
2	How frequent is market promotion done for baked products					
	How frequent is market promotion done for Deep fried products					
	Others-Specify					
3	Price of baked products depends on target market which can be Niche or Mass market					
	Price of new packaged and branded products depend on target market which can be Niche or mass market,					
	Others –specify					

NB: For experts, indicate what happens for the enterprises you deal with.

g) Resource availability

No.	Statement-Specify the process	Very great extent 5	Great extent 4	Moderate extent 3	Low extent 2	No Extent 1
1	Are there adequate, skilled staffs for training/carrying out feed fortification?					
	Are there adequate, skilled staffs for training/carrying out Baking activities					
	Are there adequate, skilled staffs for training/carrying out Packaging and branding					
	Others-					
2	Is the current financial capability of the enterprise enough to support deep frying activities					
	Is the current financial capability of the enterprise enough to support New baking activities					
	Is the current financial capability of the enterprise enough to support promotions and advertising					
	Others Specify..					
3	Is the current firm's financial resource enough to support successful marketing of formulated feeds……					
	Others-specify…					

No.	Statement	Highly decentralized 5	slightly decentralized 4	Averagely Decentralized 3	Centralized 2	No budget At all 1
1	How is the firm's budget controlled					

No.	Statement	1-2 Weeks span 5	Monthly 4	Two months span 3	Quarterly 2	No training at all 1
1	How many times on average is capacity/Training offered by value addition experts to the enterprise?					

h) Technology availability

No.	Statement	High frequently 5	Moderately Frequent 4	less frequently 3	Frequent 2	Not at all 1
1	How often do the firm change its value creation techniques/ machinery/Equipments					

ii) What informs the change of the processing method/machinery/ Equipments?

No.	Statement	Latest and efficient 5	Moderately old and efficient 4	Old and efficient 3	Old and inefficient 2	Nothing at all 1
1.	How would you averagely rate the processing facilities/Machineries/equipments					
2.	Give reasons					

NB: For experts, please only indicate for the enterprises you have dealt with.

I) Corporate culture and environment

NB: For experts, please only indicate for the enterprises you have dealt with.

No.	Statement	Very good 5	Moderately Good 4	Good 3	Poor 2	None at all 1
1.	Please rate the talent management strategy for the processing firm/group					
2.	Rate the firm's/group's Employee retention scheme					
3.	Rate the firm's/group's Reward scheme					
4.	Rate the Job progression level for employees of the firm/group					
5.	Rate the Performance based deployment for employees in the firm					

i) How would you averagely rate the management of the enterprise (Top-down) (Bottom –up) (Horizontal)

iii) What motivated you in locating the value addition enterprise where it is currently?

Appendix II: Component Matrix

	Component																		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Firm's age and maturity: I have introduced more products since the start of the enterprise	.316	.348	.528	-.213	-.024	-.056	.071	-.012	.248	-.125	.145	-.106	.004	.065	.220	-.117	-.080	.069	.169
Firm's age and maturity: I have introduced more packaged products since start of the enterprise	.287	.159	-.330	-.456	.468	-.097	-.039	.114	.102	-.275	-.150	-.045	-.213	.015	-.044	-.013	.142	.045	-.041
Firm's age and maturity: I have introduced More blended products since the start of the enterprise	.447	.418	.284	-.256	.182	.091	-.017	-.097	.145	-.163	-.339	-.062	-.011	-.033	.042	.046	.105	.004	.261
Firm's age and maturity: I have introduced more branded products since the start of the enterprise	.559	.242	.008	-.420	.158	.166	.018	.061	.005	-.350	-.264	-.168	-.151	.075	-.012	-.073	.117	-.052	.134
Firm's age and maturity: Total processing expenses increased with growth of the enterprise	.126	.113	-.104	.113	-.062	-.123	-.147	.042	.052	.379	-.038	-.032	-.081	.355	-.215	-.320	.155	-.130	.365
Firm's age and maturity: Method of processing has become more complex with more new products made	.441	.109	-.295	.020	-.018	-.137	-.065	.164	-.308	.097	.065	.210	.033	.374	-.172	-.185	.118	.030	.069
Firm size and stakeholder attributes: Increased size of the enterprise has caused an increase in products added value	.478	.493	-.083	-.039	.111	.123	.230	-.039	.143	.059	-.039	-.016	.131	.004	.025	-.201	-.158	.198	-.266
Firm size and stakeholder attributes:Increased size of the enterprise has caused an Increased branded products	.747	.148	-.136	-.117	.039	.079	.176	-.010	-.050	-.121	-.199	-.295	-.104	-.048	-.156	.039	.008	.036	-.127
Firm size and stakeholder attributes:Increased size of the enterprise has caused an Increased promotion and advertising	.689	-.103	-.097	-.016	-.024	.208	.170	.000	.010	.030	-.284	.003	-.113	-.160	.000	.107	-.071	.185	.035
Firm size and stakeholder attributes:Increased size of the enterprise has caused Increased amount of per product made	.438	.161	-.103	.178	.027	.316	.142	.204	.394	.030	-.042	.081	.083	-.091	-.185	.006	-.276	.211	.164
Customer needs and expecations: New value added products are made with consideration of suggestions from potential customers	.659	-.360	-.038	.044	.090	-.025	-.111	-.164	-.021	.083	-.152	-.244	-.051	.115	.149	.262	-.037	-.116	-.001

Customer needs and expecations: Customers liked buying the new baked products when they were first manufactured	.022	.384	.398	.059	.005	.234	-.063	.135	.117	.436	.250	.144	-.219	-.135	.049	.204	.087	.008	-.045
Customer needs and expecations: Customers liked the new packaged products when they were first manufactured	.191	-.245	.599	-.026	-.081	.179	-.372	.262	.021	.258	-.202	.134	-.098	.002	-.050	.039	.267	.021	.029
Customer needs and expecations: Customers liked new branded products when they were first manufactured	.262	-.260	.493	-.100	-.019	.066	-.404	.277	.029	.278	-.374	.005	-.045	.088	.027	.055	.214	-.005	.011
Customer needs and expecations: Customers liked the new products when they were first manufactured	-.081	.031	.228	-.090	.185	.157	-.040	.167	.491	.403	-.002	.122	.156	.384	-.071	.010	-.038	.059	-.219
Customer needs and expecations: Demand of the value added products is currently more than when product was first launched	.700	.158	.092	.075	-.134	.188	-.067	-.039	.056	.005	-.100	.068	.222	-.175	-.032	.030	-.246	-.088	.013
Customer needs and expecations: Demand of feeds is currently more than when they were first launched	.488	-.232	-.347	.181	.102	.373	-.233	-.182	-.028	-.142	.023	.230	.036	-.042	-.141	.116	.092	-.027	.107
Customer needs and expecations: Demand of bar coded is currently more than when they were first launched	.353	-.284	-.085	.144	.492	.239	-.041	-.233	.008	-.182	.010	-.044	.058	.304	.134	.208	.014	-.100	-.076
Customer needs and expecations: Demand of packaged is currently more than when they were first launched	.362	-.228	-.079	.128	.549	.166	-.103	-.183	-.038	-.114	.093	-.169	.203	.216	-.202	.145	.071	.001	-.091
Customer needs and expecations: Demand of baked is currently more than when they were first launched	.299	-.259	-.154	.252	.034	.099	-.298	.007	.483	-.028	.181	-.230	-.083	.059	-.200	-.148	.074	.211	.139
Customer needs and expecations: Demand of branded is currently more than when they were first launched	.382	-.302	-.066	.104	.052	.175	-.282	-.029	.453	-.138	.253	-.270	-.153	-.112	-.157	-.065	-.109	.142	-.027
Customer needs and expecations: Demand of the briquettes is currently more than when they were first launched	.649	.098	.243	.014	-.096	.170	-.085	-.104	.239	-.009	-.131	.225	.062	-.203	-.099	-.007	-.145	-.168	.106
Customer needs and expecations: The baked products had to be changed several times to meet the needs and expectations of the customers	.396	.239	.023	-.209	-.412	.019	-.087	.255	.204	-.304	-.128	-.086	-.109	.143	.174	.091	.029	-.060	-.046
Customer needs and expecations: The branded products had to be changed several times to meet the needs and expectations of the customers	.225	.081	-.149	-.025	-.337	.337	-.315	.192	.058	-.155	.144	-.223	-.174	.261	.333	.087	-.272	-.236	.160

Customer needs and expecations: The packaged products had to be changed several times to meet the needs and expectations of the customers	.157	.021	.256	-.003	-.501	.369	.188	.134	.081	-.262	.124	-.090	.274	.256	-.023	-.231	.065	-.181	-.138
Customer needs and expecations: The bar coded products had to be changed several times to meet the needs and expectations of the customers	.062	-.240	.478	-.229	-.158	-.226	.249	.266	.202	-.226	.035	-.019	.176	.217	-.067	-.176	-.001	.093	-.135
Product proactiveness: Branded	.710	-.129	.050	-.277	.260	.252	-.190	.092	-.111	.040	.088	.076	.074	-.001	.082	.046	.140	.079	.024
Product proactiveness: Packaging	.707	-.183	.020	-.277	.277	.187	-.190	.145	-.160	-.031	.043	.104	.122	-.016	.066	.004	-.138	.008	-.002
Product proactiveness: Baking	.098	.478	.347	-.206	.231	-.201	-.030	-.209	.235	-.014	.389	.192	.096	.064	.005	.055	.119	.057	-.008
Product proactiveness: Promotion/advertising	.551	-.237	.102	-.394	.054	-.009	-.237	.170	-.159	-.086	.114	-.021	.078	-.243	.015	-.069	.087	.200	.049
Product proactiveness: Standardization mark	.389	-.601	.264	-.201	-.166	-.135	-.141	-.067	-.036	.174	.070	-.074	-.082	-.072	.057	.108	-.062	.116	-.124
Product proactiveness: Diamond mark of quality	.416	-.459	.161	-.059	-.224	-.051	-.096	.081	-.326	-.022	.301	.138	.125	.061	.044	-.132	-.164	-.027	.041
Product proactiveness: Bar coding	.406	-.551	.114	-.196	-.041	-.094	-.233	.139	-.175	-.122	.177	.038	.199	-.144	.169	-.066	-.025	.259	.068
Product proactiveness: Flour milling	-.033	.128	.300	-.334	.447	-.380	-.211	.112	.171	.103	.211	-.010	.215	.013	.017	.189	-.046	-.115	.054
Product proactiveness: Blending	.269	.091	-.180	-.217	.606	.116	.318	.017	.025	.177	-.102	-.035	.175	.033	.001	.018	.022	.079	-.043
Product Demand: Has the features contributed to increase in turnover of the value created product	.674	-.070	.124	-.243	-.043	.039	-.126	.157	-.054	.154	-.068	-.072	-.140	-.144	.176	-.181	-.122	-.123	-.201
Product Demand: How frequent do the stocks of the new rice flour run out when promoted or advertised	.693	.412	.012	-.205	-.060	-.018	.234	.055	-.140	.136	-.024	.059	.107	-.176	-.026	-.043	.063	.009	.015

Product Demand: How frequent do the stocks of the new packaged products run out	.457	.184	-.039	-.395	-.099	.236	.247	.096	-.294	.066	.025	-.185	.025	.156	-.035	-.123	.001	-.131	.022
Product Demand: How frequent do the stocks of the new branded products run out	.457	-.097	-.088	-.341	-.247	-.244	.268	.163	.116	.074	.231	-.280	.033	-.222	-.291	.115	.218	-.037	.047
Product Demand: How frequent do the stocks bar coded products run out	.377	-.018	-.161	-.308	-.274	-.276	.310	.162	.055	.116	.297	-.285	.082	-.170	-.231	.143	.034	-.191	.024
Product demand: How frequent is there demand fluctuations for the new packaged and branded products	.222	.295	-.362	.107	.036	.239	.088	.434	-.034	-.090	.265	.353	-.079	.036	-.053	.145	.144	-.042	.009
Product Demand: How frequent is there Demand fluctuation for the new baked products	.079	.499	-.197	-.216	.014	.349	.010	.178	-.122	-.090	.291	.346	-.141	.001	.021	.027	.076	.212	.082
Product Demand: How frequent is there Demand fluctuation for newly blended rice	.351	.229	-.012	.266	-.232	.269	.079	.439	-.177	-.001	.152	-.062	.041	.098	.125	.429	.076	.063	-.081
Product Demand: Branding and packaging	.701	-.243	-.111	-.104	-.159	.168	-.102	-.200	-.135	.001	-.082	.060	.259	.102	-.126	.108	.083	-.072	-.102
Product Demand: Baking the product into e.g. cookies	.373	.338	.170	.099	-.355	.125	.055	-.429	-.026	-.156	.127	.144	.233	.081	-.120	.097	.136	.043	-.036
Product Demand: Carrying out Promotion/advertising	.739	-.168	-.148	-.124	-.108	.057	-.154	.012	-.044	.146	-.110	-.103	.280	-.116	.061	.020	.159	.034	-.066
Market of the value created products: How often is market survey carried out for baked products	.605	.444	.012	.475	-.025	.001	-.156	-.148	-.069	.069	.142	-.131	.029	-.139	.107	-.068	-.026	.015	-.079
Market of the value created products:How often is market survey carried out for bar coded products	.450	.282	.120	.359	.191	-.010	-.271	.019	-.297	.133	.240	-.198	-.049	-.148	.030	-.177	.135	-.037	-.010
Market of the value created products:How often is market survey carried out for Packaged and branded products	.432	.413	.097	.451	.018	.011	-.226	-.165	-.060	-.022	.120	-.264	-.161	-.023	.123	-.125	.128	.130	-.089
Market of the value created products:How often is market survey carried out for refined bran	.724	.198	-.183	.262	.021	.089	-.096	.007	-.155	-.018	.071	-.079	.140	-.053	-.040	-.140	-.097	-.049	.185

Market of the value created products: How frequent is market promotion done for baked products	.592	.298	-.249	.094	-.109	-.246	-.092	-.062	.007	.161	-.097	.015	.231	.051	.323	-.093	.009	.208	-.063
Market of the value created products: How frequent is market promotion done for Deep fried products	.611	.285	-.266	.082	-.097	-.482	-.234	-.021	-.033	-.031	-.201	.142	.033	.042	.073	.089	.031	.061	-.002
Market of the value created products:How frequent is market promotion done for packaged and branded products	.628	.131	-.263	.070	-.184	-.504	-.148	.177	.111	-.076	-.082	.074	.046	.109	.018	.120	-.123	.043	.027
Market of the value created products:How frequent is market promotion done for bar coded products	.606	.245	-.259	.102	-.245	-.504	-.078	.054	.150	-.078	-.076	.051	.027	.138	.003	.143	-.018	.101	.064
Market of the value created products:How frequent is market promotion done for polished rice	.675	.112	-.132	.135	.020	-.546	-.216	.072	.004	-.033	-.073	.117	.060	.058	-.127	.084	-.060	-.043	-.038
Market of the value created products:Price of baked products depends on target market which can be Niche or Mass market	.598	.160	-.094	.164	.003	.088	-.101	-.042	.228	.034	-.131	.187	-.051	-.133	-.001	-.232	.097	-.246	-.372
Market of the value created products:Price of new packaged depend on target market which can be Niche or mass market	.525	-.370	-.266	.247	.079	.019	.099	.008	.298	-.057	.064	.163	.086	-.122	.171	-.162	.243	-.190	-.067
Market of the value created products:Price of bar coded products depends on target market which can be Niche or Mass market	.171	-.296	-.122	.125	.469	-.186	.232	.168	.262	.013	.120	.072	.188	-.100	.313	-.107	-.031	-.260	.236
Market of the value created products:Price of branded products depends on target market which can be Niche or Mass market	.343	-.421	-.007	.257	-.299	-.014	.136	-.017	.297	-.271	.019	.197	-.016	-.150	.060	.092	.306	-.164	.006
Resource availability: There adequate, skilled staffs for training/carrying out feed fortification	.278	.431	.456	.307	.286	-.150	.056	.106	-.083	-.064	.114	-.133	-.036	.039	.069	.117	.027	-.153	-.075
Resource availability:There adequate, skilled staffs for training/carrying out Baking activities	.270	.245	.506	.212	.390	-.224	.114	.072	-.162	-.152	.082	-.131	.045	-.038	-.018	.051	.004	-.115	.018
Resource availability:There adequate, skilled staffs for training/carrying out Packaging and branding	.408	-.339	.184	.249	.279	-.180	-.070	.142	-.186	-.361	.111	.128	-.236	.025	-.044	-.164	.081	.046	-.031
Resource availability:There adequate, skilled staffs for training/carrying out Packaging and branding	.168	-.400	.234	.253	.126	-.238	.245	.279	.006	-.375	-.010	.184	-.134	.060	.019	-.057	-.068	.132	-.153

Resource availability:The current financial capability of the enterprise is enough to support deep frying activities	.467	.066	.532	.356	-.106	.045	.225	-.105	.006	-.095	-.178	.062	-.004	.022	-.018	.037	.045	.189	.155
Resource availability:The current financial capability of the enterprise is enough to support New baking activities	.426	-.163	.510	.371	-.064	.057	.431	-.051	-.153	-.027	-.199	.034	.033	.045	-.082	.061	-.034	.083	.098
Resource availability:The current financial capability of the enterprise is enough to support promotions and advertising	.522	-.282	.284	.457	-.005	-.064	.250	-.031	-.145	.131	-.056	-.107	.078	.045	-.208	-.006	-.056	-.054	.129
Resource availability:The current financial capability of the enterprise is enough to support bar coding	.186	-.156	-.149	.253	.262	.044	.322	.521	-.120	.181	-.188	.140	-.045	-.028	.083	-.040	-.144	-.028	.039
Resource availability:The current financial capability of the enterprise is enough to support promotions and advertising	.348	-.183	-.244	.473	.042	.009	.184	.360	.098	.225	.100	-.296	-.159	.116	-.080	.073	-.036	.094	-.095
Technology availability: How often do the firm change its value creation techniques/ machinery/Equipments	.681	.228	.264	-.126	.050	-.037	-.053	-.154	.000	-.051	.075	.190	-.276	.003	-.157	-.037	-.187	-.158	.007
Technology availability: How would you averagely rate the processing facilities/Machineries/equipments	.515	-.154	.118	-.164	-.121	-.195	-.086	-.277	-.033	.044	.143	.231	-.376	.114	-.274	.095	-.283	-.086	-.115
Corporate culture and environment: Please rate the talent management strategy for the processing firm/group	.508	-.262	.022	-.249	.058	.090	.268	-.344	-.040	.058	.231	-.004	-.059	.242	.231	.097	.057	.160	.063
Corporate culture and environment: Rate the firm's/group's Employee retention scheme	.638	-.191	-.128	-.004	-.049	-.132	.247	-.248	.170	.307	.022	.129	-.078	.028	.171	.034	-.032	-.066	.079
Corporate culture and environment: Rate the firm's/group's Reward scheme	.627	-.291	-.032	-.091	.020	.092	.363	-.153	.090	.114	.191	.093	-.231	-.090	.189	.024	.088	.008	.111
Corporate culture and environment: Rate the Job progression level for employees of the firm/group	.621	-.238	-.097	-.177	-.159	-.003	.204	-.241	-.025	.241	.073	.010	-.149	.209	.193	-.144	.062	.121	.012
Corporate culture and environment: Rate the Performance based deployment for employees in the firm	.664	.072	-.045	-.190	.062	-.144	.285	-.104	-.083	.080	-.047	.005	-.347	.042	.034	.074	.091	-.051	-.114

Extraction Method: Principal Component Analysis.

a. 19 components extracted.

Appendix III: Communalities

	Initial	Extraction
Firm's age and maturity: I have introduced more products since the start of the enterprise	1.000	.770
Firm's age and maturity: I have introduced more packaged products since start of the enterprise	1.000	.849
Firm's age and maturity: I have introduced More blended products since the start of the enterprise	1.000	.822
Firm's age and maturity: I have introduced more branded products since the start of the enterprise	1.000	.892
Firm's age and maturity: Total processing expenses increased with growth of the enterprise	1.000	.699
Firm's age and maturity: Method of processing has become more complex with more new products made	1.000	.721
Firm size and stakeholder attributes: Increased size of the enterprise has caused an increase in products added value	1.000	.782
Firm size and stakeholder attributes: Increased size of the enterprise has caused an Increased branded products	1.000	.851
Firm size and stakeholder attributes: Increased size of the enterprise has caused an Increased promotion and advertising	1.000	.739
Firm size and stakeholder attributes: Increased size of the enterprise has caused Increased amount of per product made	1.000	.784
Customer needs and expectations: New value added products are made with consideration of suggestions from potential customers	1.000	.827
Customer needs and expectations: Customers liked buying the new baked products when they were first manufactured	1.000	.794
Customer needs and expectations: Customers liked the new packaged products when they were first manufactured	1.000	.914
Customer needs and expectations: Customers liked new branded products when they were first manufactured	1.000	.912
Customer needs and expectations: Customers liked the new products when they were first manufactured	1.000	.804
Customer needs and expectations: Demand of the value added products is currently more than when product was first launched	1.000	.756
Customer needs and expectations: Demand of feeds is currently more than when they were first launched	1.000	.814
Customer needs and expectations: Demand of bar coded is currently more than when they were first launched	1.000	.796
Customer needs and expectations: Demand of packaged is currently more than when they were first launched	1.000	.793
Customer needs and expectations: Demand of baked is currently more than when they were first launched	1.000	.805
Customer needs and expectations: Demand of branded is currently more than when they were first launched	1.000	.825
Customer needs and expectations: Demand of the briquettes is currently more than when they were first launched	1.000	.786
Customer needs and expectations: The baked products had to be changed several times to meet the needs and expectations of the customers	1.000	.736
Customer needs and expectations: The branded products had to be changed several times to meet the needs and expectations of the customers	1.000	.913

Customer needs and expectations: The packaged products had to be changed several times to meet the needs and expectations of the customers	1.000	.880
Customer needs and expectations: The bar coded products had to be changed several times to meet the needs and expectations of the customers	1.000	.785
Product proactiveness: Branded	1.000	.844
Product proactiveness: Packaging	1.000	.857
Product proactiveness: Baking	1.000	.816
Product proactiveness: Promotion/advertising	1.000	.779
Product proactiveness: Standardization mark	1.000	.795
Product proactiveness: Diamond mark of quality	1.000	.766
Product proactiveness: Bar coding	1.000	.848
Product proactiveness: Flour milling	1.000	.806
Product proactiveness: Blending	1.000	.726
Product Demand: Has the features contributed to increase in turnover of the value created product	1.000	.788
Product Demand: How frequent do the stocks of the new rice flour run out when promoted or advertised	1.000	.845
Product Demand: How frequent do the stocks of the new packaged products run out	1.000	.720
Product Demand: How frequent do the stocks of the new branded products run out	1.000	.910
Product Demand: How frequent do the stocks bar coded products run out	1.000	.870
Product demand: How frequent is there demand fluctuations for the new packaged and branded products	1.000	.791
Product Demand: How frequent is there Demand fluctuation for the new baked products	1.000	.801
Product Demand: How frequent is there Demand fluctuation for newly blended rice	1.000	.857
Product Demand: Branding and packaging	1.000	.833
Product Demand: Baking the product into e.g. cookies	1.000	.788
Product Demand: Carrying out Promotion/advertising	1.000	.824
Market of the value created products: How often is market survey carried out for baked products	1.000	.926
Market of the value created products: How often is market survey carried out for bar coded products	1.000	.815
Market of the value created products: How often is market survey carried out for Packaged and branded products	1.000	.835
Market of the value created products: How often is market survey carried out for refined bran	1.000	.809

Market of the value created products: How frequent is market promotion done for baked products	1.000	.847
Market of the value created products: How frequent is market promotion done for Deep fried products	1.000	.912
Market of the value created products: How frequent is market promotion done for packaged and branded products	1.000	.903
Market of the value created products: How frequent is market promotion done for bar coded products	1.000	.919
Market of the value created products: How frequent is market promotion done for polished rice	1.000	.912
Market of the value created products: Price of baked products depends on target market which can be Niche or Mass market	1.000	.827
Market of the value created products: Price of new packaged depend on target market which can be Niche or mass market	1.000	.861
Market of the value created products: Price of bar coded products depends on target market which can be Niche or Mass market	1.000	.852
Market of the value created products: Price of branded products depends on target market which can be Niche or Mass market	1.000	.826
Resource availability: There adequate, skilled staffs for training/carrying out feed fortification	1.000	.777
Resource availability: There adequate, skilled staffs for training/carrying out Baking activities	1.000	.748
Resource availability: There adequate, skilled staffs for training/carrying out Packaging and branding	1.000	.800
Resource availability: There adequate, skilled staffs for training/carrying out Packaging and branding	1.000	.763
Resource availability: The current financial capability of the enterprise is enough to support deep frying activities	1.000	.815
Resource availability: The current financial capability of the enterprise is enough to support New baking activities	1.000	.897
Resource availability: The current financial capability of the enterprise is enough to support promotions and advertising	1.000	.837
Resource availability: The current financial capability of the enterprise is enough to support bar coding	1.000	.728
Resource availability: The current financial capability of the enterprise is enough to support promotions and advertising	1.000	.830
Technology availability: How often do the firm change its value creation techniques/ machinery/Equipment	1.000	.838
Technology availability: How would you averagely rate the processing facilities/Machineries/equipment	1.000	.882
Corporate culture and environment: Please rate the talent management strategy for the processing firm/group	1.000	.807
Corporate culture and environment: Rate the firm's/group's Employee retention scheme	1.000	.792
Corporate culture and environment: Rate the firm's/group's Reward scheme	1.000	.836
Corporate culture and environment: Rate the Job progression level for employees of the firm/group	1.000	.814
Corporate culture and environment: Rate the Performance based deployment for employees in the firm	1.000	.769

Extraction Method: Principal Component Analysis.