A CONTRIBUTION OF INTELLECTUAL CAPITAL ON FOOD INDUSTRY INNOVATION

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Abstract- The development of innovation in the food industry gets more important especially in the developing nations. This paper explores determinant factors towards the above matter. Systematic review of empirical and conceptual articles published in scholarly databases on topics of innovation in the food industry was applied. It was found that intellectual capital relationship with innovation in the food industry.

Keywords- Intellectual capital, Innovation, food industry, systematic

I. INTRODUCTION

In knowledge based economy competitiveness of firms is strongly based on innovation. It encourages businesses to be able to apply the knowledge ,skills , technological capabilities and experience to create innovative products and services to customers satisfaction[1]. And the same as Bean and Radford [2] which view that innovation contributes to development agencies in various fields, not only in products and services. It can be developed in conjunction with the other parts.

Innovation in the food sector is of particular interest and within the EU, the food sector is the largest manufacturing sector and is one of the main drivers of the EU economy in terms of a high economic output and a major role in employment [3]. In recent years, the food industry has been subject to a range of changes in society, and has needed to respond to far-reaching technical and economic changes in the production and processing of food. Such changes continue to have significant impacts on the entire processing chain from agricultural production, through food processing to the distribution of food to end consumers [4]. Consequently, innovation is deemed to be one of the most important factors in enhancing competitiveness within the food sector. Additionally, using US and European technology (90% and 10% respectively) to help local's gain access to markets while streamlining supply chains were also important components. Additionally, knowledge transfer to the farmers on how to operate and use the technology was paramount to the business model success.

To the developing country, published information about intellectual property is insufficient and is outdated. In this regard, it is difficult to learn "innovation" in food industry. Therefore, innovation and intellectual capital are two possible suggestion for food entrepreneurs to strengthen their business. To synthesize the above issue, the relationship between intellectual capital and innovation in food industry is reviewed.

II. LITERATURE REVIEW

A. Intellectual Capital (IC)

According to the Organization for Economic Co-operation and Development [5], 'intellectual capital' is the economic value of two categories of intangible assets of a company, which include (a) organizational or "structural" capital and (b) human capital.

Although intellectual capital may be a source of competitive advantage, generally speaking, most organizations do not understand its nature and value [6]. Nevertheless, one of the first firms ever to report on their invisible assets was Skandia[7].

Human Capital

Human resource is a resource that organizations should invest and develop to realize their full potential. This is accomplished by encouraging and motivating employees and engaging in work efficiency [8].

Nir [9] sought to better understand the factors associated with entrepreneurs' decision to incorporate innovative technologies in new ventures and was further stated that technology plays a key role in competitive advantage.

This is consistent with the research of Tsan and Chang [10] that identified 8 intellectual capital components within the Taiwanese IT industry. It was furthermore discovered that innovation capability plays an important role in confronting the knowledge-based economy in Taiwanese IT industries.

Structural Capital

According to Saint-Onge [11] the intellectual capital framework represents the primary value-creation dynamics of a firm in an era of shortened business cycles and rapid technological change, with suppliers, shareholders, stakeholders and partners involved in the development process.

Relational Capital

Relational capital is one of the three primary components of intellectual capital, and is the value

inherent in a company's relationships with its customers, vendors, and other important constituencies. Relational capital is also referred to as 'external capital' and 'customer capital'[12]. It is the most important component because it is the part of an organization that brings income to the organization and the importance of the enterprise data warehouse.

Table I. Frameworks for classifying intellectual capital reporting models

Developed by	Framework	Classification
Kaplan&Norton(1992)	The balance scorecard	- Customer -Internal process - Finance -Growth learning
Barney(1991,1996)	Organization resource	-Finance -Physical capital -Human capital -Organization capital
Sveiby(1997)	The intangible assets mornitor	-Internal structure -External structure -Personnel capability
Stewart(1997)	Material of Intellectual capital	-Human capital -Cultural capital -Process capital -Customer capital
Roos et al.(1997)	Consist of thinking	-Human capital -Structural capital
Edvinsson& Malone(1997)	Intellectual capital	-Human capital -Structure capital -Customer capital
Van Buren (1999) ; Bontis(2001)	Intellectual capital	-Human capital -Structure capital -Customer capital
Pike,Rylander,Roos(2002)	Intellectual capital	-Human capital -Structural capital -Relational capital

From table I. To identify Intellectual Capital that researchers have developed a model to manage, measure and report on intellectual capital (IC) of organizations such as the Skandia Edivinsson and malone [13] examined the property, intangible [14]. Balanced Scorecard Kaplan and Norton [15] and Intellectual Capital Roos et al. [16], which even at a time will have to be different but the basic concept of the design is similar to the purpose of the inspection. Intellectual capital has to offer is the second intellectual capital for small and medium-sized enterprises in the knowledge-based industries.

B. Innovation

Gunday et al. [17] stated that innovation is broadly seen as an essential component of competitiveness, embedded in the organizational structures, processes, products and services within a firm. Research results revealed the positive effects of innovations on firm performance in manufacturing industries.

Lew and Sinkovics [18] investigated governance mechanisms in international technology alliances (ITAs), firm-level innovation capabilities, and performance outcomes in the mobile computing market. The data indicated that technological commitment is a factor in expediting technology resource exchange in ITAs between heterogeneous firms. The results also show that firm-level performance is only influenced by market development capability, and not new product development capability, in product innovation.

III. METHODOLOGY

The methodology used in this article is a systematic review of the literature as proposed by Alderson [19]. By performing a systematic literature review, this article integrates existing information and provides a theoretically founded framework for understanding various aspects of intellectual capital in innovation. which is two steps are particularly important for a systematic literature review: There are two steps for the review

The first step, Inclusion criteria - included in the systematic review, a study about : theoretical, conceptual or empirical study focusing on Intellectual capital and innovation which is consists of product innovation,process innovation and technical innovation in food industry are explored from peer-review social science article , or an article and book.

The second step , Selecting the studies for potential inclusion - a computerized search by using multiple keywords in the following databases ;Academic Search Elite (EBSCO), Elsevier Science Direct, ProQuest and Emerald. include synonyms of 'intellectual Capital'. The sensitivity and precision of search terms is crucial for the validity and reliability of a systematic literature review.This result will be significantly improved the search and selection process and reduced systematic errors.In this stage , results and discussion have not brought to be concerned[20].

IV. DISCUSSION AND ADOPTION

After a review of the literature, it is believed that intellectual capital and Knowledge management are a key to driving innovation and competitive advantage of food industry , so the urge to use creativity and human capital is a vital cog to developing country economy in the future are discussed as follows:

Bollen et al. [21] studied the German pharmaceutical industry and linked empirically the value of intellectual capital and intellectual property to innovation. The researchers studied the correlation between human, structural and relational capital, intellectual property and firm performance with study results showing that including intellectual property in models linking intellectual capital to innovation enhances the statistical validity of such models and their relevance for management. Additionally,

intellectual capital is an important source of an organization's economic wealth and is therefore to be taken into serious consideration when formulating the firm's strategy.

Beckeman et al. [22] on the other hand discovered that few, if any, innovations in the Swedish food sector are considered radical and that there is lack of trust in the chain and limited exchange of information. Manufacturers and the whole supply chain would therefore benefit from an "open innovation" mindset to organise and work differently and build trust. The importance of intellectual capital (IC) in organizations is well accepted

Hsu and Sabherwal [23] and that human capital, organizational capital and relational capital positively influence competitive advantage Kocoglu et al. [24] as well as being vital to a sustainable competitive advantage. Intellectual capital offers a potential source of sustainable competitive advantage and is believed to be the source from which economic growth may sprout de Leaniz and del Bosque[25] while sustainability also plays a vital role as an antecedent of corporate reputation and relational capital.

CONCLUSION

From the literature review and discovery, A contribution of Intellectual Capital on food industry innovation preliminary findings indicate that intellectual capital helps in developing innovation of product and capabilities to create innovative organizations. Innovation can be seen from a product or service's brand image which build customer satisfaction resulting from intellectual capital. To overcome potential competitors and barriers, the food industry must be developed and improved embracing innovative technologies used in the production of goods or services. New products and packaging must be diverse meeting the needs of customers quickly covering diverse markets with production technologies meeting these needs and capacity of the food industry. And needs to focus on innovation to enhance the value for products, packaging and production within the food industry. It is expected that suitable determinants of intellectual capital will bring innovation in food industry for the developing country as well .

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