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ERGONOMIC PRODUCT CREATION: A STRATEGIC CONCEPT OF COMPETITIVE ADVANTAGE

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ABSTRACT

The creation of the best and different values for consumers will make business people continue to exist, so this value must be owned for competitive advantage. One of the value creation is ergonomic product design. This article focuses on the ergonomic design of classrooms for educational service providers. Environmental problems in the classroom: school physical environment, safety, safe, comfortable and healthy classrooms need to be complemented by an ergonomic product value approach to maximize product benefits. Ergonomic classroom design is the creation of product value for educational service organizations, where the classroom is a place of interaction between producers and consumers. The ergonomic design of classroom space, an s umber power key to customer satisfaction towards the successful organization of educational services, competitive advantage is based resource (Resource-based View - RBV).

INTRODUCTION

Competition between business actors requires business actors to have a competitive advantage in order to provide the best for consumers, companies are required to have products with different values, with the aim that the company continues to exist in the long term. Competition is also the creation of profitability through resources or adding value to these resources. Resources power that is uniquely me is the main used as a competitive force. The values offered to consumers come from the ability to utilize resources that are beneficial to all parties. Resources - resources and internal capabilities of the company influence the determination of strategic choices made by the company when competing in its business environment. The approach to improve and maintain competitive advantage based on resources (*Resource-*

based View - RBV) was originally pioneered by Penrose (1959) when describing the company as a collection of resources where the heterogeneity of resources allows the company to have a unique character, which is included in managerial skills and entrepreneurial skills (Brahma & Chakraborty, 2011), which was further defined by Wernelfelt (1984) as tangible and intangible assets that are semi-permanently tied to the company that the company can develop to achieve competitive advantage.

Consumers responded to a product based on the product that is safe, Yemen, and friendly to users (Fagerberg et al., 2004; Osborne, 1987). Ergonomics is the scientific study of rural equipment, equipment in offices or transportation seats, for the purpose of increasing efficiency, comfort, or safety (The *American Heritage Science Dictionary, 2005)*. The economics related to product characteristics such as safety, efficiency of use, and convenience that is directed maximize customer satisfaction (Osborne, 1987). Ergonomic properties are recognized as important because firms compete on the ease of use of the product (Nussbaum, 1993). The discipline of ergonomics studies the interaction between humans and technical and organizational designed environments. In ergonomics, this knowledge is used to develop user-friendly products and production ergonomics to design human-friendly (production) processes. Ergonomics objectives can contribute to organizational goals, with easy-to-use product designs, companies can provide benefits to customers, which exceed competitors' products. Implications of ergonomics has strategic value of the organization, where awareness will be the importance of human resources (customers and employees) become highly preferred.

In the concept of education services high- design space class occupies a position that is central, different dimensions of classrooms are needed in the process of selling education services. As users of the building, faculty, great students, parents and ordinary staff are assessing the physical environment of the classroom in a college. The security of the environment is part of the largest of the learning process. Learning comes from the perceptions and concentration of students in the classroom.

The discipline of ergonomics studies the interaction between humans and technical and organizational designed environments. In product ergonomics, this knowledge is used to develop user friendly products and production ergonomics to design human friendly (production) processes. Apart from social goals, ergonomics can contribute to the economic goals of an organization. With easy-to-use products, companies can provide benefits to customers, which exceed competitors' products. By human-friendly processing of production, a firm can increase its labor productivity and consequently can achieve important cost reductions. Growing awareness will be the importance of consumers to the success of the organization, implying that ergonomics can have strategic value for the organization's management.

The purpose of this paper is to provide a concept of product design value in the form of an ergonomic classroom that can be used as a competitive advantage for educational service managers in creating unique values. Reviews These

advantages can be a unique value to give satisfaction to the consumer about what it receives in the classroom during a student.

RESOURCE BASED VIEW

In the four decades back visible shift in the concept traditionally focused on the attractiveness of the industry as the main determinant of the performance of the company to the view that the company specific factors are a determinant dominant on the company's performance, so that the central topic is still open to debate which refers to whether performance is driven by industry or company-specific factors (Brahma & Chakraborty, 2011). The widely known resource-based view refers to the framework developed by Barney (1991) which has two basic assumptions, namely (1) company resources and capabilities are heterogeneously distributed among companies, and (2) these resources and capabilities are imperfect and immovable. Based on these two assumptions, Barney (1991) argues that these resources and capabilities are valuable, scarce, cannot be replicated, and cannot be replaced, which are continuously owned, so the company will achieve a competitive advantage.

Conner (1991) provides a comparison of theory-based resource with five schools of thought in the theory of industrial organization *(industrial organization economic)* stating that the approach of resource based on the strategic management focused on the attributes of companies that are expensive to be rejected as a resource of economic rents, so that is a driver of fundamental performance and competitive advantage. Therefore, in this perspective, the company's ability to achieve and choose a market position advantage depends on its ability to gain and maintain a position advantage based on the underlying resources.

Ergonomics as a branch of science that aims to achieve optimal installation of the work environment and work activities for workers. The work environment can affect performance workers in a variety of different ways from detrimental health to effects that reduce an individual's ability to perform tasks or that cause dissatisfaction and uncooperative attitudes. The scope of ergonomics includes physical workload, posture at work, lifting and carrying, machine-human system interaction, but also lighting, thermal comfort and noise. It deals with the assessment of human capabilities and limitations, work pressure and environment, static and dynamic forces on the structure of the human body, fatigue and others.

ERGONOMY

Increasing consideration has been given to Ergonomics in product design since the last few decades. Today, more and more companies are applying ergonomics to their products to meet customer needs and new product development satisfaction. Most of the companies always concentrate on developing and improving product designs to meet customer satisfaction. The entire product development stage is usually handled by engineering specialists. The absence of ergonomics for example can result in undesirable product designs (Marsot, 2005). Ergonomic design considers the capabilities and limitations of users when handling products, workstations and machines (Helander & Lin, 2002). Ergonomic design knowledge is focused on the relationship of objects

and the environment to human factors. This knowledge is very important for design engineers when making important decisions regarding ergonomic parameters for product design and layout (Kaljun & Dolsak, 2012). In the human-workstation interaction, it is important that the workstation must be adapted to the task so that the task must be in accordance with the human body (Oyewole et al., 2010).

Ergonomic products have characteristics such as function, usability, safety, and comfort, which have positive associations that can be communicated to customers. Since the main purpose of design is to consider human safety (Chang, 2008), the study of the relationship between humans and products is becoming more important in maximizing human safety and comfort (Corsini, 2002). While traditional studies in design pay less attention to human factors, they also emphasize that it is time to consider ergonomic attributes as an important dimension for human related research (Liu, 2003).

The purpose of implementing ergonomics is to achieve a logical and suitable relationship between human resources, machines and work organizations. In this condition staff can achieve maximum productivity. Ergonomics studies staff psychology and workplace physiology which is a human, machine and work system.

SATISFACTION

Customer or customer satisfaction is a key factor in improving company performance, when the products or services used exceed customer expectations. Quality products and services have an important role in shaping customer satisfaction. The more quality provided, the higher the satisfaction felt by customers. Satisfaction is not a stand-alone concept. Customer satisfaction is a level where the needs, wants and expectations of customers can be fulfilled which will result in repeat purchases or continued loyalty (Band., 1991). In line with Meesala and Paul (2018) that satisfaction is a post-purchase situation in the minds of consumers that reflects how consumers like or dislike a product or service after experiencing it.

The most important factor to create customer satisfaction is the agent's performance which is usually defined by the agent's quality (Mowen, 2000). Customer expectations are formed from their previous experiences, advice from friends or colleagues and promises and information from marketers and competitors (Kotler & Armstrong, 2016; Kotler & Keller, 2016). Satisfaction level is a function of the difference between perceived performance and expectations. Customer expectations are the background why organizations in the same type of business can be judged differently by their customers. In the context of customer satisfaction, expectations are generally estimates or customer beliefs about what they receive.

Some experts agree that customer satisfaction is defined as a statement of customer response in evaluating the actual performance received by customers with customer expectations or expectations regarding the performance obtained after using a product or service. So, customer satisfaction can lead to how companies need to monitor and improve their performance (Pozza, 2014).

In various literature today, there are two conceptualizations of customer satisfaction, namely transaction-specific satisfaction and cumulative satisfaction. Transaction-specific satisfaction refers to a result that is obtained from a single purchase and use of a product or service. Pozza (2014) explains that although the concept of customer satisfaction is a concept that is easily understood by the manager or by the customer and it seems easy to define and set the dimensions of the measurement, but there was no consensus at how the dimensions measured. This is related to consumer attitudes in repeated interactions with the use of a product or service which is cumulative satisfaction, while on the other hand, satisfaction is also related to the last transaction in using a product or service which is referred to as transaction satisfaction.

Traditionally, customer satisfaction can be viewed as a cognitive evaluation that focuses on a particular purchase choice. This view maps the dimensions of customer satisfaction in the context of a cognitive-based assessment of product or service use. While on the other hand there is also a view that the emotional dimension can play a role in customer satisfaction, especially in relation to the service context. So it can be said that cognitive and affective responses to a product or service are a dimensional aspect of service satisfaction (González-Mansilla et al., 2019; Meesala & Paul, 2018; Pozza, 2014). Meanwhile, cumulative satisfaction is related to overall satisfaction with a product or service after a series of purchases and a prolonged use experience that leads to customer loyalty (Woodside et al., 1989).

Customer satisfaction is a response in the form of feelings of satisfaction arising from the experience of consuming a product or service, or a small part of that experience. Thus, customer satisfaction can be expressed as a cognitive and affective attitude and response to the fulfillment of customer expectations for the quality of services and products received based on their previous experience, advice from friends or colleagues and promises and information.

The existence of a two-way dialogue between consumers and companies can build trust and mutual learning that is mutually beneficial. The interaction between consumers and companies aims to build conditions that are conducive to mutual listening and learning, in developing a related understanding of consumer desires and the company's ability to fulfill their desires, which are expected to increase consumer satisfaction.

DISCUSSION

Recent studies in innovation and design have claimed that product design is an important factor in creating company success (Verganti, 2008). However, researchers have urged more research in product design with a paradigm methodology (Ul Rich, 2011). This paper is an attempt to incorporate ergonomic concepts into product design. This paper proposes education managers do an innovation that differs in terms of the product of his form of classrooms that can affect the perception of the customers of the student. With regard to psychometric properties, that customers understand innovative products based on the design of the product. To capture customer perceptions in terms of unique product designs based

on ergonomic product designs, it is necessary to conceptualize based on how consumers perceive product designs produced by education managers.

Customer satisfaction with class attributes and the other attributes have an impact on the performance of students. Reality perception is most students are very dependent on the physical and non-physical strongly influenced by perceptions of the design of classrooms ergonomics.

Humans are equipped with five senses. These senses include the eyes, ears, nose, mouth and skin. The five senses have their respective functions. The eyes function as the sense of sight, the ears function as taste buds, and the skin functions as the sense of taste. In general, these five senses are present in life to help humans interact with their environment and work their lives.

The human body will try to maintain normal conditions with a perfect body system so that it can adapt to changes that occur outside the body. That the productivity of human labor will reach the highest level at temperatures of 24 degrees Celsius to 27 degrees Celsius. Then the condition of the classroom will be very productive if it has room temperature within that range, because if it is more or less it will cause unproductive.

Lighting is very influential on humans to see objects clearly, quickly without causing errors. Insufficient lighting causes the eyes to tire quickly which results in eye damage. Likewise, excess light or glare will have a negative effect on eye health. Light is a radiant energy that can be evaluated visually. With light humans are able to see. Poor lighting in a workplace can result in reduced ability of the eye to see clearly. Excessive light either directly from the light source or reflected toward the eye can cause a glare effect. As for the concern is the avoidance of factors that affect vision ability, visual acuity, eye accommodation ability, and age. Limitations in the visual system are sensitivity to light contrast, ability to distinguish colors and eye fatigue.

Another thing is the need to know what are the factors that affect hearing ability, including noise, hearing loss, age. Knowledge of noise reduction techniques, use of noise suppression rubber, away from noise sources, of course, will improve hearing conditions. The length of time the sound is heard, the intensity of the noise and the frequency of the sound determines the quality of the sound that can determine the level of interference to humans. So it is suggested that the condition of the classroom is within a good noise level limit, namely between 20 decibels (DB) to 50 decibels (DB).

The need will oxygen that the gas needed by living things is the main thing, therefore cleanliness level and the dirty water will result in humans. Dirty air somewhere will affect the health of the body and accelerate fatigue. Therefore, it is necessary to replace dirty air with clean ones, and air circulation somewhere will help the health of the human body.

Color affects the eye's ability to see objects. In addition, color can affect, stimulate and impress a place. With the characteristics of color, it is necessary to pay attention to suit human activities. What is meant by color here is the walls

of the room and the interior around the workplace. So the use of color in the interior of the classroom really needs to be considered, because color can affect the human atmosphere.

Classrooms must be configured to provide learning with the best environment to improve learning is most of the self. Perception is most students in the context of the physical environment such as the size of the space to weld, lighting and technology, can add to the understanding of the environmental impact study on satisfaction and performance of all students. Classroom environment is well organized to Facilitate learning students and improve the evaluation toward the instructor. In fact, the physical learning environment can be improved through classroom design, maintenance and management. By analyzing the physical learning environment impact on satisfaction and performance all in education, makes the design of products ergonomic classroom and learning environment becomes an important part in higher education.

The temperature setting of the cooling system affects the thermal comfort of occupants and energy consumption. If a person is exposed to a hot outdoor climate and his body temperature increases, the body must be cooled down to form a comfortable state. Human body temperature is regulated by itself in a limited range of temperatures by blood flow control (Schimidt & Thank You, 1989). However, if the thermal environment causes sweating or shivering, mental concentration and productivity may decrease (Toftum et al., 2004).

CONCLUSION

The service organization's marketing strategy must support the objectives of the various functions of the business and the organization as a whole. The proposal of linking ergonomics explicitly to the education services business strategy remains a major challenge for the discipline of ergonomics and marketing strategy. The contribution of ergonomics to the performance goals of educational outcomes, of course, will not satisfy all parties. Design of classrooms ergonomics in the service system of education is expected to be designed to carry out the learning process, supported by the harmonious relationship between human, labor and environmental systems. The physical conditions of classrooms that vary in temperature, air circulation, odors, color, inertia, lighting, vibration, noise, etc. will have an impact on the performance and motivation of teachers and students. The strategy to prioritize the ergonomic value of classrooms will create *values* that will affect customer satisfaction and the sustainability of the education service business. The power of innovative ergonomics is all featured unique competitive, the which will result in consumer satisfaction. There are several environmental problems in the classroom: the physical environment of the school, safety, safe and healthy classrooms need to be complemented by a behavioral approach to maximizing benefits and preventing safety.

This ergonomics classroom design concept occupies a central position to create a comfortable classroom environment and makes this a Resource Advantage Value Creation in Educational Services Marketing Strategy.

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