Concept Paper

Research Writing

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**Title:**

A Summative Evaluation on the Implementation of Self-Checkout Machines in the Philippines

**Keywords:**

Self-Checkout Machines, Summative Evaluation

**Short Title:**

Self-Checkout Machines in the Philippines

**Rationale:**

In this world and time of uprising technologies, another one has come up to our attention, it is an innovated system called self-checkout system. It deeply modernizes the traditional system where people are still needed to manually operate. In this system, the customers are the ones who will do the work; they are required to scan the barcodes, weigh the items, and put every item to the bagging area which were purchased at that moment.

The self-checkout system has been implemented to modern countries for years already, but it has never been implanted to any developing countries, and that sparked our interest. We were grasped by the thought that, what would happen if a self-checkout system has been implemented in a developing country, or more specifically, our country the Philippines. We want to research mainly whether the Philippines is ready for this system or not. We would also want to cover the study regarding the pros and cons of the system.

**Background of the Study:**

Self-checkout is an automated process that allows customers to scan, bag, and pay for their purchases without someone assisting them. This automated system is like the traditional checkout lane in most supermarkets except the shoppers are the one who are interacting with the computer’s user interface rather than the cashier or store employee.

The first self-checkout grocery store was established in by Dr. Howard Schneider in New York, year 1992. According to Schneider, he considered these self-checkout machines as "robots", he also thought that a new class of "service robots" would perform service work and give a basis and platform for his ideas on artificial intelligence. Eventually, the technology was sold to NCR and Fujitsu. By 2003, self-checkouts became more widespread and known with countries like USA, Canada, Australia, and UK.

Even though self-checkout systems have been in implementation for quite some time in several stores in the United States, it is still debatable whether self-checkout shows any improvement in efficiency compared to the traditional checkout system. Considering how fast the growth and improvement of technology in the Philippines is, this study focuses on evaluating whether the idea of implementing self-checkout systems in establishments such as supermarkets would be viable and efficient in the Philippines.

**Research Questions:**

1. What are the Advantages and Disadvantages of the System to the Philippines?
2. What would be the effects of the System to the

* Owner
* Economy of the Philippines
* Users

1. Is the Philippines ready for the implementation of Self-Checkout Systems?

**Objectives:** This research aims to evaluate if the Philippines is capable of implementing self-checkout systems in grocery stores, supermarkets, and hypermarkets. Considering that the Philippines is a developing nation, several differences may occur that could change the outcome of the research. Thus the objectives are:

1. to determine the effectivity level of implementing self-checkout systems in grocery stores in the Philippines.
2. to analyze the possible effects that may occur from implementing self-checkout systems in grocery stores in the Philippines.

**Theoretical Framework:**

* **Self-Checkout Machines**

**Field theory** A theory that explains physical phenomena in terms of a field and the manner in which it interacts with matter or with other fields.

**Queuing theory** The mathematical study of waiting lines, or queues. In queueing theory, a model is constructed so that queue lengths and waiting time can be predicted.

**Customer Satisfaction Theory** Is an overall psychological state that reflects the evaluation of a relationship between the customer/consumer and a company-environment-product-service.

**Unified Theory of Acceptance and Use of Technology** (Venkatesh et al., 2003)Is a technology acceptance model formulated by Venkatesh and others in "User acceptance of information technology: Toward a unified view” The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior

* **Summative Evaluation** - examines program outcomes to determine overall program effectiveness. A systematic process of collectinng and analyzing data on impacts, outputs, products and costs in an implementation study. It is used to assess success, effectiveness, or goal achievement of an intervention.

**Evaluation Theory** (Shadish, 1997)Is neither concise nor axiomatic; and it is not a single theory but rather a set of diverse theoretical writings held together by the common glue of having evaluation practice as their target.

**Conceptual Framework:**

Queuing Theory

Field Theory

Unified Theory of Acceptance and Use of Technology

Customer Satisfaction Theory

The researchers relates the *Queuing Theory* to Self-Checkout Machines because one of the main goals of Self-Checkout Machines is to reduce the line queues when making transactions in retail stores. The researchers also associates the *Unified Theory of Acceptance and Use of Technology* and the *Field Theory* because the machine will be introduced to a new environment and the acceptance and use of the community will heavily matter on the succes rate of the implementation. Lastly, the *Customer Satisfaction Theory* as the users’ satisfaction can inrease the acceptance rate of the system to the community.

**Scope and Limitations:** This research will primarily focus on investigating the overall status regarding the implementation of self-checkout systems to the grocery stores in the Philippines. It will focus particularly on the effects of the system to the owners, users, and economy of grocery industry here in the Philippines. It would also investigate, whether the Philippines is set or not for this system and compare the self-checkout system with the traditional/current checkout system. The research will not cover the other parts of the industry such as markets, convenience stores, bookstores, etc. since they have a different environment thus making it unnecessary to study.

**Definition of Terms:**The definition of words to be used in this research is defined by the following

* Self-checkout – a machine that enables customers to checkout goods on their own without assistance.
* Grocery – a self-service store selling foods and other household supplies.
* Supermarkets – a massive self-service store that sells different products.
* System – a group of methods, procedures, and routines created to perform a specific task.
* Users – a person who control something, particularly a computer or any machine.

**Methodology  
- Research Design** This study aims to develop conclusions on whether a self-checkout machine is viable to be implemented in the Philippines. An exploratory research regarding the advantages and disadvantages in the implementationn of self-checkout systems in the Philippines.

**- Target Respondents & Market**

**- Research Instruments** For this research, 2 research instruments will be used, a questionnaire and a semi-structured interview. For the questionnaires, we will use a written and a virtual one, the virtual questionnaire is administered via Google Forms while the written one is administerred via paper and pen. And to further support our research, we will also study other researches published related to our topics from secondary sources such as Google and EBSCO Host.

**- Procedure** For this research, managers in-line with the retail industry and retail consumers in the Philippines will be asked to answer a written questionnaire and some will be called in for a semi-structured interview. The researchers will collect the preference, reactions, and \_\_\_\_ from the respondents.

**- Statistical Treatment** The researchers will process the gathered from the answered questionnaires by computing for its mean, median, and mode in order to find out the standard deviation. The researchers will also use a pie chart indicating the percentages of the general data.

 FORMULAS:

Mean: Median (Odd):



Median (Even):



Standard Deviation:

Where μ = mean

X1 = are individual values

Percentage:   
Where % = Percent

f = Frequency

n = number of cases

Unified Theory of Acceptance and Use of Technology

Grounded Theory

Lifespan

Customer Satisfaction   
Theory

Field Theory

User Interface

Acknowledgement and Popularity

Customer Service

Queueing Theory

Line Queues

Self-Checkout Machines