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Research Article

"Software Technology Foster Eco- Friendly Sustainability In Commercial Kitchen Operation."

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ABSTRACT

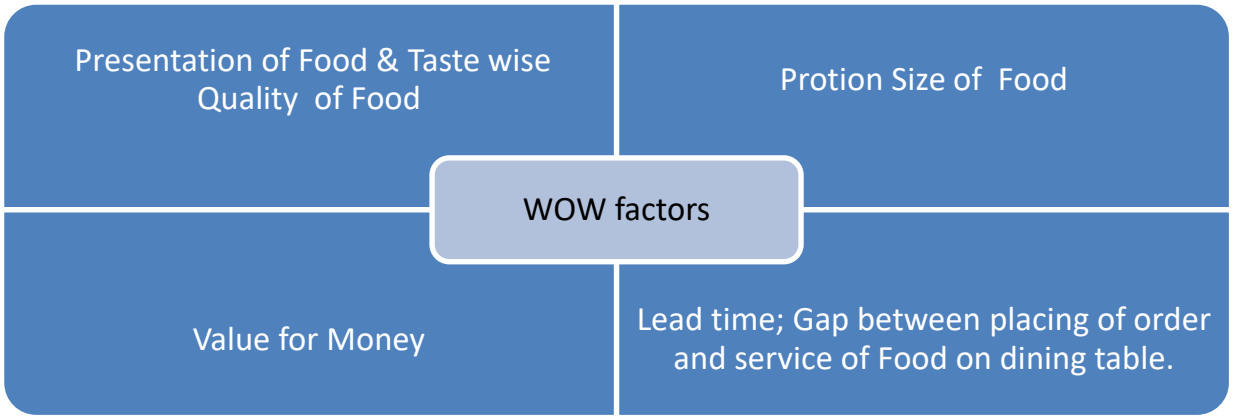
This study based on the users interface software of commercial kitchen operation which is mainly used by the executive chef or second in command of Kitchen Bridge and disclosed the significance facts in term of contribution of the kitchen software in different linked task use in the commercial kitchen operation. Many parameters used in this study to support the hypothesis in regards to alternative and null form. There are 39 participants for different form of hotels broadly classified in to Chain Hotels and Non-Chain Hotels considered. These Participant submitted their views through a structured questionnaire which having the question in terms of users interface, application of management concerning information like food cost, storage of Raw material and flow of information among the different suppliers deals with different kind of raw materials used in to commercial kitchen operation with the key area of performance i.e. revenue. The questionnaire drive the information on likert scale 1-5 point and then information as data tested into single t test as well as descriptive statistics.

KEYWORDS: Commercial, Operations, Kitchen Software, Food Cost, Descriptive Statistics.

INTRODUCTION:

We all are living in a era of fast communication and that only due to correct uses of Technology. Technology makes the communication very fast among the different users as well as society in whole. Presently many operations uses the different kind of software which helps to enhance the quality and speed of work by establishment the right way of communication and coordination in many function which starts from post operation; during operations; and in the last pre operations. It's the top most priority of any organization which performs different function for the goodness of society. That starts form pre set plan, formation of strategies carefully which includes vital phase of functioning of institutions in form of organization and society arrangement. When considering many of the arrangements of society management of any of the organization mostly divided its function which initiated from planning, direction, and comes to end with the continuous process of control along with feedback.

Therefore, managers who are involve in the function of managements will always use the effective process of communication in a proper way which is possible only through opting the right software which is one of the dimension of the technologies. Considering about the commercial kitchen managers are so called as executive chef or Kitchen in charges who is over all responsible for the smooth functioning of day to day affairs by consider many of the tailored made guest who is the end users (Person who visited the food outlet where food being served) as per their perception and satisfied their wants till "WOW FACTORS" which included many aspect shown in figure below:



Many of the stake holders involve in order to Gain the "WOW Factors based on above figures like suppliers of different kind of raw material, lower level staffs with proper skills, and supportive staff as administration and clerk. Executive chef who is first in command as per classical kitchen bridge perform many of the functions like decision making regarding selecting suppliers for different categories of food, designing of menu via including dishes , pricing and over all maintaining the food cost control aspect apart for direct and indirect cost. In views of smooth operations coordination and among the functions of commercial kitchen is for most important. Work flow chart is as below figure.

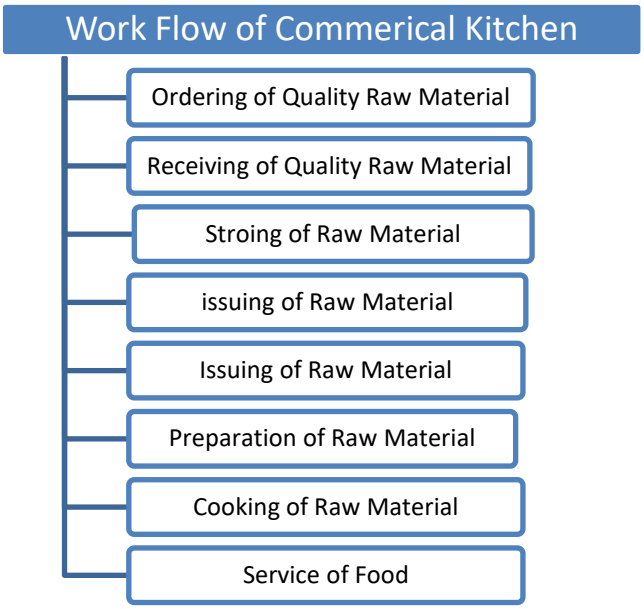


Figure:1.1 (Source: https://www.ukessays.com/essays/international-studies/the-chisholms-kitchen-good-work-flow.php)
By considering the above work flow many of the management function can be discharges with the help of effective use of technology as "COMPUTER SOFTWARE".

Many of the kitchen software are available in the open source as well as paid version into digital platform which helps in decision making phase to executive chef in a reasonable time. In this paper, we starts from technology, then consider software and in last views about the role of software into commercial kitchen operation. In study we also takes the valuable views of executive chef or kitchen in charge in regards of Software use in kitchen operation

1.1 Technology:

Technology words derived from the Greek Words with combination of 'techne and logos'. Technes words means different dimensional meaning like art, crafts, skills whereas LOGO means expression or saying inwards thoughts in classical way. whereas in present days term technology concern with tools , machines, crafts , skills, techniques , system and process may be called methods to resolve the issues and problem of organization. Many authors observed and feels that innovation and development receive place in domain of technology that given the significant blow on our day-to-day life in numerous of ways. Technology almost evolves in every daily affair

from morning to night in different areas like personal works, professional works even in the kitchen operation of every household.

1.2 Computer Software:

Computer software, a process that runs the data and derived the result in a meaningful way as and when required by the users. Everyone is aware that computer is important in every one life due to offering huge storage of data or information in a systematic manner, analysis by processing of data in form of information and offers the result to end users as and when required by different users or interested parties. In commercial kitchen also many of the useful software are in practices name as "MASTER CHEF", "PROFESSIONAL CHEF" re the big name. These software's are easy to use as these don't require more days to learn due to its simple interface with the users. This software not having complex commands to works and also helps to store standards recipe cards of specific dishes which contain raw material tables, method of preparation, pictures and number of portions for dishes. Or in simple it helps to make their own directory of dishes in perfect manners.

1.3 Commercial Kitchen Operations:

Food is being the important in way of biological at human life weather in social gathering or professional events. Many people dine out for the changes for their monotonous life. People visit many places for din out into different form of food outlet who are profit making units such as Specialty restaurants, fast food outlet, coffee shop or coffee house Which open 24 hours in a day), banquets for social and professional events, takeaways and other public places. Normally the sustainability of these outlet are depends WOW Factors as mention above. And the management is responsible for the same. Management needs to focus on many aspect for driven this WOW FACTORS which involve many important decisions like quality of raw material, procuring cost, selecting right suppliers, time to receive supplies, proper storage condition along with in hand stock of raw material etc. in order to accomplished these task executive chef or first in command use software to prepare and serve the quality dishes from the AL CARTE , carte de jour or table de hote Menu. Moreover industrial and institutional catering also the prime responsibility of catering management at different places like schools, universities, production units and other places.

Literature Reviews:

Authors having significant views about the different role of technology in many literatures. In this section many of the author's reviews discussed which shows the development as well as innovation describes in a well manner.

According to author, in present days many of the dimensional business needs fast pace for the operations indeed to gets the leading position into competitions. And as per it is possible only to efficiently use of small portable devices such as mobile, laptop and computers, those improve the efficiency of operational process in a effective with the aids of cut cost. These devices are developed in such a ways which get the more app or software which helps to deal the daily business affairs regarding decision making process in less time. In this paper author consider many linked like e-mails, stores, and application to communicate with prospective clients along with different engage stakeholders which helps to gain the faith of them. He also consider like CRM, software management, and promotional. (Saratkar, 2019). As per author Digital technology is one of the essential frame works that includes changes as per present days due to multiple dimensions. The study finding are as" The findings help to offer an expansion of the TM framework in three major ways: 1) inclusion of orchestration as a new TM capability/activity, 2) integration of TM activities across multimodal stakeholder interactions, and 3) emphasis on the critical role of TM professionals in carrying out TM activities." (Cetindamar & Phaal, 2021) As per study application of plan is the challengeable task for any project. This becomes easier when decision making software support the executers take the decision in appropriate time in form of system dynamic. This system dynamic also consider the uncertainty environment when the project is to be lies. In significance words the originality of this study lies in the decision-making process for get hold of the best preparation choice under doubt and project circumstances. Actions should be put into practice that forecast and examine ad hoc project planning processes and manage model-based decision-making under ambiguity. (Khatun et al., 2022)

According to author global software development that increasing in fast pace of software industry featured through highly spread in the world He classified in to five base line these paraphernalia, according to the software life cycle process on spotlight and how they hold up the 3C aspect (coordination, cooperation and communication). The collection of the tools establishes are separate tools (77%). A very less number of platforms (8%) also offer a set of interrelating tools that envelop the software development lifecycle. Outcome also point out that SPM field in GSD are not sufficiently supported by matching tools and justify more attention from instrument builders.(Chadli et al., 2016). In views of author mention in the study few facts plays an significant role in the competition environment in the industries of IT/IS sectors. The study consider the Greek industries of informational technology .He concluded that Information technology engaged highly experienced and expertise professional having high education in the process of development of IT companies and most of these are not offering any professional training and development programs for the upliftment in the production

process of encasement of software. (Chatzoglou et al., 2007). Author explains about the significance of Information system in the organization manage by the management information system which helps to flow the information into different level or among the users in order to carried out the decision making process effectively and efficiently. This is only possible due to flow and analysis of information in appropriate manners in decision making group. In way of baseline understanding " on side that the number of modern business data and information exponential develop, and well-organized business decision-making is achievable only if the essential in order is fast, precise and qualitative and managed by adequate staff but for the most cases not suitable competence is the result of a be short of good management information systems (Berisha - Shaqiri, 2014).In views of literature based on Iran , as per trend in the development in the IT sectors and MIS many of the public and private organization using at large. He focused on the aspect of designing process, establishment, operations, ad development of the proper channel for the flow of information through using of Management information system within the users at specific environment.(Babaei et al., 2013). Authors focus on the open sources software which are widely used in the world for different and some time specific task. This helps to develop the public in professional manners. (Scacchi et al., 2006) As per the study carried in the Pakistan by considering reasonable samples in the country about the flow of information through managing of Information via management information system in regards of timely arability of result for decision making process.(Awan & Khan, 2016). As per case study mentioning about the flow of information derived by the management information system makes the information available in specific time frame among users in order to take the decision in a appropriate environment in regards of business process.(Nayak et al., 2012) "Communication and administration are harmonizing disciplines and well-built business essentials for achievement. Management abilities are necessary in a business, but all evenly important are those connecting to the regulations for the message and the way in which administration or recognize how to act together with his staff. Being manager not only way to restraint in business, but mostly meaningful to harmonize a team, leadership skills and most of all, communicate." (Bucăţa & Rizescu, 2017)"Taking into thoughtfulness that concerned come up for assignment administration are not enough for a flexible and unsure creation as software, the project success laid on how software project professional handle with barriers and make decisions form the best option. Dissimilar from the normative planning theory , which focal point on how decisions should be made in order to be balanced, the expressive conclusion theory focus on how decisions are in reality made and consist of the naturalistic decision making framework. Base on a organized writing review, this paper objective to synthesize empirical studies published on journals and conferences proceedings that analyze the decision-making occurrence in the software project management circumstance from a naturalistic point of view".(Cunha et al., 2016)

Objective of the study:

After considered the literature reviews, the objective of the paper is to know contribution of the software in commercial kitchen operation in following fold mainly falls into three main aspect:

- Evaluate the software contribution into management function dealing with procurement of raw material from suppliers.
- Know actual status of raw material available into storage area .
- Analysis the performance into standards operation and preparation of dishes in way of standard recipe card formation and directory.

Hypothesis: To accomplish the objective of the study hypothesis are present in order to validate the result which helps to make the article more meaningful to understand. Hypothesis based on the importance of software in the kitchen operation.

- **Ho Null: Software use in commercial kitchen not offer significance role in kitchen Operations.**
- **H1Aternative: Software use in commercial kitchen offers significance role in kitchen operations.**

In order to study on hypothesis, significance **variables** identified for the study are

- User friendly interface.
- Decision making process in kitchen operation workflow in certain stages.
- Identification of financial impact in way of budgetary control considering food cost.
- Standards Recipe cards of dishes

Sample: The information inform of data are collected through a structured questionnaire (Considered the hypothesis of the study). Sampling in form of probability and non probability concerning stratified and convince as well as snow ball sampling. Here, kitchen bridge and second in command considered as useful who are normally graduate in hotel management and mostly works on the kitchen software to accomplish daily task and deals with different situation in a systematic way. Daily works concern with stock raking of raw material available in the store, and then ordering of food by focusing on any regular and special menu by following the principle of A'lacaret , Table de Hote, carte de jour and dishes of the day.

Management concept control the food cost in commercial kitchen operation by using machinery interface:: Before taking any decision regarding the ordering of raw material as items either fresh or frozen , chef consider many classical management concept like minimum ordering quantity, Economical ordering quantity, minimum stock capacity, maximum stock capacity as well as holding cost for some specific dishes.

Data Analysis

This study consider the data as information collected form users as kitchen managers(also known as executive chef or Sous chef second in command in the kitchen departmental formal structure), who carried out important task of the kitchen department in order for smooth conduction of kitchen affairs in day to day operations. They are the one who mostly aware with the management functions use into kitchen department of any of the hotels

Graph :1 Showing chin hotels and non chain hotels using Kitchen software

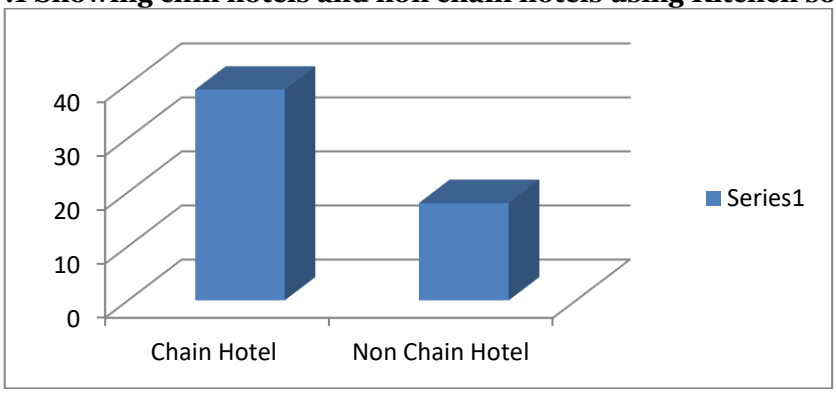


Table :1 Showing chin hotels and non chain hotels using Kitchen software

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chain Hotel	21	53.9	53.9	53.9
	Non Chain Hotel	18	46.1	46.1	100.0
	Total	39	100.0	100.0	

Finding: Total numbers of respondents are 39 which are broadly classified into two main category for the study; Chain hotels and non chain hotels. These respondents are working with the capacity of manager level as kitchen in charge as well as Sous chef as working assistant, who are solely responsible to report the senior management of the hotel property. As per the above (Table-1), chain hotels and non chain hotels respondent are 21 and 18 in numbers respectively as in percentage shown in 53.9 and 46. 1 in present and valid present column.

Table:2 Age Group showing using kitchen software

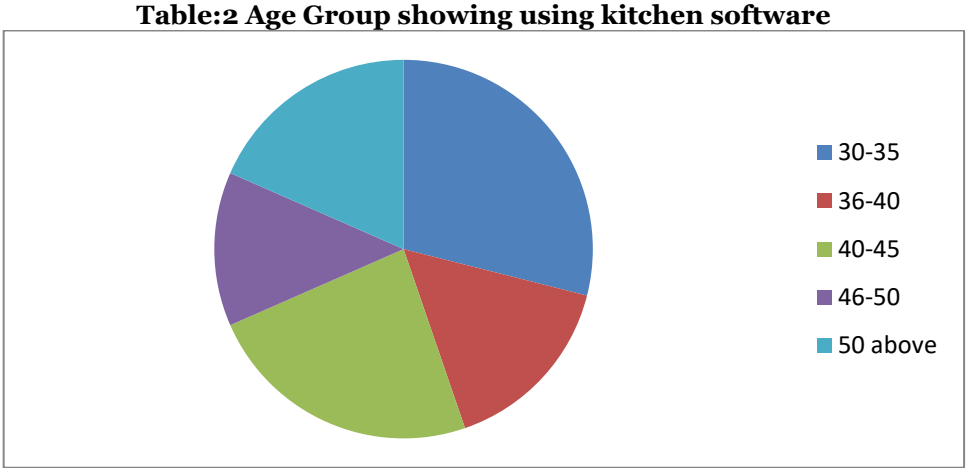


Table:2 Age Group showing using kitchen software

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30-35	12	30.8	30.8	28.2
	36-40	6	15.4	15.4	43.6
	40-45	9	23.1	23.1	66.7
	46-50	5	12.8	12.8	79.5
	50 above	7	17.9	17.9	100.0
	Total	39	100.0	100.0	1

Finding: As per the above Table:2, one of the important demographic aspect of age consider for the study as showing that which age group is more efficient in learning and apply the software uses in to kitchen operation for the discharge of work in a effectively and efficiently that deals with the managing of kitchen resources as well as optimum utilization of with the aiming for maximum generation of revenue from the kitchen operations for the hotels. As well as minimize the cost of operation into kitchen department.

Table:3 Descriptive Statistics

	N	Minimum	Maximum	Sum	Std. Deviation
Easy ordering for raw material ----------	39	1	3	98	.556
Timely passing the information about the storage of raw specific raw material.	39	1	5	145	1.297
---------- Helps in maintaining the food cost. ----------	39	1	12	298	4.516
Reduce the food cost from spoilage of raw material ----------	39	2	16	350	5.143
Helps to maintain the standard in operation of kitchen department. ----------	39	3	15	397	3.394
Standards recipe card via considering the dictionary of dishes recipe	39	3	14	397	3.648
---------- Valid N (listwise)	39				

The above descriptive Statistic (Table:3) show the views about the different aspects related to kitchen operation as per kitchen incharge (Executive chef or Sous chef as second in command in kitchen bridge) in related to ordering, storing and standardize operation of the kitchen. As per the considering, easy ordering for the raw material, timely passing the information about the raw material and food cost (significance parameter for the performance of kitchen department in term of efficiency & effective) holds the minimum number where as 3,5,12 as the maximum respectively along with sum of 98, 145, and 298 as per order with showing the standard deviation. Whereas standard recipe and operation (deal with performance at minimum 3 and maximum of 14 and 15 respectively but spoilage of food shown in minimum of 2 and maximum of 16 with standard deviation of 3.394 and 3.648 as per above table.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Interface of kitchen software is friendly is the same across categories of Offered accruate information related to issuing of Raw material.	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.
2	The distribution of Helps in analysis of kitchen performance in food cost is the same across categories of Offered accruate information related to issuing of Raw material.	Independent-Samples Kruskal-Wallis Test	.169	Retain the null hypothesis.
3	The distribution of Offered accruate information related to stock of Raw material is the same across categories of Offered accruate information related to issuing of Raw material.	Independent-Samples Kruskal-Wallis Test	.134	Retain the null hypothesis.
4	The distribution of Kitchen software controls the Ferrzer point in kitchen is the same across categories of Offered accruate information related to issuing of Raw material.	Independent-Samples Kruskal-Wallis Test	.165	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The above table showing the result in favor of accepting the null hypothesis.

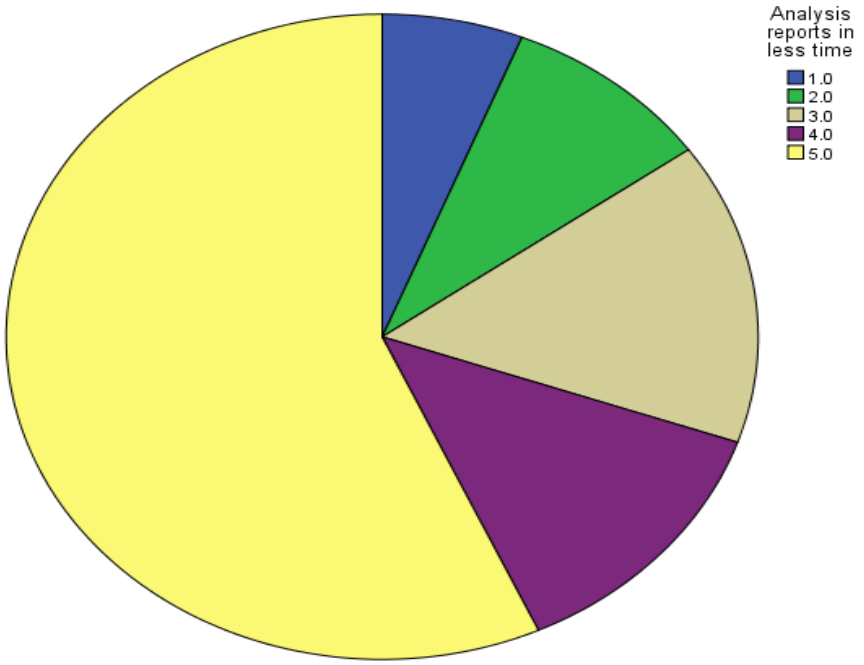
Test Statistics

	kitchen software friendly	Evaluate kitchen performance in food cost	Offered accruate information related to stock of Raw material	Kitchen software controls the Ferrzer point in kitchen
Chi-Square	4.632[a]	29.789[b]	31.632[c]	13.789[b]
df	4	3	2	3
Asymp. Sig.	.327	.000	.000	.003

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 7.6.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 9.5.

c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 12.7.



Finding: the graphs shows about the views in regards to users of kitchen software users into different task of commercial users in term of time.

Conclusion:

This study helps to understand about the views in regards to kitchen software with the help of literature reviews and application different statistic model to data which were collected in the Likert scale (1-5 scale). That proven the significant information in term for uses of kitchen software in kitchen operation shows contribution of AI interface in commercial food production operation for the smooth conduction as well as maximum generation of revenue that helps into sustainability of the food business. And Alternative Hypothesis accepted as per the resulted considered four aspect information; user friendly interface, kitchen flow, budgetary control in kitchen operation, and standard recipe card and operation aspect.

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