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# Key Performance Indicators for E-commerce

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2017 Laurea



Laurea University of Applied Sciences

## Key Performance Indicators for E-commerce

Anish Nepal  
Business Information Technology  
Bachelor's Thesis  
November

Anish Nepal

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Year	2017	Pages	31
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This paper focuses on Key Performance Indicators (KPIs) and their efficacy for the E-commerce business. The purpose of the study is to help relevant stakeholders gain a view of how KPIs can help them boost their E-commerce business. The report examines whether KPIs are useful for every business model and whether they can help businesses to monitor and measure the sites. The paper focuses on the framework for essential E-commerce KPIs.

The thesis report begins with a problem statement, the aims of the study, and research objectives. This is followed by a literature review in which past E-commerce KPIs are discussed and reviewed in a detailed manner. The results section presents an analysis of key performance indicators. The report concludes that KPIs are an effective tool for the E-commerce business and these can help the companies to make sound decisions for their websites. At the end of the thesis report, framework limitations and future work for E-commerce business regarding KPIs are also discussed.

Keywords: E-commerce, KPIs

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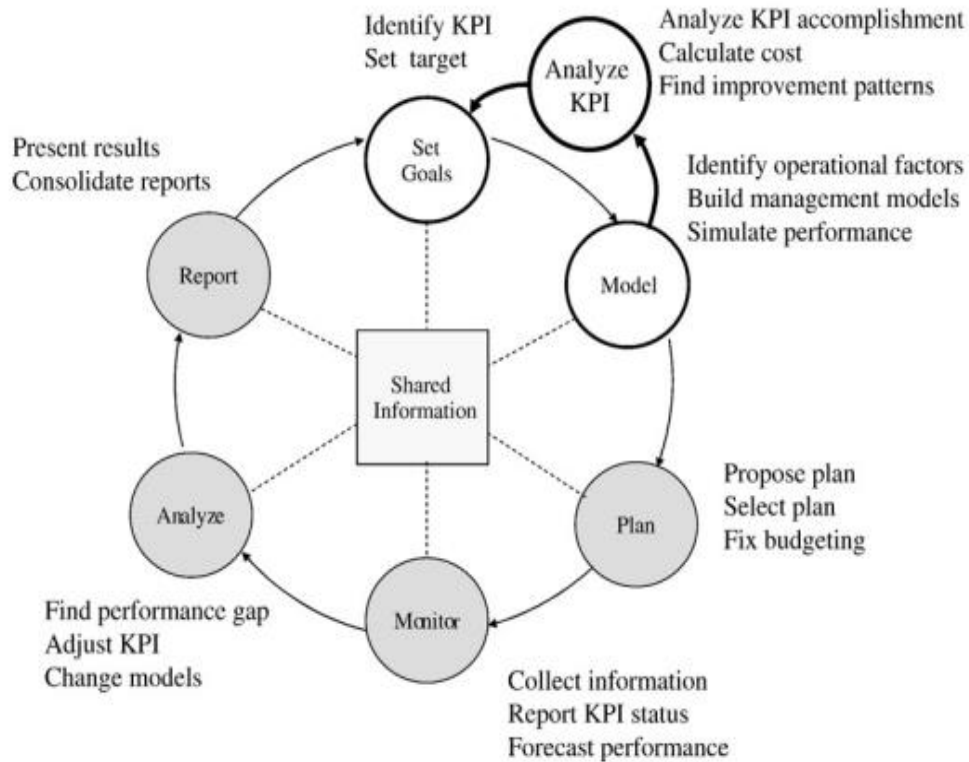
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## 1 Introduction

The key performance indicators (KPIs) are metrics that are needed to understand the performance of an entity. KPIs can be useful for the multiple factors as the business performance can be known and these are helpful for the owners, marketing managers as well as the webmasters. KPIs are considered effective to evaluate the E-commerce related business operations of the company and KPIs can tell that the site is successful or not.

There are different Key Performance Indicators that E-commerce business can select to boost its business. For sales, marketing and customer services key performance indicators can help in improving the business. For sales, the KPIs are inventory levels, cost of goods sold conversion rate etc. For marketing, the KPIs are site traffic, chat sessions initiated and blog traffic etc. For Customer services, the KPIs are customer's service email count and customer service phone call count etc. These KPIs will improve the sales, marketing and customer services of the business for sure and if the sales and marketing improves, the E-commerce business will improve as well. That is how Ecommerce KPI helps in improving the business.

Thus, the business after analyzing the market situations and after identifying the real growth or analyzing the company status can make recommendations so that there could be an improvement in the company as well as in the actual data results. Through the KPIs, companies could evaluate the business performance and there could be analysis of the E-commerce websites. Moreover, KPIs can help and lead the companies so that their statistics can be improved. However, bounce rate and time on site can help the retailers and online stores to grow in their market.



**Figure 1: Improved KPIs Performance Management Cycle**

### 1.1 Motivation and Problem Statement

In every business, the organizations need to focus on the sales activities because it is crucial to increase the business revenues by effectively managing the sales activities of the sites. The online retailers and other business organizations need to consider the effective business opportunities so that business organization can be successful. Thus, E-commerce KPIs are helping the businesses to grow by effectively evaluating their performance and through getting the company information on weekly, monthly or annually basis.

There is the need for the identification of the problem statement so that the E-commerce solutions can be defined for the company's technical infrastructure so that the experts able to get the benefits through performance measuring system. KPIs or E-commerce KPIs can help the business to grow, as they are the focus on the business financial as well as the non-financial measures. The E-commerce website can use KPIs and help the managers so that they could identify the company strategic objectives as well as they could improve the

decision-making and other processes after measuring the current performance. The website strengths and weaknesses are also identified through the KPIs, and there is effectiveness in monitoring the business performance. Moreover, the motivation for the E-commerce KPIs can help the companies to grow in their relevant market.

### 1.2 Aim of the Study

This thesis aims to develop a framework to help the companies so that there could be E-commerce website's evaluation through the KPIs, as it can help companies to maintain their effective performance and helps them to get the positive results. The major aim of the study is to help & assist companies by providing effective and efficient framework that how they can get the customer satisfaction through analyzing the website performance. The framework focuses or seeks to assist; the E-commerce KPIs can help businesses to analyze the performance of the product and service as well as the sales by focusing on the strategic goals and by analyzing the competitive strengths.

### 1.3 Research Objectives and Questions

To conduct and focus on the research objectives, the measurable terms for the E-commerce are considered, which can help companies to manage their business performance and they can find out that what framework can provide understandable information to them. The companies need to focus on the proactive monitoring and there is the need to identify improvement through the multiple KPIs so that effective business levels can be given strengths and there could be effective performance measures.

The primary research objectives include the following points:

- To describe the performance data of the companies including the retailer's Website, in an organized manner.



- To focus on the certain parameters of E-commerce KPIs that what number of visitor's company have and what is their sales performance.
- To describe useful information and the target performance of companies, which are in the E-commerce business by considering their KPIs.
- To develop the effective framework, objectives, recommendations to resolve company's issues, which they may potentially face in the E-commerce business.

Following questions need to be considered for evaluating the thesis:

- What is the effective framework for the E-commerce business KPIs?
- How E-commerce KPIs can help the websites to increase revenue targets and internal sales?
- How E-commerce KPIs are useful for the critical business information and help companies to focus on conversion rates, revenue, customers and visitor loyalty?

#### 1.4 Outcomes of the Thesis

A framework is developed for the retail companies so that they could increase their internal sales as well as the revenue through analyzing their E-commerce performance with identification of their KPIs and critical business information. It is analyzed that the companies can improve their performance through indicating the performance or identifying the performance through KPIs. The outcomes of this thesis focus on the past researches that are described in the literature review. In addition to that, a performance of a retail site through relating the past performance of the companies is described.

#### 1.5 Outline of this Thesis

The thesis focuses on to research the historical performance of the E-commerce KPIs so that effective framework can be developed for the effective performance of the retail site. Moreover, critical business information and the valuable trend information are also fo-

cused. Through evaluating the past performance of the companies, the valuable trend and critical business information are considered. Initially, the background information has been provided, and in next parts of the paper, a detailed literature review would be provided along with research methodology, designs etc. Then data collection process and data analysis would be described to further discuss the results of this research. At the end, the paper would discuss about some limitations as well as recommendations for future research work.

## 2 KPIs for E-commerce

According to the research conducted by Gharakhani & Alirezaairajpour (2014), the performance indicators are very important in the industry of home appliances. The overall relationship between them and the intensity impact is very important for the success of E-commerce in this industry. The main goal of this research is to identify the KPIs of E-commerce with the balance scorecard (BSC) approach for the home appliances business. Balanced scorecard is a metric used in measuring the performance regarding strategic management. It helps to improve different internal function of the company and relates the higher-level elements like mission, vision with the operational level elements like performance, initiatives. From this study, we can evaluate the key performance indicators by using the model of BSC and then examine the effect of these indicators on the E-commerce business of the home appliances.

This study focuses on the six constructs of BSC model that include learning, customer, society, growing, financial and internal process. By Applying this quantitative judgement, we can identify the performance of a business. The “Decision Making Trial and Evaluation Laboratory” (DEMATEL) method is used to indicate the level of casual relationship. By constructing the strategies of delivery, quality, flexibility, and inventories, we may be able to better understand all the indicators of performance in the E-commerce. Many organizations are not using this indicator effectively and therefore not able to perform very well in their business.

For the success of organization business, the accurate identification and implementation of these key performance indicators are very important. (Gharakhani & Alirezaairajpour, 2014).

According to the research conducted by Sergei Kaganski, Jüri Majak, Kristo Karjust & Silver Toompalu (2017), the key performance indicators of home appliances in the enterprise analysis model is newly introduced to provide powerful tools in the process of management. This model is tested in the private company; there is a complete package in this model for the better management of an organization. This model is best for saving the time analyzing and selection. By using this model, we can create a better competitive environment and shorter lifecycle of the product.

For the superior performance of an organization, it is extremely important to exactly measure their outcomes. For this purpose, there should be right matrix to use for good measurement because using inefficient matrix always results in the incorrect measures of the performance. The enterprise analysis model is powerful tool for analyzing the performance of company without any compromise on the quality. This model also includes some questionnaire, once the questions are received, these questions are connected to the KPIs to get relevant answers. After that, the answers are analyzed. It is the best way to measure current situation of the organization, which can improve its future performance (Kaganski, Majak, Karjust, & Toompalu, 2017).

## 2.1 Results and KPI

According to the research conducted by Seyed Kamal Chaharsooghi\*, Nasrin Beigzadeh & Arman Sajedinejad (2016), the commercial sites and electrical stores mostly failed in Iran. There are different methods to evaluate the performance of those sites. The main reason behind this failure is the balanced scorecard, which is very rarely used for the evaluation of these sites in the country. To overcome this problem, the first thing that we do is to apply BSC approach to identify different perspectives of the BSC. After that, the DEMATEL technique is also applied for the proper examination of the relations between these four perspectives of the BSC model.

In the end, the overall result is generated by the structural equation modeling software to confirm the sufficiency of the website proposal model and improve the graphics of the websites. By applying all the above methods one by one we can effectively measure the overall performance of the site and improve the overall work performance and efficiency of the website. The adoption of these kinds of methods very much depends on the nature of an organization, and what is the basic requirement of its structure (Chaharsooghi, Beigzadeh, & Sajedinejad, 2016).

According to research of Mihaela I. MUNTEAN, Diana TÂRNĂVEANU<sup>1</sup>, Alina Raluca ION (2016), one of the focus of the E-commerce business is sales. The research indicates that the shopping cart in an e-shop is the essential performance indicator as it is the first step to bring sales. The research paper implements three major performance indicators: Order conversion rate, Average product in an order and average value of an order for monitoring business processes. By using these KPIs, the working performance of the organization can be evaluated, and future estimated performance can also be calculated. Once the company has identified its goals and mission statement, stakeholders and who they measure their process to attain the goals of the organization. The performance indicators that the company selects are the reflection of how well the company is performing and going towards its goals (MUNTEAN<sup>1</sup>, TÂRNĂVEANU, & ION, 2016).

According to the research conducted by Mohsen Alvandi, Safar Fazli, Leila Yazdani & Milad Aghaee (2016), they analyzed that the balanced scorecard is one of the efficient technique to evaluate the performance. In the real word situation, BSC very well reflects the dependence and problem related to the feedback. This model is used for the decision-making; however, it depends on various criteria. SAPCO is one of the big companies in Iran for spare suppliers. After the measurement of the analytical network process (ANP), we measure the relationship between weights. The result of ANP shows that the customer is the most influential factor. For them, the performance indicators are customer satisfaction, total price of parts and production of parts. The author of this article also explains, how the marketplace has been changing because of economy and financial environment of the world. In this situa-

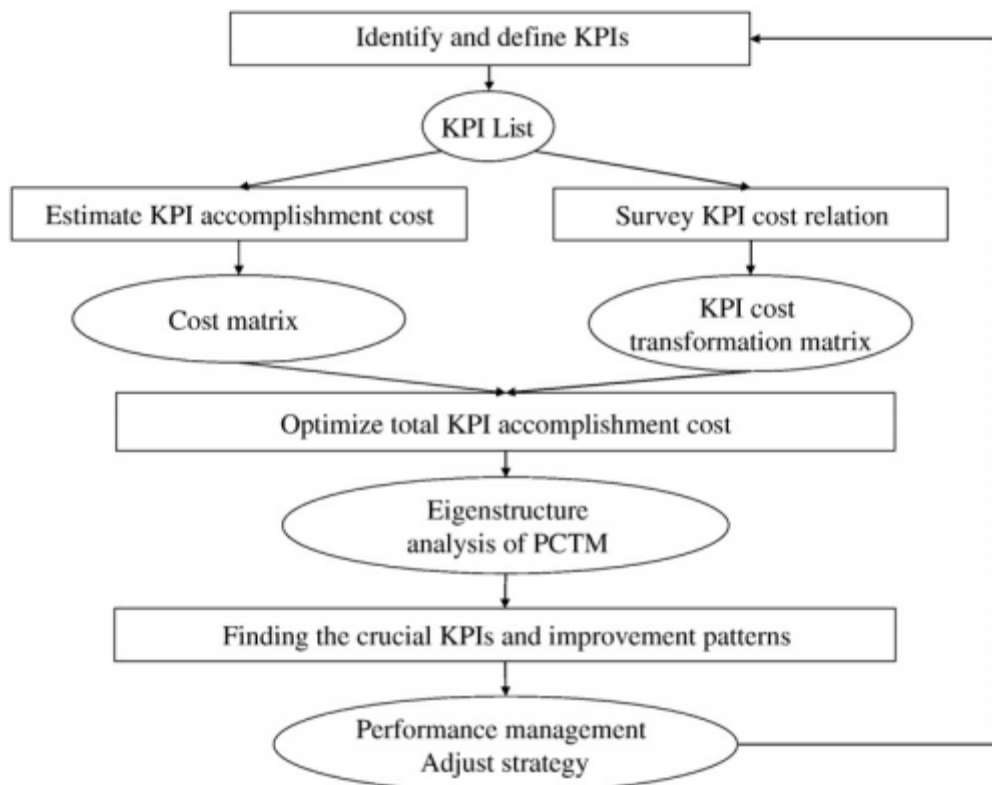
tion, the main questions that arise are; what are the goals and mission statement of the organization and what are the strategies, they use for the accomplishment of their goals. The BSC model is best amongst all the models used for the measurement and evaluation of companies' goals and performances (Alvandi, Fazli, Yazdani, & Aghaee, 2012).

## 2.2 Predict Approaches

According to the research conducted by Katerina Konsta, & Evi Plomaritou (2016), they review that how KPIs are important and what is their role in the shipping market. The authors mention how questionnaire review was taken for the shipping companies in the Greece. After the result of this questionnaire, they came to know that there are many companies in the Greece that know the importance of key performance indicators. But there are very few of them, who really know their importance in the company's performance. The companies are not only focused on earnings but also profitability of the organization. For this purpose, it is very important for the companies to understand the dynamics of whole market. Their product and service should be available in right time, right place, with right quantity to the right customers. The financial measures of the company are obtained by the effectiveness and efficiency of their financial performance. The companies, who have defined goals and well-prepared strategies for achieving the goals, are more likely to get increased productivity and will be successful in the market. By following the indicators of performance, the organization is more likely to improve its working and overall performance of their business (Konsta & Plomaritou, 2012)

Another research conducted by Aivars Niedritis, Laila Niedrite & Natalija Kozmina (2016), analyzed that there are few main principles of indicators in the organization, which indicate that the performance of the company is not only depends on the measures of performance indicators but also depends on the management model of the organization. There are many kinds of indicators, which are used in the organization. Some of them are called the formal indicators that are mainly used to define the performance measurement framework, in which they cover the complete five-step life cycle of the performance.

The measurement is not just about identifying the current situation of the business, but also making proper operations to improve the future performance of an organization. The main point is that how a company can choose what is most suitable measure for them and that is also the best framework for such measure because each company has different measures and different framework to execute. The performance measuring system that a company is using should be very effective so that the chances that the company may survive among the competitors in the market. By knowing the exact strategies of the organization, they can select the best measuring framework for them (Niedritis, Niedrite, & Kozmina, 201).



**Figure 2: Improving KPIs Performance “E-commerce Companies”**

### 3 Methodology

The secondary research is conducted by analyzing the qualitative and quantitative data as well as approaches that were presented in the relevant literature or studies. The KPIs for the E-commerce business are focused, as the relevant methodology for the analysis of this thesis analyzes the already available data and there are focuses on the various situations. Through the existing literature review, the broad quantitative survey is done in the E-commerce company. The companies are using KPIs as an effective tool as it is clear from the literature review. Thus, in this way, there is analysis of the qualitative data and the professional networking that how the companies working in the industry (Mitra, Sambamurthy, & Westerman, 2011).

The methodology also focused on the standardized quantitative analysis; the major focus is given to the explanatory studies so that the data that is already conducted through the primary sources can be obtained or analyzed. There are also focuses on the company’s methodological operations and distinctive attributes (Lim and Ting, 2013). The explanatory research design focuses on the present research studies and results in the KPIs, that they are effectively used by the companies and the research methodology through identifying system functions. There is an evaluation of the companies that how they perform and how procedures and actions can be changed through identifying the aspects of E-commerce Website, E-commerce performance or the E-commerce nature of the companies.

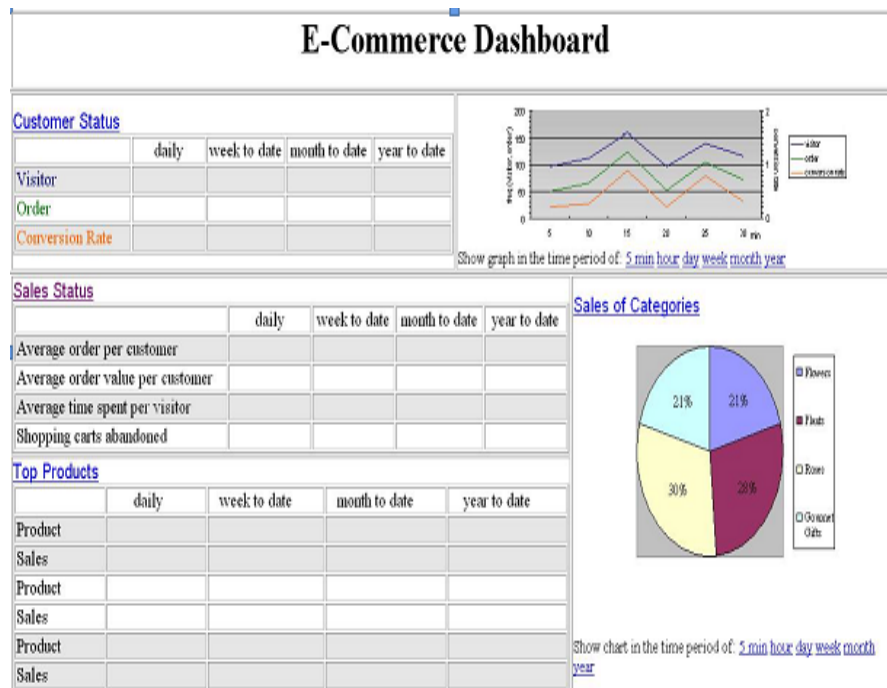
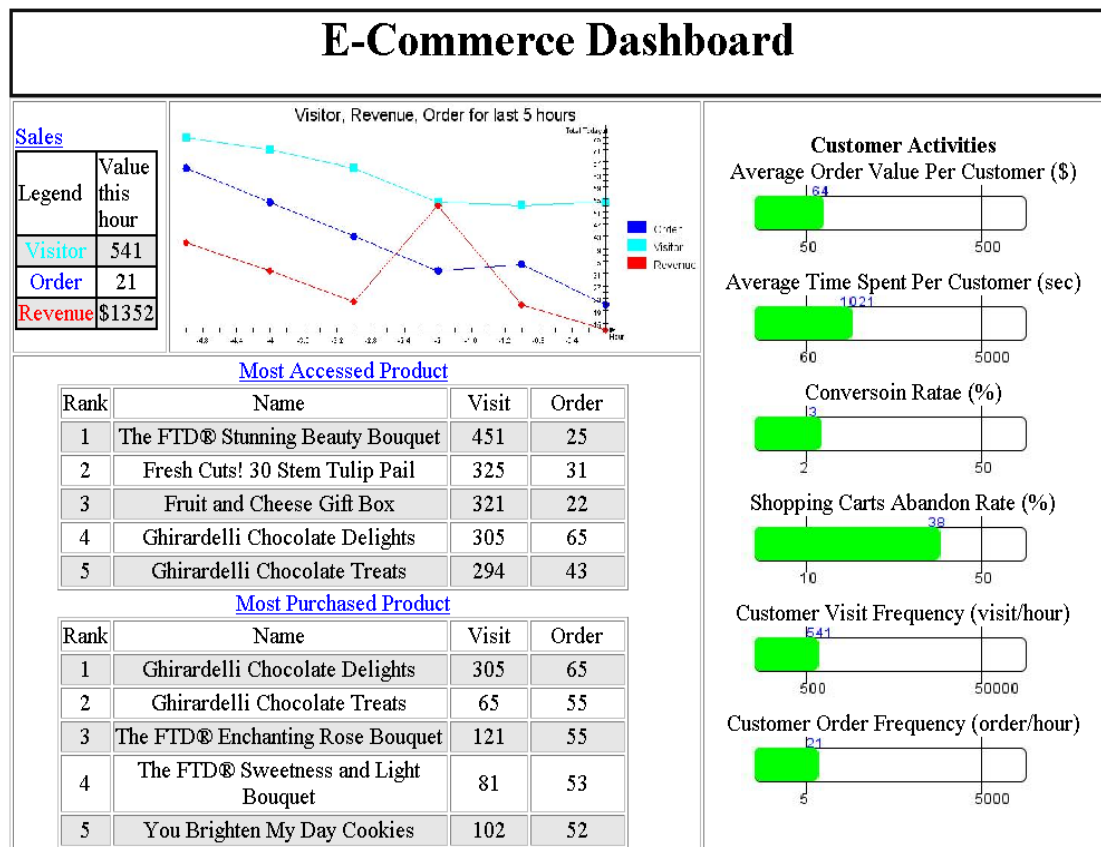


Figure 3: E-commerce Prototype Design



### 3.1 Research Design Analysis

The research design focus on the E-commerce KPIs that how users and developers use the applications, how they test the functionality, regarding the website content, presentation, and the application. Existing literature review is focused from the broad quantitative survey so that there could be the analysis of the E-commerce companies that how they are using KPIs as an effective tool. The quantitative data and qualitative data are analyzed in methodology. There is also focus on the explanatory study so that primary sources can be properly investigated.



**Figure 4: Final Design of KPIs of E-commerce**

### 3.1.1 Functional Purpose

In the KPIs, the functional purpose was used to focus on the work domain so that there could be analysis on the websites and the objective of E-commerce can be focused on the functions and their purposes. There is the visualization of the website performance and through the E-commerce dashboard; the status of the website is monitored that could also alert about the problems, which can occur.

Moreover, in the methodology, the abstract function was focused and there was analysis of the company's description. The casual relationships of the websites are also described by the laws that are the priorities and cannot be broken. Thus, abstract functions also do the e-metrics measurement.

### 3.1.2 Abstract Function

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### 3.1.3 Generalized Function

The generalized information is focused on the methodology, as company uses the generalized function so that there could be analysis of the casual laws, which companies could monitor through the business transactions data. Moreover, the generalized function does make comparison of the websites by getting the information of the organization.

### 3.1.4 Physical Functions

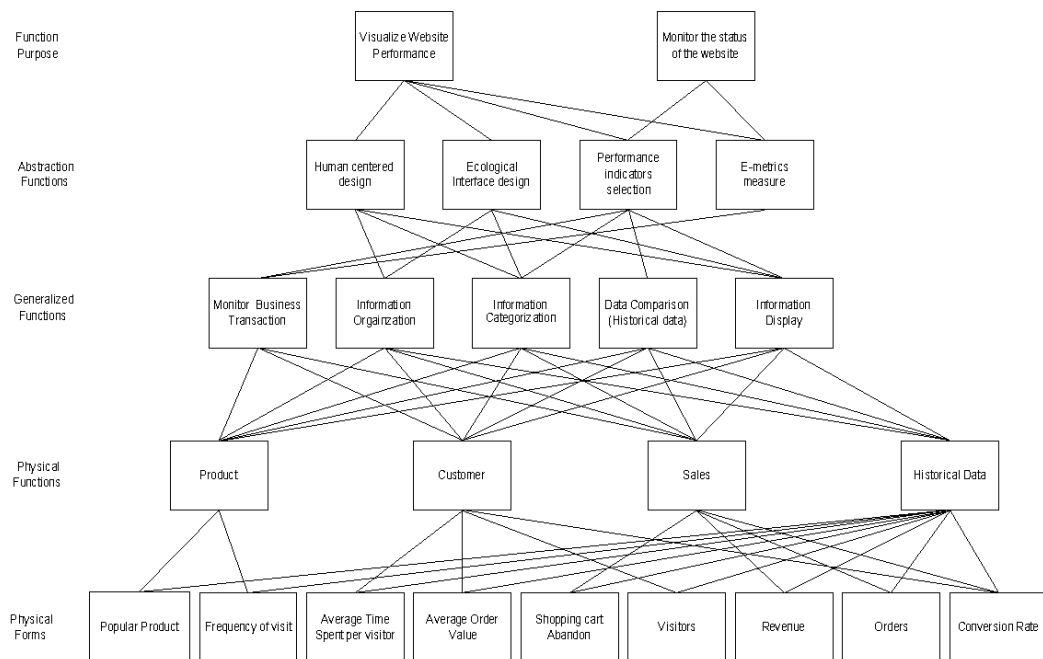
The methodology also includes the physical function levels as there is physical analysis of various components, and there is focus on the work domains and capabilities. Moreover,

the E-commerce dashboard is focused through to get the relevant information about the product. The historical data regarding the sales and customers are also analyzed.

### 3.1.5 Physical Forms

The physical forms of the websites are focused through KPIs, as this step includes the description of the products' physical appearance. There are also focuses on the work domain, and information is analyzed through the performance indicators abstraction hierarchy or the information requirements. There is also focus on the design specification so that the products can be focused according to their demands (Bendavid, Lefebvre, Lefebvre, & Fosso-Wamb, 2008).

## Abstraction Hierarchy



**Figure 5: Abstraction Hierarchy of the E-commerce**

### 3.2 Tools for Analyzing KPIs

Following are the tools that can be used for analyzing or tracking the key performance indicators for E-commerce.

#### **Tableau**

Tableau is a tool that can be used for analyzing the KPIs. It is a very useful tool because the features like real time reporting and data blending make it quite different from other tools.

#### **Grow**

Grow is another tool which helps in analyzing the KPIs for Ecommerce. It has a professional dashboard, simple to use and it can connect to Google Analytics and Ad words.

#### **Google Analytics**

It is widely used tool for collecting website related data. It provides different insights regarding the visitors, session time, sales, bounce rate and other customized analytics.

#### **Stats Mix**

In this tool, the KPIs can be reported automatically and it is easily shareable as well.

### 3.3 Data Collection Process

For the data collection process, this research uses the literature review as a learning process, and tools of E-commerce KPIs are used as a successful design to enhance the usability of KPIs. Technical backgrounds were focused, and the graphs & charts are also elaborated. The explanatory research design and secondary method are focused on the present research study to find out the effective results of E-commerce KPIs.

### 3.4 Data Analysis

It is analyzed and focused in the methodology that the work domain analysis can provide the benefits of the information requirements, as through KPIs and E-commerce tools the necessary information can be obtained by displaying requirements. For the research design analysis, the information requirements and the companies work domain analysis is focused that how they are managing the E-commerce website and key performance indicators are no-

ticed. The above-used analysis or functions can effectively monitor the E-commerce websites and can help companies to analyze the website performance and can tell companies that how effective performance through incorporate domain can be achieved (Becker, Vilkov, Wei, & Winkelmann, 2010).

Companies in the technological market are using the systematic method so that there could be effective searching about a company's website and detailed information through selection & performance of right kinds of strategies. Moreover, several questions can be made to store these relationships for the constraints. The companies could get relevant information by effectively selecting E-commerce KPIs strategies or hierarchies.

#### 4 Results/Analysis

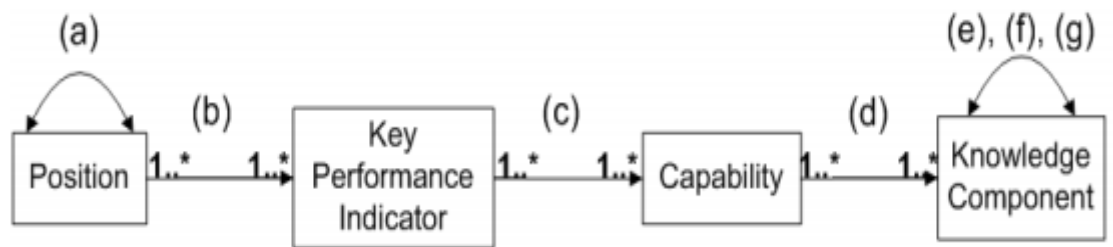
##### 4.1 Results

The sales and revenue can be increased through analyzing the category of multiple KPIs over time. The results evaluation told that E-commerce websites are helping the business and these websites helping to effectively grow business in the market. The results that obtained through the exploratory research focused on the development of the E-commerce dashboard, with the time. However, it is analyzed that companies are focused on E-commerce KPIs so that there could be effective design analysis, and work domain could be supported. Moreover, the companies are getting the benefits through analyzing the importance of the E-commerce information.

Key performance Indicators (KPIs) analysis gave the results that companies are using to make design concept and specification based on the E-commerce so that there could be effectiveness in the processes, and companies could gain the competitive advantages in the market. There are selections on the prototype design section so that company could analyze its interface design according to the working environment or the working of the market conditions. The companies are determining the constraints that are there in the E-commerce KPIs strategies or designs.

## 4.2 Key Performance Indicators Analysis

For the analysis of the key performance indicators, the E-commerce KPIs are focused to achieve the interface design. To analyze the performance of the KPIs, the various level of tools or business performances types are focused. (Amrina & Yusof, 2011).



**Figure 6: Components for KPIs**

### 4.2.1 Visitor

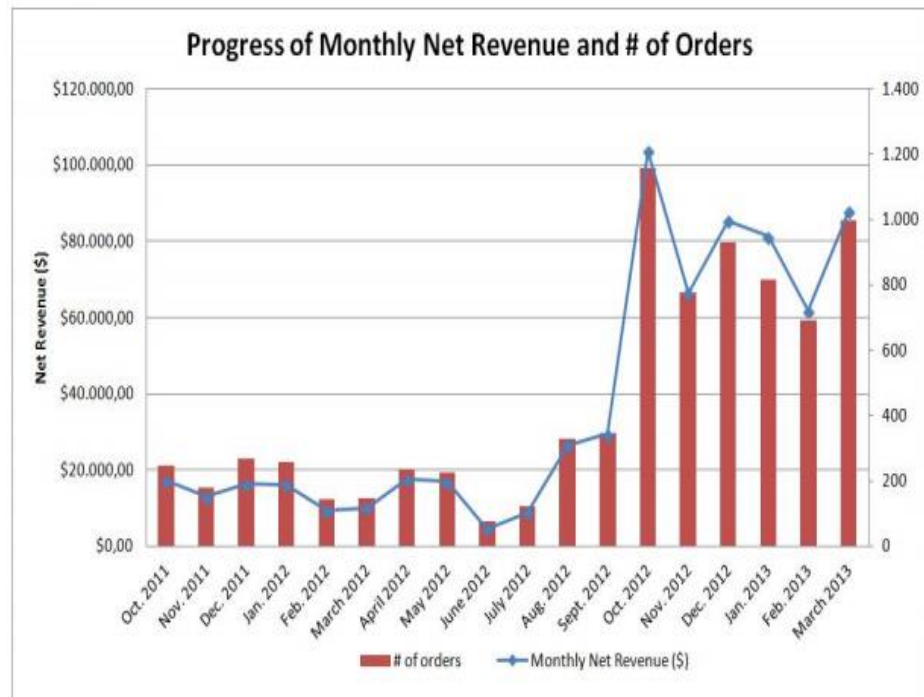
It is the KPI metric, which focuses on the visitors visiting the website in a day. There is analysis on how many customers visited the websites. However, there is also focus on the timeframe or period of one hour as well.

### 4.2.2 Order

In this step, there is focus on the number of orders that how the product was bought and counted as one unit. There is also focus on the basic parameters and the data over time; however, there is also timeframe or period of per hour.

### 4.2.3 Revenue

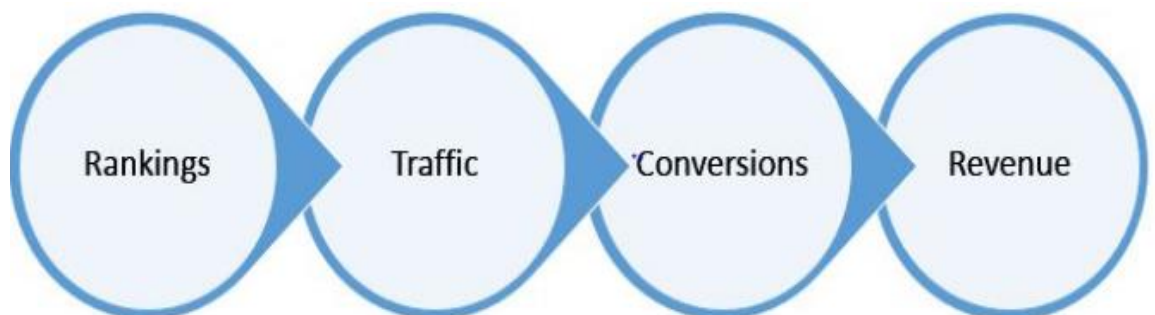
Revenue includes the amount of sales that has occurred in an e-shop. It is one of the important performance indicator in a business. However, the revenue may not remain static and might change over time. so, it is equally vital to have a proper analysis of revenue stream.



**Figure 7: Analysis of Revenue through KPIs**

#### 4.2.4 Conversion Rate

Conversion rate as a KPIs tool could be known as the sales that are made on time and it is the prospect that is converted for the customers. However, there is also evaluation of the repeated visits before a time that KPIs shows in the percentage.



**Figure 8: KPIs Business Goals**

#### 4.2.5 Average Order Value

The average order value focuses on the customer, in terms of monetary value. The analysis is done to analyze the future increase in customer orders, so that the ordered products can be analyzed and the adjustment on the price or offers can be introduced.

#### 4.2.6 Average Time Spent

In the average time spent, there is investigation of the visitors in the seconds; the investigation is done for the website structure and the content as well. If the analysis shows that there is a drop in average time spent then it is crucial for a business to make adjustment in their existing system regarding the layout and user experience so that a user can be engaged for longer time.

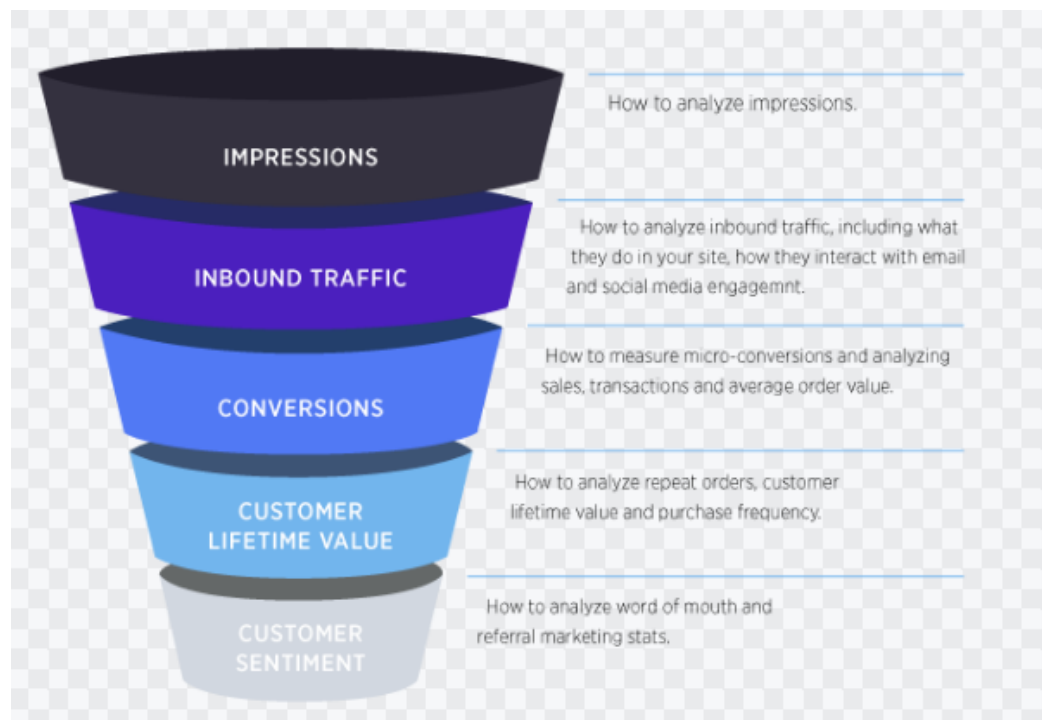
#### 4.2.7 Shopping Carts Abandon

Shopping carts abandon is focused on the ratio of the abandoned carts, which is through the purchases of per day. It is related to the KPIs because there is analysis of prices and quality of the product, which primarily is discussed. Moreover, there is focus on the website layout as deal and analyze the high abandon rate.



#### 4.2.8 Customer Visit Frequency

In the customer visit frequency, there is focus on to notice or analyze the visitors' number in per hour. However, the KPIs can analyze the customer visits on the website regularly or frequently (Cai, Liu, Xiao, & Liu, 2009).



**Figure 9: E-commerce KPIs Metrics**

#### 4.3 Discussion

In the discussion segment, it could be said that all KPIs are considered effective to evaluate the E-commerce related business operations because above analysis E-commerce KPIs are proved successful in every business models. They provide help to the online retailers. All above discusses models are the efficient KPIs tools as they help websites to analyze their customers as well as the popular products of the companies. Thus, the entire features are helpful for the organizations because E-commerce can be supportive through all these procedures and processes.

KPIs can help and lead the companies to grow, and these companies could also analyze the statistics so that there could be evaluation of their effective performance. Moreover,

through effective KPIs strategies, the companies are growing in the market as they can gain critical business information to gain success of organizational business. Through the literature analysis, the thesis has accurate identification and implementation that the E-commerce KPIs should be implemented as it can analyze the qualitative and quantitative data and approaches. Through the broad quantitative survey, it is known that explanatory study is useful primary sources for the analysis (Amrina & LutfiaVilsi, 2015).

## 5 Conclusion

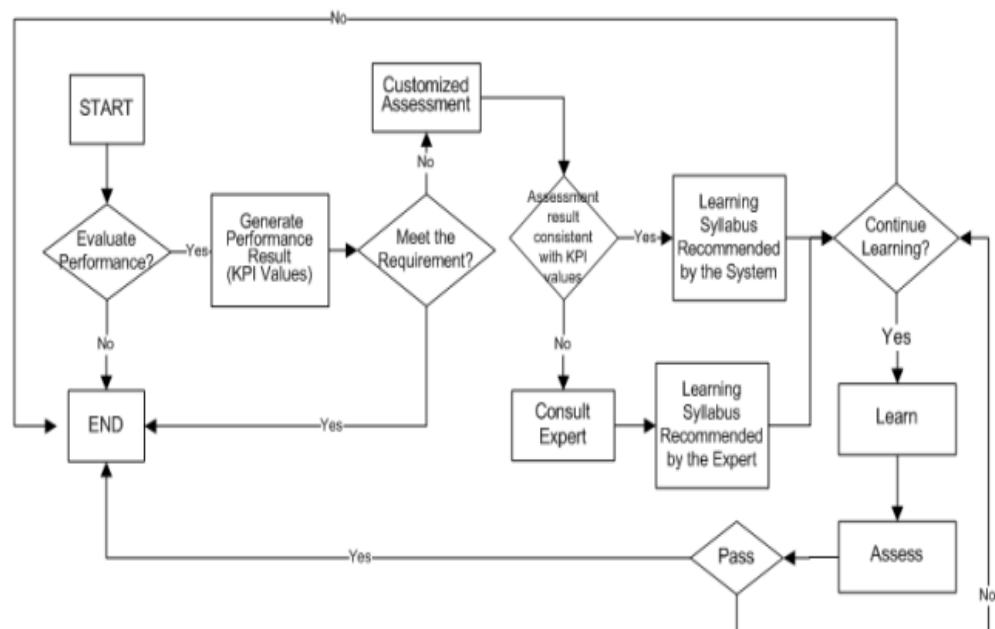
It can be concluded in this thesis that it has evaluated the E-commerce websites, which are helping the businesses and its websites to grow effectively in the market. It is analyzed that companies can improve their performance through indicating the performance or identifying the performance improvement areas through KPIs. In consideration with the E-commerce, it is known that KPIs can be useful for multiple factors because they not only improve or increase company revenue but also prove successful in every business models, as focused in literature review.

Thus, companies could make recommendations so that there could be improvement in the process of their website. Online retailers are getting benefits through performance measuring system and these E-commerce KPIs are helping the business to grow. Moreover, KPIs framework can provide understandable information to companies so that performance data of the companies could focus on effective outcomes in an organized manner. The multiple KPIs are proved effective for business levels framework, objectives, and various recommendations can be made for the efficient target performance of the companies. By evaluating the past performance, an effective framework can be developed for the effective performance of the retail sites for future.

### 5.1 Research Questions

Through analysis of the researches, afore mentioned research questions are analyzed and it is known that framework of E-commerce KPIs is effective enough for E-commerce business. The research question of what should be effective framework for the E-commerce KPIs?

It focused on the answer through the analysis of the website visitors, orders and revenues. There could be identification of effective KPIs strategies that companies can use in the future. The conversion rate, average order value and average time spent can also help companies to focus on other questions example regarding the increase of revenue targets and internal sales. Moreover, in the methodology part, the effective framework is also analyzed to get useful information for the critical business decisions like abstract function, generalized function and the physical functions or the physical forms etc. These frameworks or strategies can help companies to grow in the E-commerce market.



**Figure 10: E-commerce KPIs to Improve Business Performance**

## 5.2 Framework Limitations

The framework of E-commerce KPIs also has the limitation, as with lacking performance measurement, there could be translation that E-commerce website is not performing well and there could be lost revenues as well as customers. Moreover, e-retailer can stay competitive and can gain more profit with the effective E-commerce strategies. But it is limitation that what KPIs model is suitable for a certain type of E-commerce business.

### 5.3 Future Work

For the future work, there is needed to make improvements in the KPI tools so that E-commerce can be more versatile and effective. The data collection techniques can be improved and focused towards collecting behavior driven user data to get insight of overall performance. A deeper analysis of KPI tools can be performed to get information about the performance of overall ecommerce website. I would have liked to perform test with multiple ecommerce site and analyze which KPI model is better for certain business.

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