THE RELATIONSHIP BETWEEN TTM (TIME TO MARKET) TOOL AND EVALUATING THE PERFORAMNCE OF PRODUCTS' LAUNCHING PROCESS: A CASE STUDY OF ORANGE JORDAN

Rifat O. Shannak

Associate Professor of Management Information Systems, Faculty of Business, University of Jordan, Amman, Jordan

Amal AL-Masri

Sales & Services, Planning ,Performance & Project Directorate. A former MBA student at the Faculty of Business, University of Jordan, Amman, Jordan

Abstract:

The objective of this research is to evaluate and study the relationship between Time To Market (TTM) tool and the performance of the launching process of Orange (Mobile Company) products and services.

The type of research design is modeled as case study; it relies on secondary information and primary data. The research has been conducted through interviews .The conduction and analysis of the interviews follow a methodology called (general interview guide approach). In addition, a sample of Orange products and services has been selected. The product list was filtered taking into consideration the existence of products pre and post the implementation of the TTM. The Willcoxon statistical test was used to test research hypotheses and to analyze the data. The research major conclusions are that TTM tool effectively contributes in products and services launching process and also creates an enabling environment for creativity and innovation. Information systems that support the core business and which is thought to be strategically important in product launching process should be customized. In addition, albeit TTM evaluation process is deemed important, more focused measures and methods for evaluation are needed.

The research has proposed several recommendations; of which the most important are: TTM internal process needs to be improved and enhanced since the sharing of lessons learned by

employees and TTM users is required and more weight should be given to planning phase in the launching process.

Keywords: TTM Tool, Performance, Launching Process, Mobile Company, TTM Internal Process, Product Launching

1. Introduction

In today's fast dynamic business environment where the business landscape continually changes in response to shifting customer preferences, new and better production processes, and the development and introduction of advanced technologies, companies need to have flexible and planned business practices to facilitate change in order to adapt to the market environment. Aligning resources and employees to a company's goals and objectives is essential.

The telecommunication industry is facing increasing regulatory pressure and stiff competition. Developing new products has become even more critical than in the past as time to market has a greater impact on a company's success. Streamlining product development processes is now becoming a major priority for companies looking to improve their market share.

A products and services performance evaluation tool is one of the most important critical success factors in this tough struggle environment, Performance Evaluation is a tool you can use to enhance the products and services launching process .(Smith and Reinertsen,1998).

Building performance metrics to evaluate the products launching process provides a framework for benchmarking the launching process. The evaluation tool is very critical and important. Establishing performance metrics is a critical for organizational success (Smith and Merritt, 2002).

Orange TTM process

Figure 1: Illustrates Orange TTM process and milestones that each product or project is supposed to follow these milestones.

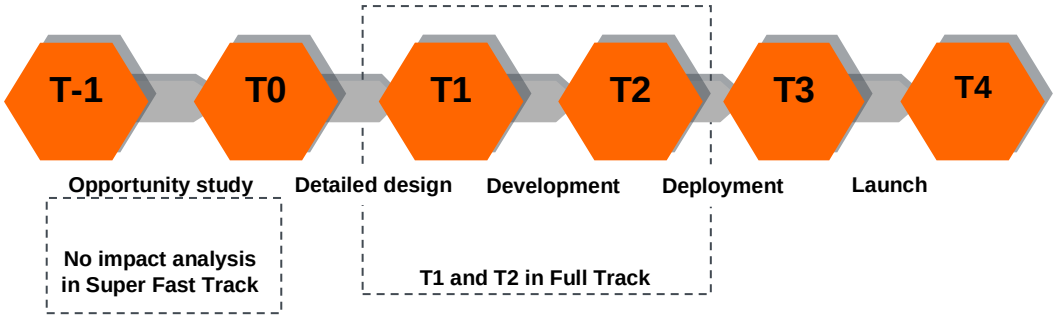


Figure 1: Orange TTM Process and Milestones

The above figure shows the process milestones and phases; there is a deadline for each phase, as it is not proceed to the next phase without accomplishing all the required check lists and business cases and getting the approval of TTM committee. Phases are stated as follows:

T-1= Pre-Opportunity review: design and market launch of the Product/Service.

T0= Opportunity review: Take Go/No-Go decision for the design and market launch of the Product/Service

T1= Design Review: Take Go/No-Go decision for launch of development phase

T2= Development review: Take Go/No-Go decision for deployment phase on basis of presentation of results of development phase.

T3= Launch review: Review finalized marketing tools.

T4= post implantation review: Review results of the market launch, take corrective actions and prepare feedback for the development of the subsequent versions of the product/service.

T5= performance review: Evaluate the product.

T6= End of life review: cancel the product.

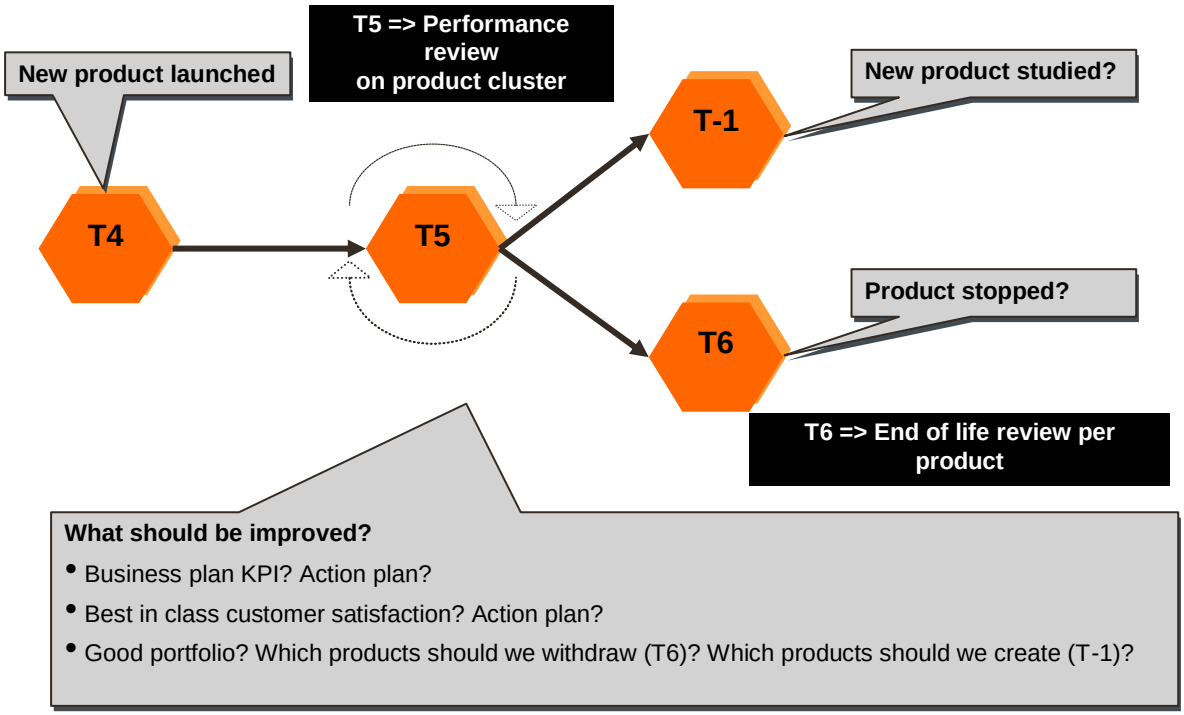


Figure 2: Orange ILM (In Life Management) Process

This previous figure 2 explains the ILM role in improving the product development process by enhancing the profitable products while eliminating or cancels the non-profitable ones.

In life management (ILM) of products

ILM is the succession of strategies used by management and as a product goes through its product life cycle. The conditions in which a product is sold changes over time and must be managed as it moves through its succession of stages. (Box, 1983). ILM is a process which managing a Product/Service from Post Sales Review (T4 in TTM) to End of Life Review (T6 in ILM). It is claimed that every product has a life period, it is launched, and it grows, and at some point, may die. A fair comment is that - at least in the short term - not all products or services die.

ILM is designed to maintain a focus on launched products In Life Cycle Management of Current Products (TTM material, 2009). In Life management of current products when doing well can lead to better pay back and profitability (Rey et al., 2004). Instead of just relying on an ad hoc way of management, it makes more sense to rely on the individual skills of product, marketing, business development and operational managers. An In Life Management 'roadmap' and toolkit can produce better results (TTM Material ,2009).

In their criticism of the product life cycle, (Dhalla and Yuspeh, 1997) state: "clearly, the Product Life Cycle (PLC) is a dependent variable which is determined by market actions; it is not an independent variable to which companies should adapt their marketing programs. Marketing management itself can alter the shape and duration of a brand's life cycle."

Key objectives of In Life Management are to increase revenue and margin of products across all stages of the product lifecycle. The following figure 3 shows the product life cycle phases.

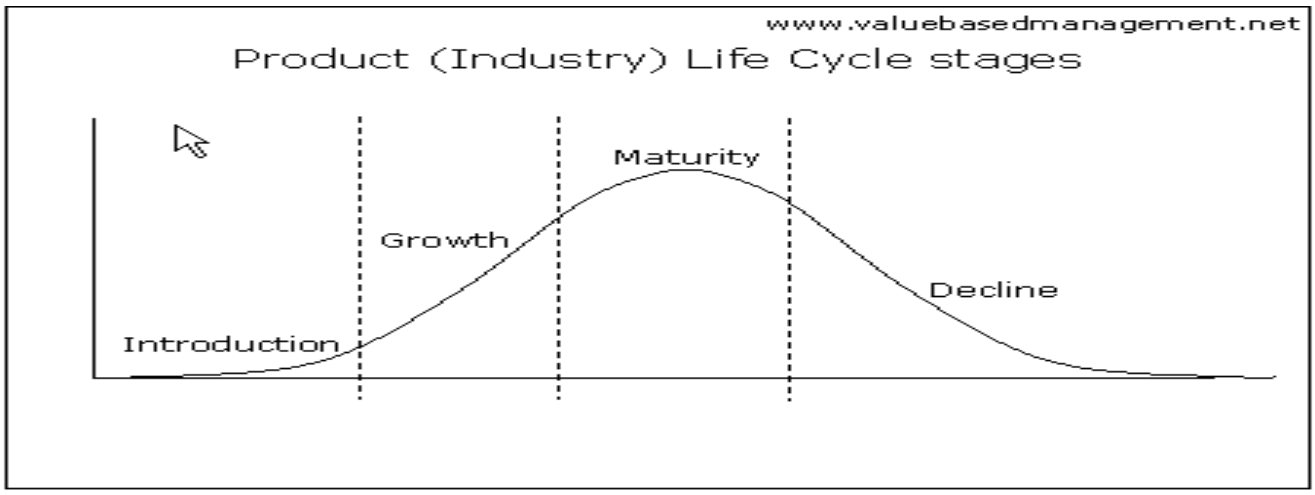


Figure 3: Product Life Cycle Stages

It is obvious from this figure that product life cycle accomplishes the maximum outcomes in the maturity stage. The role of ILM emphasis of this stage is demonstrated in the research conclusions.

ILM Approach

In Life Management is a costly process and should be applied to all products via cluster based reviews, rather than individual product reviews. Products are allocated to an appropriate cluster at T0 (TTM Material, 2009). It is mandatory to review all product clusters regularly in order to share best practice, identify potential delisting of specific products through T6, and initiate a T-1 milestone for product improvement.

The ILM principles are:
First: T4 is both the end of TTM and the beginning of ILM.
Second: T5 is repeatable Performance Review of Product clusters.
Third: T6 is End of Life Review of individual products.

Product Life Cycle Management (ILM) comprises a framework of integrated processes which support management of the various stages of products and portfolio life cycles. These processes are not prescriptive but provide a guide, with supporting tools, to assist practical implementation of the stages of the life cycle, comprising (Hari and Weiss, 2003); Product Portfolio Strategy, Planning and Product Definition, Voices of Customers and market research, Product Competitive Analysis, Product

Development., Product Launch and Introduction, Time to Market Compression, In Life Product Management and Product Replacement and Withdrawal.

This Research focuses on the following:

1. The relationships between TTM tool in evaluating the performance of products and services in launching process and performing products managements by implementing (IN life management) (ILM) for the selected products and services.
2. Answering the research questions to achieve the research objectives and to test various hypotheses through the statistical analysis.

2. Problem Statement and Research Questions

The main purpose of this research is to identify the performance of TTM in evaluating the Orange products and services launching process. This research seeks to evaluate to what extent the TTM has been successful in creating high quality and profitable products or services.

The focus was on sampling products performance before and after the implementation of TTM by measuring the mentioned. KPIs and Critical Success Factors (CSFs).

This research was designed to answer the following questions:

1. What are the KPIs in products launching processes?
2. What is the role of TTM in product evaluation process?
3. How does the TTM influence the product launching process?
4. How do the TTM view the products critical success factors and what are the concentrate ways to including it in marketing tools?
5. How could orange improve the quality and revenue of their launching process? And in particular which areas should be given extra attention in the future product development tools?
6. Does the TTM affect products profit, ARPU, AMPU, customer satisfaction and Subscription base?

3. Aims and objectives

These can be summarized as follows:

1- Study orange products according to TTM process. This includes sample of products before and after implementation of TTM.

2- Analyze the impact of implementing the TTM tool on products and services launching process by focusing on the KPIs (Key Performance Indicators) which are mentioned in the theoretical framework.
3- Evaluate the Implementation of TTM to improve the following KPIs.

Achieving the objectives of the research will help Orange in their business goals for:

1- Increase revenue and margin of products across all stages of the product lifecycle by pruning non-profitable products (ARPU, AMPU, and Profit and Sub base).
2- Ensure the quality of products and customer satisfaction.

4. Importance of this Study

Developing new products has become even more critical than in the past as time to market has a greater impact on a company's success. Product development process is now becoming a major priority for companies to improve their market share.

This research is intended to help improve the launching process of products and services by increasing the outcomes, performance as well as help Orange sustain its competitive advantage when they launch the products early.

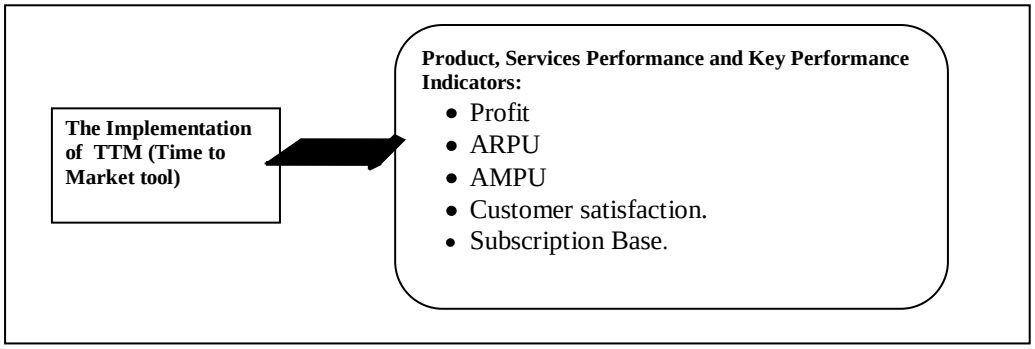
Different Business activities must be seamlessly linked to shareholders, suppliers, customers, and employees in a TTM Process. It must be a process that converts effectively formulated strategies into higher customer value in both product and service by connecting the end customer's needs directly to the development process.

Finally, this study recommends a TTM success matrix and new product development process when the organization implements the TTM tool. The matrix takes into consideration all motioned KPIs and the Critical Success Factors.

5. Theoretical Framework Diagram

For the sake of achieving the objective of this research, a theoretical framework was developed and is illustrated in the following diagram:

Before:



After:

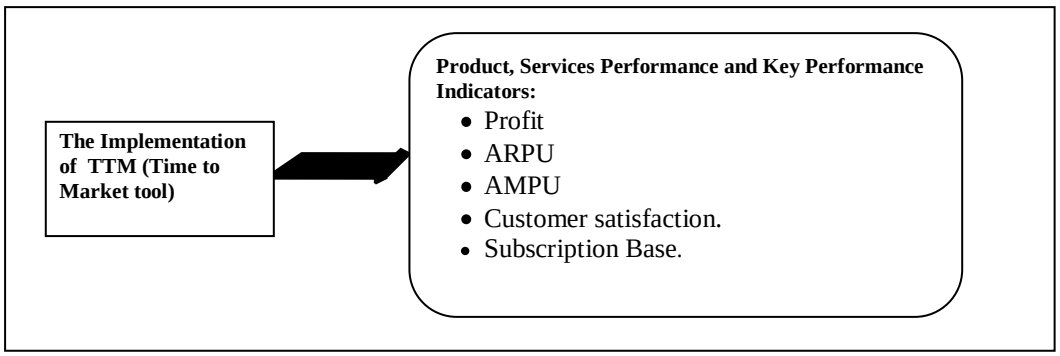


Figure 4: Theoretical Framework diagram

Figure 4 illustrates the relationship between the implementation of TTM tool and the critical success factors or KPIs for the 10 selected products.

The ten selected products were extracted from TTM and other company data bases (i.e. PLP [Product Launching Process]) in order to observe the trends before and after TTM implementation. It was noted that the selected products had reflected the development paths, therefore all interviewees recommended to obtain these most critical products and service.

6. Operational Definitions for Variables

The following definitions are used in orange working environment:

ARPU Average Revenue per User is (Total monthly subscription, airtime revenue and VAS revenue) incurred by all subscribers over a particular time averaged by subscriber base. Calculated as follows: Total service revenues of the month divided by the average subscriber base.(TTM material.2009). **Average revenue per user** (sometimes average revenue per unit) usually abbreviated to **ARPU** is a measure used primarily by consumer communications and networking companies, it is the total revenue divided by the number of subscribers.

AMPU, Minutes Average minutes used per user =total minutes used / no. of users (TTM manual, 2009).

Profit (loss) for Jordan Telecom Group after taking into consideration the subsidiaries net profit (loss), (TTM manual, 2009).

Subscription Base: number of activated customers ((TTM manual,2009).

Customer satisfaction: a business term is a measure of how products and services supplied by a company meet or surpass customer expectation. It is seen as a key performance indicator within business and is part of the four of a Balanced Scorecard (Kessler, 2003).

The dependent and independent variables were measured as foloows:

First, T-1 and T0 (Time to Go) was measured by studying the business cases and related deliverables for sample of products and services in the life cycle time.

Second, T1, T2 and T3 (Time to Market) was measured by studying the (T1, T2, T3) Checklists and related deliverables for sample of products and services in the life cycle time.

Third, Profit, ARPU, AMPU and Subscription base was calculated as defined in orange terminology.

Finally, Customer satisfaction was measured by studying customer satisfaction surveys that was performed by orange for the sample was taken.

7. Hypotheses statements and Testing

The research tests the following hypotheses:

H01: there is no significance evidence to indicate that TTM will enhance the ARPU for selected products.

H02: there is no significance evidence to indicate that TTM will enhance the AMPU for selected products.

H03: there is no significance evidence to indicate that TTM will enhance the Profit for selected products.

H04: there is no significance evidence to indicate that TTM will enhance the Sub base for selected products.

H05: there is no significance evidence to indicate that TTM will enhance the Customer satisfaction for selected products.

Hypotheses Testing

H01: there is no significance evidence to indicate that TTM will enhance the ARPU for selected products.

Wilcoxon signed rank test was used to test this hypothesis, the results are included in the following table. Wilcoxon test between the two measures (before and after adding TTM) for ARPU indicator.

Table 1: ARPU Wilcoxon Test

indicator	**Rank sign**	**Ranks sum**	**Num of ranks**	**Mean ranks**	**Z**	**sig**	**H_0 decision**
ARPU	Neg	39.0	8	4.88	1.17	0.241	Accept
	Pos	16.0	2	8.0			

Table (1) shows the results of Wilcoxon test between the two measures (pre and post implementing TTM) for ARPU indicator. The number of negative ranks (8) indicates that 8 different instruments and Products decreased after implementing the TTM tool while the number of positive ranks(2) indicate that 2 instruments and Products increased after adding the TTM tool.

Clearly 8 out of 10 (80 %) of the instruments and Products had decreased in ARPU indicator. This decrease was not statistically significant as the value of z value has a probability value (sig) of 0.241 which is greater than 0.05 suggesting no effect or importance for adding TTM tool in ARPU indicator.

As a result and based on the probability value mentioned in the above table the null (study) hypothesis is accepted and the alternative one is rejected.

H02: there is no significance evidence to indicate that TTM will enhance the AMPU for selected products.

Wilcoxon signed rank test was used to test this hypothesis, the results are included in the following table. Wilcoxon test between the two measures (before and after adding TTM) for AMPU indicator.

Table 2: AMPU Wilcoxon test

indicator	**Rank sign**	**Ranks sum**	**Num of ranks**	**Mean ranks**	**Z**	**sig**	**H_0 decision**
AMPU	Neg	**0.0**	0	0.00	2.80	0.005	Reject
	Pos	**55.0**	10	5.5			

Table (2) indicates the results of Wilcoxon test between the two measures (before and after implementing TTM) for AMPU indicator. The number of negative ranks (0) indicates that 0 different instruments and Products decreased after implementing the TTM tool while the number of positive ranks (10) indicates that 10 instruments and Products increased after adding the TTM tool.

Clearly 10 out of 10 (100%) of the instruments and Products had increased in AMPU indicator. This increase was statistically significant as the value of z value has a probability value (sig) of 0.005 which is less than 0.05 suggesting that adding TTM tool had an effect or importance for AMPU indicator.

As a result and based on the probability value mentioned in the above table the null (study) hypothesis is rejected and the alternative one is accepted.

H03: there is no significance evidence to indicate that TTM will enhance the Profit for selected products.

Wilcoxon signed rank test was used to test this hypothesis, the results are included in the following table. Wilcoxon test between the two measures (before and after adding TTM) for profit indicator.

Table 3: Profit Wilcoxon test

indicator	**Rank sign**	**Ranks sum**	**Num of ranks**	**Mean ranks**	**Z**	**Sig**	**H_0 decision**
Profit	Neg	**0.0**	0	0.00	2.80	0.005	Reject
	pos	**55.0**	10	5.5			

Table (3) shows the results of Wilcoxon test between the two measures (before and after implementing TTM) for profit indicator. The number of negative ranks (0) indicates

that 0 different instruments and Products decreased after implementing the TTM tool while the number of positive ranks (10) indicates that 10 instruments and Products increased after adding the TTM tool. Clearly 10 out of 10 (100%) of the instruments and Products had increased in profit indicator.

This increase was statistically significant as the value of z value has a probability value (sig) of 0.005 which is less than 0.05 suggesting that adding TTM tool had an effect or importance for profit indicator.

As a result and based on the probability value mentioned in the above table the null (study) hypothesis is rejected and the alternative one is accepted.

H04: there is no significance evidence to indicate that TTM will enhance the Sub base for selected products.

Wilcoxon signed rank test was used to test this hypothesis, the results are included in the following table. Wilcoxon test between the two measures (before and after adding TTM) for sub base indicator.

Table 4: Sub base Wilcoxon test

indicator	**Rank sign**	**Ranks sum**	**Num of ranks**	**Mean ranks**	**Z**	**Sig**	**H_0 decision**
Sub base	Neg	**0.0**	0	0.00	2.66	0.008	Reject
	pos	**45.0**	9	4.5			

Table (4) shows the results of Wilcoxon test between the two measures (before and after implementing TTM) for sub base indicator. The number of negative ranks (0) indicates that 0 different instruments and Products decreased after implementing the TTM tool while the number of positive ranks(9) indicate that 9 instruments and Products increased after adding the TTM tool.

Clearly 9 out of 10 (90%) of the instruments and Products had increased in sub base indicator. This increase was statistically significant as the value of z value has a probability value (sig) of 0.008 which is less than 0.05 suggesting that adding TTM tool had an effect or importance for sub base indicator.

As a result and based on the probability value mentioned in the above table the null (study) hypothesis is rejected and the alternative one is accepted

H05: there is no significance evidence to indicate that TTM will enhance the Customer satisfaction for selected products.

Wilcoxon signed rank test was used to test this hypothesis, the results are included in the following table. Wilcoxon test between the two measures (before and after adding TTM) for customer satisfaction indicator.

Table 5: Customer Satisfaction Wilcoxon test

indicator	**Rank sign**	**Ranks sum**	**Num of ranks**	**Mean ranks**	**Z**	**Sig**	**H_0 decision**
Customer satisfaction	Neg	**0.0**	0	0.00	2.44	0.014	Reject
	pos	**21.0**	6	3.5			

Table (5) shows the results of Wilcoxon test between the two measures (before and after implementing TTM) for customer satisfaction indicator. The number of negative ranks (0) indicates that 0 different instruments and Products decreased after implementing the TTM tool while the number of positive ranks(6) indicate that 6 instruments and Products increased after adding the TTM tool.

Clearly 6out of 10 (60%) of the instruments and Products had increased in customer satisfaction indicator. This increase was statistically significant as the value of z value has a probability value (sig) of 0.014 which is less than 0.05 suggesting that adding TTM tool had an effect or importance for customer satisfaction indicator.

As a result and based on the probability value mentioned in the above table the null (study) hypothesis is rejected and the alternative one is accepted

Statistical Result Analysis

Statistically, above KPIs were tested by Wilcoxon test, it was using because the ten products selected had very various values and there is no normal distribution ones. Each KPI was tested by null hypothesis as was mentioned in the previous pages. It was noticed that all KPIs were improved after implanting the TTM tool except the ARPU ,and the justification is that orange was increased the number of customers and decreased the profit margin per each customer or user.

The followings five figures illustrate the CSF measurements trends before and after implementation of TTM, it was noticed that all CSF was improved after TTM implementation:

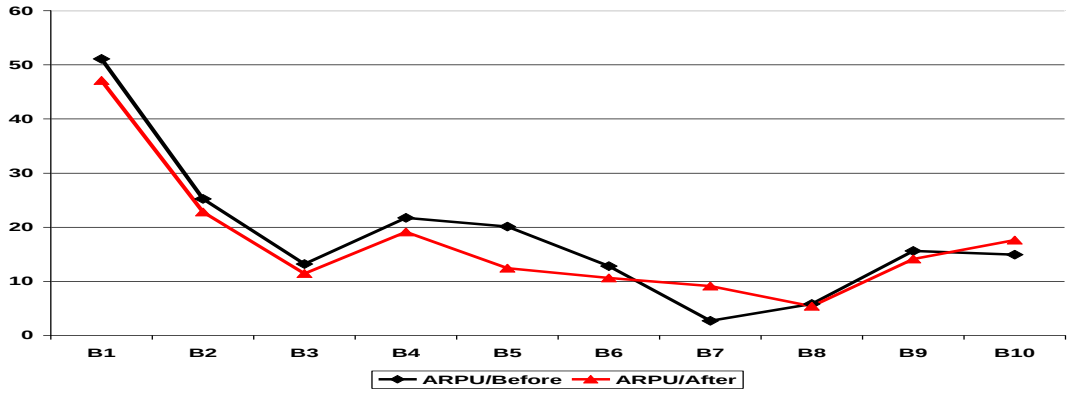


Figure 5: ARPU trend Pre and Post Implementation of TTM

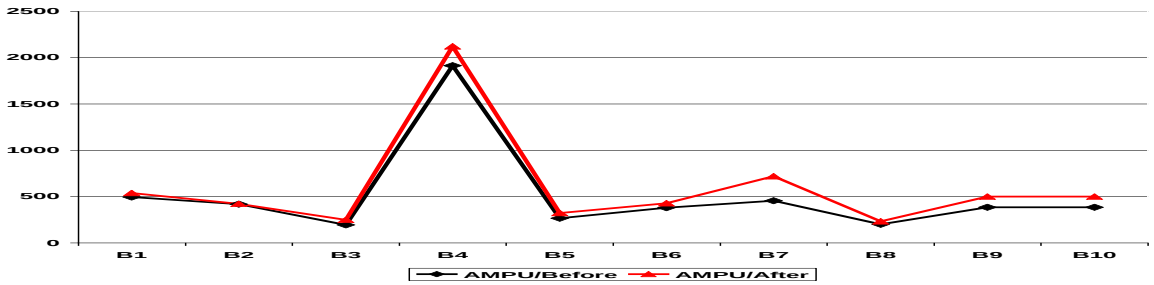


Figure 6: AMPU trend Pre & Post Implementation of TTM

Figure 7: Profit trend Pre & Post Implementation of TTM

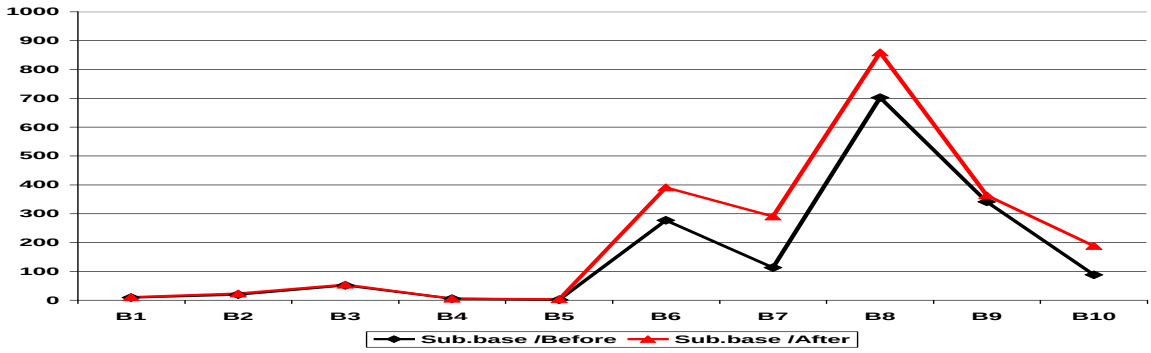


Figure 8: Sub Base trend Pre & Post Implementation of TTM

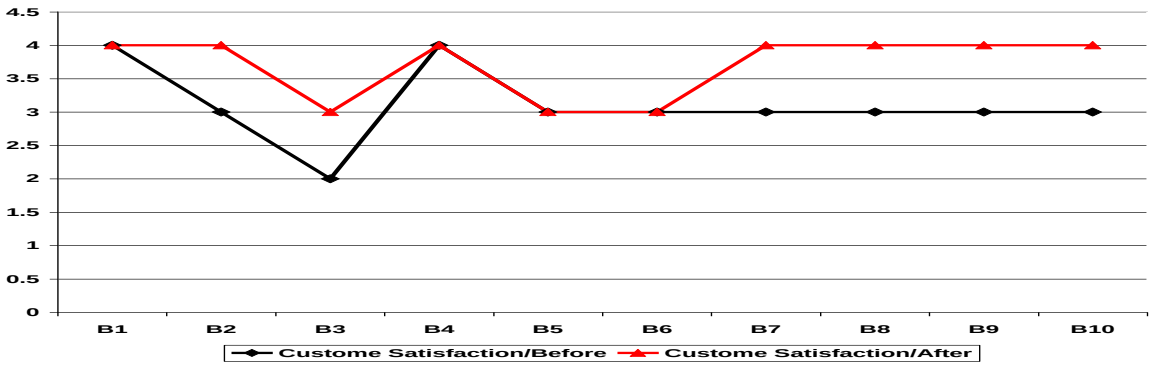


Figure 9: CS trend Pre & Post implementation of TTM

8. Discussion, Conclusions and recommendations

Before implementing the TTM process, Orange was used the PLP Process. PLP have some problems which are: Different from time to market, difficulties in determining if the product is ready, the sales people (and/or channel) can't sell it, difficulties in supporting function and delay in product launching process. Consequently Orange decided the change to the TTM in order to solve existing problems and to achieve the following benefits:

1- Improve Product messaging by improving products features and benefits, speeds, solving problems, improving time to reach and enhancing flexibility for change.

2- Positioning vs. other company products by: finding the right product for the buyer, reducing sales/prospect confusion, and keeping it simple at the first glance.

3- Using the geek-sheet where appropriate for positioning vs. other vendors, typically speeding and feeding is unique and relevant about product and Company/financial data which is also important.

After comparing the former PLP Process with TTM, the following points were noticed:

1- The PLP process did not consider the product evaluation after launching the product.
2- The TTM implement the product performance through phases T4, T5 and T6.
3- The PLP process is complex and wastes more time than TTM.
4- The PLP is not effective and efficient like the TTM tool.
5- The TTM has more control on the launching process through the TTM milestones.

The research questions of this study are answered as follows:

1. What are the KPIs in products launching processes?

The KPIs and Critical success factors for the launching process were measured and analyzed according to the statistical test.

2. What is the role of TTM in product evaluation process?

The Role of TTM in product evolution process was found to clarify the contribution role of TTM to developing and enhancing the product evaluation projects.

3. How does the TTM influence the product launching process?

This question was answered through collecting and analyzing the KPIs before and after implementation of the TTM, and noticing the trends.

4. How does the TTM view the products critical success factors and what are the major ways to include in marketing tools?

All critical factors were reported in the interviews with Orange TTM professionals.

5. How could orange improve the quality and revenue of their launching process? and in particular, which areas should be given extra attention in future product development tools?

The answer to this question was obtained through the analyses the KPIs measurements that were collected from TTM data base.

6. Does the TTM affect products profit, ARPU, AMPU, customer satisfaction and Subscription base?

The summarized answers are as follows:

We can compare between tow processes according to their KPIs as in the following:

1. AMPU (average minutes per user) was improved after implementing the TTM for the selected 10 products.

2. Profit was improved after implementing the TTM for the selected 10 products.

3. Sub. Base was improved after implementing the TTM for the selected 10 products

4. Customer satisfaction was improved after implementing the TTM for the selected 10 products, excluding the ARPU which was crashed, and the justification is that the company reduced the cost per user; this is one of orange marketing strategies which were used to scan the market by shrinking the pricing cost per user.

As a final point, TTM improves all mentioned KPIs and launching process, and connects the end customer's needs directly to the development process. This study recommends a TTM success matrix and new product development process when the organization implements the TTM tool. The matrix takes into consideration all motioned KPIs and Critical Success Factors.

8.1 Conclusion

The general conclusion of this study is not very different from general findings in the literature. Implementing new marketing tool such as TTM are full of challenges and the methods or best practices are still being developed. It can also be concluded that implementing TTM enhanced the products critical success factors or KPIs; consequently this study brings forwards the same CSF as previous research. The conclusions are as follows:

A- Information systems like TTM are very challenging. It was noted that TTM function at Orange is still quite new and the processes and methods are not fully developed. Furthermore, the organization does not fully utilize the research and literature on how Information System (IS) tools are best conducted although it is readily available and that such guidance could be consulted at a greater extent instead of putting in much time on testing and trying different methods.

B- Situations where end user representatives can try out the new application should be created so that possible superior ways of working, that the application allows, are tried out. In this way the quality of the business process could be changed and improved. The Process or changing the process to fit the system is different.

C- Only such information system that support the core business and are thought to be strategically important in product launching process should be customized. This research furthermore shows that the project management in general was thought to be self–evidently important by information management professionals.

D- A thorough enough planning phase is critical for new marketing tool success. Every possible impact that the system could have on the whole organization should be analyzed as part of the planning. It is clear that there are far more disadvantages of optimistic planning than there are advantages and this creates frustration among the end users.

E- Evaluation is important but concentrate measures and methods for evaluation are needed. According to the general literature in the field of IS implementation, the first step would be to create a mutual understanding of what kinds of investments information system are. The interviewees expressed that TTM Professionals would rather talk about a big information system investment as strategic investment and it has been noted that promising financial results (ARPU, AMPU, Profit, Sub.base and Customer satisfaction) is often to promise too much.

F- Training and communication are a critical success factors in IS tools and is seen as a vital part of organizational business excellence. This study concludes that the most important thing is yet again to understand where the end users are coming from in order to be able to successfully communicate and train them about the product performance. It was frequently highlighted by the interviewees that the message should always be customized depending on the receipient and that the communication should happen in a professional manner.

8.2 Recommendations

Recommendations that are given to Orange on the bases of the literature review and the findings of this research are listed here below. The reader must be informed that these recommendations are given specifically on the basis of the material collected for this research. Consequently, the recommendations here should in some cases not be taken as improvement suggestions but rather as reminders of the importance to put emphasis on the specific issue.

I. Improved Sharing of lessons-learned.

The literature review shows that the sharing of lessons learned is important. The interviewees expressed that there might be a better procedure within Orange for sharing lessons learned with other employees in the organization. This would benefit Orange in creating an atmosphere that would encourage the sharing of both positive and negative experiences in a greater extent. It is recommended that the first PDM tool (TTM) is thoroughly enough evaluated before launching orange products and services.

II. Attention should be paid to how the application is selected.

The literature review demonstrated that it is crucial to select such application or tools that beneficial to the the company. The interviews showed that there are no common guidelines for the process of deciding about the application in Orange. The recommendation is hence to give some attention to the processes of selecting the application.

III. Requirement collection methods need to be developed

The literature review shows that it is crucial to design a system to users needs and expectations therefore the work with collecting the requirements is critical. Interviews show that knowledge about how to execute the requirements collection need to be increased in Orange. Clear guidelines and best practices need to be created. It is also recommended that requirements get frozen at some point. Quality work in Orange already focuses on this part.

IV. Methods for monitoring projects' progress need to be improved.

The literature review shows that close monitoring of tool and project progress is critical for success. The experience of the PDM and TTM is that this monitoring work should be improved. It is also recommended to improve the monitoring part in the TTM tool.

V. Project internal processes in TTM need to be improved.

Research shows that good project management and in conjunction with having clear project internal process and division of responsibilities is vital for project success. The interviews show that lack of clear project internal process can be devastating for a project and the future of a marketing tool like TTM would be important to decide about these processes already in the planning phase of the project or tool. This recommendation especially concerns the future marketing and PDM tool.

VI. Work related to the data migration should be given more attention.

The interviewees expressed that not all Orange products and services were inserted into the TTM tool. The recommendation is therefore related to the need for the data migration to the TTM for all products and services and with the allocation of other needed resources especially if the quality of the data in the system is important.

VII. The evaluation of Tool success should be agreed upon in the planning phase.

This research has shown that the cost saving can be achieved through the introduction of some information system tools but it is known that the savings are difficult to measure and evaluate. Therefore, operational efficiency and similar improvements should be targeted. In addition, if an information system is thought to be a strategic investment it should be regarded primarily as such. This is in line with the findings from the interviews. Financial benefits should only be promised because this might only hurt reputation. Financial benefits should only be promised if ways of how to measure them have been carefully agreed upon before launching new products and services. Overall it is recommended that the attitude that "it is simply impossible to evaluate the TTM and Products launching" are altered. The data in the system is important.

VIII. Projects with too little resources should not be launched.

Previous researches suggest that any IS tool should be carefully analyzed before launching which also means that the size of the project should be known. Therefore, a suitable amount of resources should be assigned to the project and if there are not enough resources the product project should not be launched. Such a mistake should not be repeated.

IX. More weight on planning phase.

Previous research lists planning of the project among the most important critical success factors. As noted in literature review several projects have failed in some areas because there has not be thorough enough planning of the project internal ways of working and for the lack of division of responsibility. The interviews further expressed that the customer would rather wait a little longer for some application instead of getting a badly and hastily implemented one. Hence, the recommendation is to put more emphasis on the importance of the planning phase.

X. The organization of all information systems need to be improved.

The Literature review shows that it is important to manage all information system as a whole. The connection between information systems (TTM milestones) is of great importance. Interviews and data gathered show that there is a need for improvements in managing the integration of systems and for more holistic focus on the application form. This need is already somewhat answered to as there is an integration manager assigned in Orange.

XI. Increased usage of process models.

The Literature review shows that it is utterly important for the TTM experiences to be familiar with the business divisions and products KPIs. Hence, the idea presented in the interviews that the process model could be used also inside Organization is given as a recommendation here. The process models could be used for better understanding the product needs and as a basis for functional specification. In this way the process models would also be used in greater extent.

XII. Readiness to work over team boundaries.

It was noted in the interviews that the organization should be able to arrange a temporary set up on the way to handle such issues that involve expertise from different functions and items. The first step towards this would be more internal knowledge sharing about the different functions.

XIII. TTM is a useful tool to enhance the Quality.

A tacit assumption of many is that TTM is improved (shortened) by skipping steps of the development process, thus compromising quality. Especially for those who use highly structured development processes, such as Stage-Gate or Six Sigma, product development is often viewed as a sequence of steps to be followed. Skipping a step, due to time pressure, for example, not only undercuts quality but can lengthen development if they must complete or repeat the step later. Following this view, TTM is usually improved by following all of the prescribed steps. Orange is supposed to practice TTM improvement for a variety of reasons. Some variations of TTM are:

First: Pure speed, that is, bringing the product to market as quickly as possible. This is valuable in fast-moving industries, but it is not always the best objective.

Second: More predictable schedules. Rather than reaching the market as soon as possible, delivering on schedule, for example to have the new product available for a trade show, can be more valuable. In addition to processes such as Stage-Gate or Six Sigma, project risk management is an effective tool here.

Third: Minimizing resources, especially labor. Many managers figure that the shorter the project the less it will cost, so they attempt to use TTM as a means of cutting expenses. Unfortunately, a primary means of reducing TTM is to staff the project more heavily, so a faster project may actually be more expensive.

Fourth: flexibility to make changes. Product innovation is intimately tied to change, and often the need for change appears midstream in a project. Consequently, the ability to make changes during development without being too disruptive can be valuable. For example, one's goal could be to satisfy customers, which could be achieved by adjusting product requirements during development in response to customer feedback. Then TTM could be measured from the last change in requirements until the product is delivered.

References:

Box, J. (1983), Extending product lifetime: Prospects and opportunities, European Journal of Marketing, vol 17, 1983, pp 34–49.

Dhalla, N.K., Yuspeh, S. (1997). Critical Chain, North River Press, USA.

Hari, M and Weiss, A. (2003). Analysis of Risk and Time to Market during the Conceptual Design of New Systems, Proceeding of the international conference on engineering design, ICED 03 Stockholm August 19-21, 2003.

Kessler, Sheila. (2003). Customer satisfaction toolkit for ISO 9001:2000. Milwaukee, Wis.: ASQ Quality Press.

Rey, F.J., Martín-Gil, J and Velasco, E. (2004) Life Cycle Assessment and external environmental cost analysis of heat pumps, Environmental Engineering Science, vol. 21, September 2004, pp 591–605.

Smith, Preston G. and Merritt, Guy M. (2002.), Proactive Risk Management, Productivity Press.

Smith, Preston G. and Reinertsen, Donald G. (1998). Developing Products in Half the Time, 2nd Edition, John Wiley and Sons, New York.

TTM Material in orange. (2009).