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EFFECT OF MARKET DYNAMICS ON WAREHOUSE MANAGEMENT IN SAUDI ARABIA: A CASE OF UNIVERSAL MOTORS AGENCIES (UMA)

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ABSTRACT

The evolution of the market has dynamicity influences the finances and operations of the company. Thus, warehouse management plays a key role in determining the performance of the organization. The aim of this study is to test the effect of market dynamics on the warehouse management. The research used quantitative methodology whereby 30 employees of Universal Motors Agencies (UMA) in Jeddah, KSA were participated in the questionnaire survey. This study used correlation analysis to identify the presence of a relationship between the market dynamics and the complexity of the decision, the sophistication of the control, and the planning extensiveness. Besides that, this study also explores the presence of the causality between the market dynamics as independent variable and the complexity of the decision, the sophistication of the control, and the extensiveness of planning. The findings showed that market dynamics do not have a significant effect associated with that of warehouse management. There is a positive strong correlation between the market dynamics and the decision rule complexity (0.772) and a medium negative correlation between the market dynamics and control sophistication (-0.407). Despite the presence of the significant correlation, the paper does not find a significant impact of the market dynamics on the Decision Complexity, the Control Sophistication, and Extensive Planning. The results imply that there is a correlation but no causality, which implies the presence of other variables that are correlated with these variables and cause the change in the dependent variables.

INTRODUCTION

Warehouse management is crucial for efficient performance in the field of business. Warehouse Management System (WMS) specializes in shipping orders or optimizing picking schedules and advising on inventory

replenishment [1]. This has been only possible due to the development of technology in the warehouse and has monitored various operations thereby. Warehouse management would revolve around inspecting the quality, enhancing the packing and labels, putting them under proper storage areas and then sending them to the appropriate buyer, consumer or customer by shipping. It is mostly related to operational activities of the organization.

WMS makes administration work easier by minimizing the errors that could occur if done manually. "The Warehouse Management System (WMS) market is projected to reach USD 3.23 Billion by 2023, at a CAGR of 14.1% between 2017 and 2023." [2]. The market has increased significantly for the warehouse management and this forecasted rate is set to bring about efficient performance in the warehouse management. According to Min (2007): "Warehouse management system (WMS) that is designed to speed up order turnaround time, improve inventory accuracy, provide instant order status information, manage warehouse space and enhance labour productivity. It has become an integral part of warehouse operations and the subsequent supply chain processes." [3]. It becomes easier to keep the records updated of how much the stock was inbounded and how much was out-bounded.

Market dynamics brings about improved performance in the organization as well as the economy on a whole [4]. It is considered as a driver for growth and improved performance. It has the potential to change the activities of the organization with respect to the changes in the market. Van Assen (2005) confirmed that the market dynamics is one of the main drivers of the warehouse management [5]. Besides that, Faber (2015) claims that the market dynamics influence the warehouse management structure through the predictability of the work to be done [6].

A recent analysis research about the market dynamics in relation to warehouse management has declared that the WMS market "went through a significant shift this year." The report describes how the current warehouse management techniques have led to historical performances by the market due to the changes in the transportation systems, technological systems. The comprehensive study has clearly shown how the efficiency of a warehouse system proportionate the growth of economy involving the forecasts, industry analysis, revenue segments, applicants and the range of customers [7]. De Koster and Balk (2008) have found there is a positive relationship between warehouse management and market dynamics thus confirming their interconnection that brings about improved performance of the warehouse [8]. The increasing consciousness about the WMS has increased the economic value of the warehouse systems.

There are few of the challenges that can be listed namely inventory location, automation processes and warehouse layout. These challenges bring a lot of ordeal among the warehouse managers resulting in loss of time and money. The warehouse layout method will make optimizing the items and storage systems easier and minimize the chances of consuming a lot of time finding the exact locations of specific storage systems [9]. Without having proper customer services, the business can never go really far with the success.

Maintaining a good business profile and running the customer benefiting processes can increase the profits as well as the reputation. The change in market plays an important role in determining warehouse management.

The warehouse management should be looked forward to keeping all the drivers and factors in mind. It is the responsibility of all the organizations to ensure the warehouse management system keeping up with the change in the market according to the needs and requirements of the customers and evolving technology which is all parts of globalization and developing economies all around the world. Therefore, this study identifies the effect of market dynamics on the warehouse management.

METHODOLOGY

The research aims on studying the relationship between the warehouse management and market dynamics. This study is a quantitative approach, where the data are obtained through online survey and then analyses using SPSS version 21 statistical software system.

Overview of Research Methodology Types

There are three types of research methodologies namely qualitative, quantitative and mixed methods. "Qualitative is an intensive, holistic description and analysis of a single entity, phenomenon or social unit. Case studies are particularistic, descriptive and heuristic and rely on heavily on inductive reasoning in handling multiple data resources." [10]. This type of research exemplifies a specific situation with more details using research tools such as interviews, surveys and observations.

Quantitative method involves quantifiable data, (i.e.) numerical and statistical explanations. It should have more than one variable to quantify the research problem in order to generate numerical data that can be transformed into useable statistics. Mixed method of research contains both qualitative and quantitative methods of research.

Data Collection Tools

In this study, online questionnaire survey used as the data collection tool to gather the data.

Primary Data

The primary data is the obtained information from the questionnaire survey among the employees of Universal Motors Agencies (UMA) in Jeddah, KSA.

Secondary Data

The secondary data used in this study is based on the previous work done such as published article and journal in order to serve as a reference and guideline to design the questionnaire.

Sample Size

The sample in this study is the 30 employees of Universal Motors Agencies (UMA) in Jeddah, KSA.

Data Collection

The data was collected through the online survey developed using Google forms which distributed to the employees through email and instant messaging applications.

Data Assessment

The data was assessed and analysed by using SPSS version 21 statistical software system. The descriptive information is used to study the relationship between warehouse management and market dynamics of (UMA).

Hypothesis

The research investigates three different hypotheses:

Hypothesis 1: There is a positive effect of Market Dynamics on Decision Rules Complexity.

Hypothesis 2: There is a positive effect of Market Dynamics on Control Sophistication.

Hypothesis 3: There is a positive effect of Market Dynamics on Planning Extensive.

The developed research model is shown in Figure 1, which demonstrates the relationship of the hypotheses.

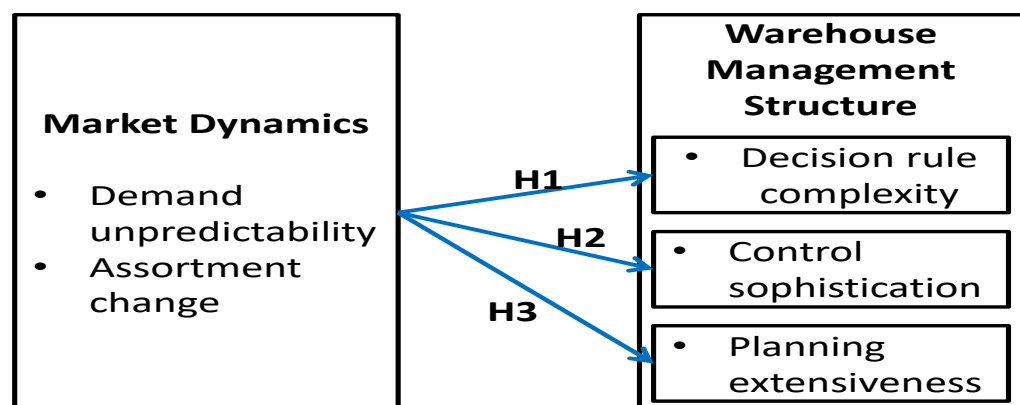


Figure 1. Model Of Research

RESULT AND DISCUSSION

RELIABILITY AND VALIDITY ANALYSIS

Reliability Analysis

Reliability refers to the consistency of the respondents' answers. Cronbach's alpha and split - half are used through internal consistency to test the reliability of the study [11]. Internal consistency reliability involves correlating responses to each question to the others in the questionnaires [12].

Cronbach's Alpha

Alpha coefficient is ranges in value from 0 to 1. It was indicated that 0.65 is an acceptable reliability coefficient [13]. Table 1 tabulates that the Decision rule complexity and Control sophistication have an acceptable level of reliability (Cronbach's Alpha > 0.65), while Market Dynamics has a poor reliability value (Cronbach's Alpha < 0.65).

Table 1. Reliability Test For “The Effect Of Market Dynamics On Warehouse Structure”

Variable	Cronbach's Alpha
Market Dynamics (MD)	.419
Decision rule complexity (DRC)	.805
Control Sophistication (CS)	.790

Correlation Matrix

The correlation matrix is a matrix giving the correlations between all pairs of data sets. It provides the Pearson's Correlation Coefficient between variables under study and each other, to be able to evaluate the relationship between those variables. Pearson's correlation is used to find a correlation between at least two variables. The value for a Pearson's correlation can fall between 0.00 (no correlation) and 1.00 (perfect correlation).

Results shown in Table 2 identify that the correlations between the variable “Market Dynamics and Decision Ruled Complexity “are .772. These values refer to positive. The correlations between the variable “Market Dynamics and Control Sophistication”, “Decision Rules Complexity and Control sophistication” are -.407, -.283 respectively. These values refer to negative.

Table 2. Correlation Matrix (N=30)

	Market Dynamics	Planning Extensiveness	Decision Rules Complexity	Control Sophistication
Market Dynamics				
Pearson Correlation	1	AN	.772**	-.407*
Sig. (2-tailed)			.000	.026

Planning Extensiveness				
Pearson Correlation	AN	AN	AN	AN
Sig. (2-tailed)				
Decision Rules				
Pearson Correlation	.772**	AN	1	-.283
Sig. (2-tailed)	.000			.130
Control Sophistication				
Pearson Correlation	-.407*	AN	-.283	1
Sig. (2-tailed)	.026		.130	

Regression Analysis

Regression analysis is a statistical process for estimating the relationships among variables. The estimation target is a function of the independent variables called the regression function. Regression analysis is widely used for prediction and forecasting as well as understands relationships between the independent variables and dependent variable. Through this section, a regression analysis will be presented for the relationships among variables under study according to the predefined model relations.

Simple Linear Regression Analysis For Market Dynamics And Decision Rules Complexity

Hypothesis 1: There is a positive effect of Market Dynamics on Decision Rules Complexity: A simple linear model is fitted between Market Dynamics, as an independent variable, and Decision Rule Complexity as a dependent variable. The results were shown in Table 3.

It was found that the model coefficient of determination (R Square) equals 59.6%. This means that the model explains 59.65% of the variance in Decision Rule Complexity, or that 59.6% of the variation in the latter variable can be explained due to the variation in Market dynamics. Also, the overall statistical significance of the model reveals that the model is significant with p-value=0.42283285726732 (P-Value > 0.05). According to these results, data supports H1, which means accepting the null hypothesis (H1,0) and reject the counter null hypothesis (H1,a), which implies that the market dynamics do not have a significant impact on the decision rule complexity.

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.772 ^a	.596	.581	.42283285726732

a. Dependent Variable: Decision Rules Complexity

b. Predictors: (Constant), Market Dynamics

Simple Linear Regression Analysis for Market Dynamics And Control Sophistication

Hypothesis 2: There is a positive effect of Market Dynamics on Control Sophistication: A simple linear model is fitted between Market Dynamics, as an independent variable, and Control sophistication as a dependent variable. The results were shown in Table 4.

It was found that the model coefficient of determination (R Square) equals 40.7%. This means that the model explains 40.7% of the variation of the Control Sophistication variable, or that 40.7% of the variation in the latter variable can be explained due to the variation in Market dynamics. Also, the overall statistical significance of the model reveals that the model is significant with $p\text{-value}=0.2428$ ($P\text{-Value} > 0.05$). According to these results, data supports H2, which means accepting the null hypothesis ($H_{2,0}$) and reject the counter null hypothesis ($H_{2,a}$), which implies that the market dynamics do not have a significant impact on the Control Sophistication.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.407 ^a	.166	.136	.2428

a. Dependent Variable: Control Sophistication

b. Predictors: (Constant), Market Dynamics

Simple Linear Regression Analysis for Market Dynamics Over Planning Extensive

Hypothesis 3: There is a positive effect of Market Dynamics on Planning Extensive: A simple linear model is fitted between Market Dynamics, as an independent variable, and planning extensive as a dependent variable. The results were shown in Table 5.

It was found that the model coefficient of determination (R Square) equals 5.8%. This means that the model explains 5.8% of the variance in Planning extensive, or that 5.8% of the variation in the latter variable can be explained due to the variation in Market dynamics. Also, the overall statistical signification of the model reveals that the model is significance with $P\text{-value}=0.402$ ($P\text{-value} > 0.05$). According to these results, data supports H3, which means accepting the null hypothesis ($H_{3,0}$) and reject the counter null hypothesis ($H_{3,a}$), which implies that the market dynamics do not have a significant impact on the Planning Extensive.

Table 5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.241 ^a	.058	.024	.402

a. Dependent Variable: Planning Extensiveness

b. Predictors: (Constant), Market Dynamics

CONCLUSION

The results of this research showed that all hypotheses were rejected, which means that market dynamics does not have a significant effect on the warehouse management. Even though, the market dynamics and the warehouse management variables are significantly correlated. This does not imply necessarily the presence of the causality effect, which the finding of this paper confirms. The research does not find a significant impact of market dynamics on the control sophistication or on the decision rules complexity. These findings mean that the planning and controlling within the industry in Saudi Arabia do not depend on market dynamics. A possible explanation is the presences of some other industry-specific factors that have cause the control and the planning change.

REFERENCES

- IQMS 2016. What is a Warehouse Management System (WMS), Retrieved November 13, 2018 from <https://erpblog.iqms.com/what-is-warehouse-management-system/>
- Dublin 2017 Research and Markets - Warehouse Management System Market 2017 - Global Forecast to 2023: Major Market Players are SAP SE, Manhattan Associates and Oracle. Cision PR Newswire. Retrieved November 11, 2018 from: <https://www.prnewswire.com/news-releases/research-and-markets---warehouse-management-system-market-2017---global-forecast-to-2023-major-market-players-are-sap-se-manhattan-associates-and-oracle-300472238.html>
- Min, H. 2007. The Applications of Warehouse Management Systems: An Exploratory Study. *International Journal of Logistics Research and Applications*, 9, 2, 111-126, DOI= 10.1080/13675560600661870
- Seo, Y. W. and Chae, S. W. 2016. Market dynamics and Innovation Management on Performance in SMEs: Multi-Agent Simulation Approach. *Procedia Computer Science*, 91, 707-714.
- Van Assen, M.F. 2005. Empirical studies in discrete parts manufacturing management. Published PhD thesis, RSM Erasmus University, Rotterdam.
- Faber N. 2015. Structuring Warehouse Management: Exploring the Fit Between Warehouse Characteristics and Warehouse Planning and Control Structure, and its Effect on Warehouse Performance. Erasmus University Rotterdam. Thesis Study.
- ARC. 2017. New ARC Research Report Explores Market Dynamics for Warehouse Management Systems. Retrieved November 11, 2018

- from: <https://www.arcweb.com/press/new-arc-research-report-explores-market-dynamics-warehouse-management-systems-0>
- De Koster, M. B. M. and Balk, B. M. 2008. Benchmarking and Monitoring International Warehouse Operations in Europe. *Production and Operations Management*, 17, 2, 175-183.
- Dijkstra, A. S. and Roodbergen, K. J. 2017. Exact route-length formulas and a storage location assignment heuristic for picker-to-parts warehouses. *Transportation Research Part E*, 102, 38-59.
- Merriam, Sharan B. 1998. *Qualitative Research and Case Study Applications in Education*, Jossey-Bass: San Francisco
- Treiman, D. J. 2009. *Quantitative Data Analysis: Doing Social Research to Test Ideas*. San Francisco, CA: Jossey-Bass.
- Saunders, M., Lewis, P. and Thornhill, A., 2009. *Research Methods for Business Students*, 5thEd. Harlow: Pearson Education.
- Nunnally, J. C. 1978. *Psychometric theory* (2nd Ed.). New York: McGraw-Hill.