

The role of logistics service quality dimensions on marketing flexibility: An empirical study in Dairy factories in Duhok governorate

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ABSTRACT

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The aim of this study is to determine the role of logistics service quality (LSQ) in its functional and operational dimensions on marketing flexibility in diary factories working in Duhok governorate/Kurdistan region. The research problem arises through the research question which states: Do logistics service quality dimensions contribute in achieving marketing flexibility? The primary data used in this study was attained from a structured questionnaire distributed to managers in examined factories. 34 valid questionnaires have been collected and analyzed. The findings of the research show that there was a significant correlation and effect between logistics service quality in its functional and operational dimensions on marketing flexibility. The research presented a set of recommendations, the most important of which are: focusing and attention to all dimensions of the (LSQ) in the researched factories, especially the functional dimension of its greater contribution in achieving marketing flexibility.

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1. Introduction

Change is an integral part of the nature and it is the only thing that has remained constant throughout the evolutionary periods of humans, and this fact has become more evident in the present era, as change controls all industrial and service sectors. This has got more intense because of globalization, rapid technology developments, and work environment changes. This lead the modern organizations need to depend on the new scientific methods in production, marketing and logistics fields in order to be able to espouse with new and emerging challenges in different aspects. Many organizations tried to embrace marketing flexibility to deal with all these changes and existential threats in the short and long term (Shalender & Singh, 2015; Gilbert, 1999). On the other hand, some organizations concentrated on the concept of logistics' service quality dimensions after the results of many studies proved that the concept directly affects the marketing mix. Many studies have confirmed the existence of a correlation and effect of logistical activities on the marketing mix. Several other studies have also shown the role and importance of logistics service quality in attaining different benefits for an organization, such as competitive advantage and customer's satisfaction and loyalty (Meidutė-Kavaliauskienė et al., 2014).

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1.1. Research problem

Local industries in Iraq, including the Kurdistan Region have faced numerous problems and difficulties. The most noticeable of these problems are the inability of the factories to market their products due to weak government support and the adoption of an open market policy that filled the market with foreign products that affected customers' orientation with a preference for foreign products (Al-Taei & Al-Ameedi, 2018; Beraha et al., 2018; Goyal & Netessine, 2011). This status became clear to the researchers more obviously through the field visits they made to dairy factories in Dohuk Governorate in order to get to know their problems accurately. Hence, the following questions must be addressed,

1. Are the logistics service quality dimensions available in the researched factories?
2. Is marketing flexibility available in the research factories?
3. Do the logistics service quality dimensions contribute in achieving marketing flexibility in the research factories?

1.2. Significance of the study

The current study derives its importance through its attempt to emphasize on the role that the logistics service quality dimensions can play in attaining marketing flexibility, and this importance is represented by the following:

1. Presenting a theoretical framework on the logistics service quality dimensions and marketing flexibility concepts in the researched factories.
2. Warning the researched factories of the importance of the logistics service quality dimensions and its contribution to achieving the marketing flexibility to face the foreign product and to market their products efficiently.

1.4. Research objectives

In light of its problem and importance, the study seeks to achieve the following objectives:

1. Diagnosing logistics service quality dimensions and marketing flexibility dimensions in the research factories and trying to evaluate their reality with regard to the current research interests to determine means of development and upgrading it to enhance their position.
2. Testing the nature of the correlation and impact relationships between Diagnosing logistics service quality dimensions and marketing flexibility in the research factories.

1.5. Research model

The study will adopt the proposed research model (Fig. 1), which indicates the existence of correlation and impact between logistics service quality dimensions as an independent variable (interpreter) and marketing flexibility as a dependent variable (respondent).

1.6. Research hypotheses

H₁: There is a significant correlation between logistics service quality dimensions and marketing flexibility:

H_{1a}: There is a significant correlation between functional logistics service quality dimensions and marketing flexibility.

H_{1b}: There is a significant correlation between operational logistics service quality dimensions and marketing flexibility.

H₂: There is a significant impact of logistics service quality dimensions on marketing flexibility.

H_{2a}: There is a significant impact of functional logistics service quality dimensions on marketing flexibility.

H_{2b}: There is a significant impact of operational logistics service quality dimensions on marketing flexibility.

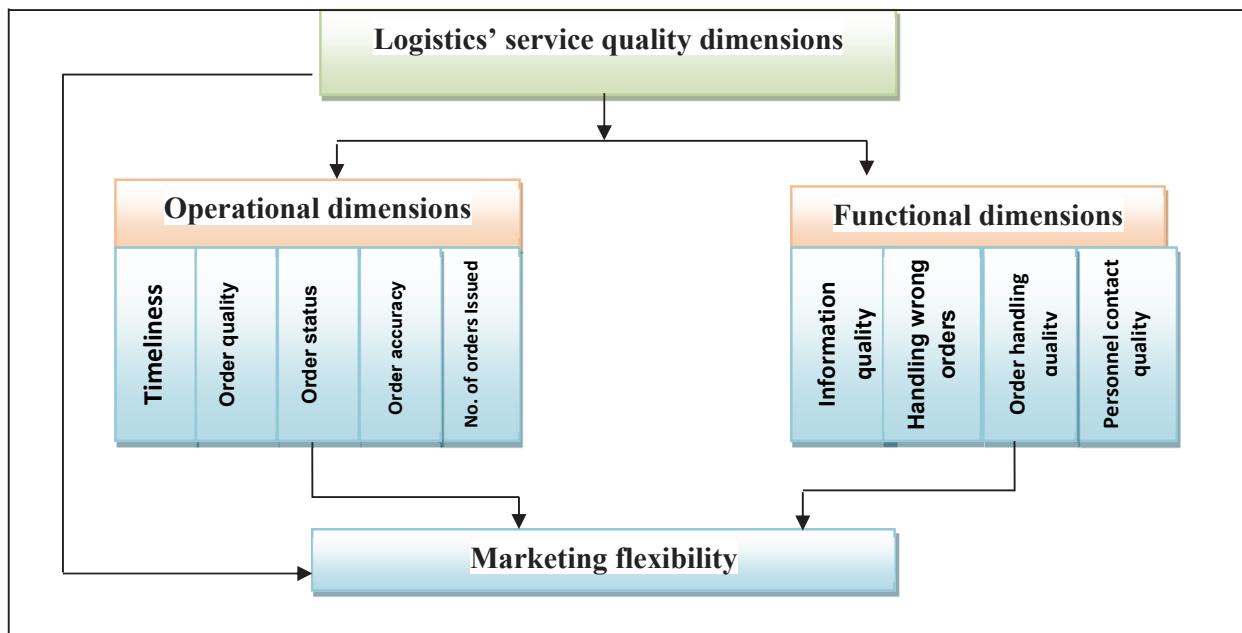


Fig. 1. The proposed study

1.7. Data collection method

The study was using survey method with distributed scales questionnaire to the studied factories in Duhok governorate. The questionnaire included three parts. The first part concerns information of the questionnaires' respondents. The second part contains items related to independent variable (logistics service quality dimensions). The total number for this part is 25 items: 15 items for functional logistics service quality dimensions and 10 items for operational logistics service quality dimensions. Items for measuring the independent variable (LSQ) dimensions were adopted from (Alemu, 2016; Tamang, 2014; Mentzer et al., 2001; Chin et al., 2013; Jia et al., 2013). The third part of the questionnaire contains items related to dependent variable (marketing flexibility) which contains 8 items and developed by Selcuk and Gokpinar (2017) and Saura et al. (2008). All the identified items were measured using a 5-point Likert scale.

2. Literature review

2.1. Logistics service quality

The beginnings of the logistic term back to the ancient Greek language, its source is the word (*logos*) and its meaning is ratio or arithmetic (Rajan et al., 2005). Then in the late nineteenth century, the term was used again in France by the army to express the transfer of materials, equipment and armies from one place to another. The term was recently used in economics and business (Al-Ghamdi, 2017; Chen & Qi, 2016). Law (2016) believes that logistics represents the operations to manage the strategies of logistic activities and defines it as a process for managing the strategy of procurement, transportation and storage of raw materials, spare parts and finished products within an organization and marketing channels, so that current and future profitability is maximized, according to effective principles of cost reduction. The definition of the service quality concept is the most used among authors and according to them it is the degree to which the actual performance of the service matches the customer's

expectations for that service. Logistics service quality defined by Su and Sampaio (2012) as a measure of the organization's ability to provide the product to customers at the specified time and place in the required quantity and quality. While the American Logistics Workers' Board of Directors defined logistics service quality as those works related to planning, implementing and controlling the efficient and effective flow of raw materials, final goods and related information from the production place to the consumption place in order to achieve the requirements of customer satisfaction (Lambert et al., 2011). Roslan et al. (2015: 458) state that most definitions that are focused on the logistics service quality see that achieving quality in the field of logistics services is possible if the customers' requirements and expectations are matched with what they actually got from provided logistics service.

2.2. *Logistics service quality dimensions*

The (SERVQUAL) model presented by (Parasuraman et al., 1988) is one of the oldest models that pursue to measure the service quality in general. This model has been applied and developed by numerous authors. The idea of the model is based on the view that the customer's evaluation of the service quality is crucial, and the service quality is evaluated by customers by identifying the gap between what they expect from a service to the actual service performance. Ten dimensions were determined in the first form of (SERVQUAL) model which were (reliability, responsiveness, efficiency, access, sympathy, communication, credibility, security, customer understanding, and tangibility). In (1988) the author merged and reduced the dimensions of (SERVQUAL) model to five dimensions (tangibility, reliability, responsiveness, assurance, empathy) (Shaban et al., 2015). Cronin and Taylor (1992) proposed another model of (SERVQUAL) with a different philosophy based on measuring the efficiency of service performance rather than the gap, the two authors called their model (SERVPERF), and they demonstrated the feasibility and accuracy of the new model to reach the results compared to the previous model (Alemu, 2016: 11). Then Mentzer et al. (2001) presented a modified model towards measuring the quality of logistics service focusing on two main aspects: (Alemu, 2016, 12).

First: physical distribution service (Operational dimensions)

Second: Marketing customer service (Functional dimensions)

The model contains nine dimensions to measure the logistics service quality. The authors developed (25) items to measure these dimensions. Two or three items are used to measure each dimension. Kamble et al. (2011: 82) indicate that the model of Mentzers et al. (2001) added the functional quality side of the logistics service with the technical operational side, and the technical quality indicates the results of the service, while the functional quality indicates the service delivery process. Based on the above, the researchers will adopt Mentzer et al. (2001) model to assess the quality of the logistic service with its nine dimensions divided into two main dimensions as shown in Table 1.

Table 1

Definitions of logistics service quality dimensions

Dimensions	Definitions	
Personnel contact quality	Indicates the customer's perceptions about the communication process by organization staff.	Functional dimensions
Order procedure	Indicates the efficiency and effectiveness of the procedures followed by the organization	
Order discrepancy handling	Indicates how the organization handles wrong orders on arrival.	
Information quality	Refers to the customer's perceptions of the information provided by the organization regarding the products that the customer may choose	
Order release quantities	Indicates the availability of the required product and the quantities utilized from it.	
Order accuracy	Refers to the extent to which orders are matched to customer requests upon arrival	Operational dimensions
Order Condition	Indicates that there is no damage to orders	
Order quality	It indicates the product's quality, and this includes the extent to which it meets the required product specifications and customer needs.	
Timeliness	Refers to organization's ability to deliver orders to the customer's place on time.	

Source: Alemu , Hana, 2016, Implication of logistics service quality on customer satisfaction: the case of Jumia online market , a thesis, Addis Ababa University School of Commerce .

2.3. Marketing flexibility

Several studies have addressed flexibility concept, but there are a few of studies dealing with marketing flexibility (Shalender & Sushil, 2017). During the past 30 years, flexibility concept has mostly been linked with production processes, strategy and human resource management, but very few studies have linked flexibility with marketing (Combe, 2012). The flexibility concept, according to many authors, refers to adaptation and response to environmental change, ensuring that organizations survive and grow (Li et al., 2010). Marketing flexibility is one of the various forms of flexibility that organizations use as a strategy to maintain their competitive advantage (Singh & Shalender, 2015). The need for marketing flexibility emerged as a result of the competitive landscape of postmodern marketing, and due to recent developments, the concept has become a priority in the forefront of marketing issues, and its idea and actions are centered on customers by enhancing the value to them through participation, interaction and implementation. According to Grewal and Tansuhaj (2001) marketing flexibility is one of the strategies that many organizations use to counter changes by resetting their marketing efforts. Shalender and Sushil (2015) confirm the previous opinion by linking marketing flexibility with organization's capabilities and mentioned that it is a concept that indicates the organization's ability to enter or exit markets, and its position in existing and new markets.

3. Data analysis

3.1. Variables Description and testing hypotheses

The content of this part includes the statistical description (mean, standard deviation, and response rate) of the research variables as perceived by the study sample in the researched factories based on the Likert scale, and to achieve this the researchers used SPSS program as follow:

3.1.1. Statistical description of the variables of logistics service quality dimensions

Table 2

Statistical description of the variables of logistics service quality dimensions

N.	Variables	Items	Mean	Standar deviation	Response rate	Arrangement
X1	Personnel contact	Our factory members make a great effort to understand customer needs.	4.47	0.74	89.4	3
X2	quality	Problems are easily handled by our factory employees.	4.53	0.66	90.6	1
X3	Order procedure	Individuals with the necessary expertise and skill work in our factor	4.29	0.83	85.8	6
X4		Our factory procedures are easy when placing an order for products.	4.50	0.74	90	2
X5		Our factory applies the conditions agreed upon in its procedures when ordering products.	4.41	0.70	88.2	4
X6	Order discrepancy handling	Our factory allows the replacement of non-conforming products.	4.32	0.97	86.4	5
X7		Our factory deals well with the wrong products.	3.50	1.50	70	8
X8		Our factory compensates its customers for errors in their order.	4.50	0.74	90	2
X9	Information quality	Our factory gives customers the necessary information about the products.	4.24	0.78	84.8	7
X10		Our factory provides accurate information about the delivery times of the products.	4.32	0.84	86.4	5
Average			4.3	0.85	86.16	

The results of Table 2 illustrate that the answers of the respondents about the variables of functional dimension through its items (X1-X10) is consistent in terms of the general mean that reached (4.3), which is greater than the proposed mean (3) on the Likert-scale used in the study. The value of general standard deviation was (0.85), and the average response rate (86.16%), which indicates that the response rate is high for the respondents' answers to the functional dimension items. Among the most prominent variables that contributed to enriching the variable agreement ratio (X2), as it obtained the highest mean (4.53) and a response rate of (90.6%). This indicates that the studied factories were able to easily address all of its customers' problems.

Table 3
Statistical Description of Operational Dimension Variables

N.	Variables	Items	Mean	Standar deviation	Response rate	Arrangement
X11		Our factory has the right quantities of products.	4.56	0.74	91.2	2
X12	Order release quantities	Our factory has no problem when ordering huge amount of products	4.59	0.74	91.8	1
X13		Our factory has no problem when ordering products in small quantities.	4.56	0.66	91.2	2
X14		Our factory rarely delivers products to the wrong person.	3.56	1.61	71.2	7
X15	Order quality	Our factory rarely receives the wrong quantity of products	3.47	1.48	69.4	8
X16		Our factory rarely receives the wrong quality products	3.35	1.47	67	9
X17		The products that our factory delivers to its customers are not damaged.	4.38	0.81	87.6	4
X18	Order Condition	Rarely our products getting damaged during transportation process	4.09	0.90	81.8	5
X19		Rarely our products getting damaged during warehousing process	3.35	1.36	67	9
X20		The products provided by our factory are of appropriate quality.	4.50	0.66	90	3
X21	Order accuracy	The products provided by our factory are within the required specifications.	4.50	0.61	90	3
x22		Our factory orders for required parts or products are rarely not-matched.	3.76	1.49	75.2	6
X23		Our factory services are characterized by short waiting times.	4.56	0.66	91.2	2
X24	Timeliness	Our factory receives its orders on time.	4.50	0.66	90	3
X25		The average time application order in our factory is short.	4.38	0.73	87.6	4
Average			2	82.8	0.97	4.14

The results of Table 3 show that the responses of the respondents about the variables of operational dimension through its items (X11-X25) is meaningful in terms of the general mean that reached (4.14), which is greater than the proposed mean (3) on the Likert-scale used in the study. The general value of standard deviation was (0.97), and the average response rate (82.8%), which indicates that the response rate is high for the respondents' answers to the operational dimension items. Among the most prominent variables that contributed to enriching the variable agreement ratio (X12), as it gained the highest mean (4.59) and a response rate of (91.8%). This shows that the researched factories have the capacity to fulfill orders of large sizes.

3.1.2. Statistical description of marketing flexibility variables

Table 4

Statistical description of marketing flexibility variables

N.	Variables	Items	Mean	Standar deviation	Response rate	Arrangement
X26	Marketing Flexibility	Our factory has the ability to offer a variety of products.	3.85	1.45	77	4
X27		Our factory has manufacturing capabilities that enable it to easily change the characteristics of its products.	4.35	0.81	87	1
X28		Our factory constantly changes the prices of its products.	3.71	1.26	74.2	7
X29		Our factory adapts to price fluctuations easily.	3.82	0.96	76.4	5
X30		Our factory has promotional capabilities that help it respond quickly to campaigns launched by competitors.	3.74	0.99	74.8	6
X31		Our factory uses tools and promotional activities effectively.	3.71	1.03	74.2	7
X32		Our lab always has alternative distribution channels.	3.91	1.05	78.2	3
X33		Our lab has achieved the desired interaction between its distribution channels and customers.	4.03	0.87	80.6	2
Average			77.8	1.05	3.89	

The results of Table 4 illustrate that the answers of the respondents about marketing flexibility variables through its items (X26-X33) are relatively high in terms of the general mean that reached (3.89), which is greater than the proposed mean (3) on the Likert-scale used in the study. Despite the high value of the general standard deviation, which is (1.05), while the response rate was (77.8%), which is the rate above medium of the respondents' answers to the marketing flexibility items. Among the most noticeable variables that contributed to enriching the variable agreement ratio (X27), as it gained the highest mean (4.35) and a response rate of (87%). This indicates that the researched factories have manufacturing capabilities that enable them to change the characteristics of their products easily.

3.2. Correlation hypothesis testing

The content of the first main hypothesis indicates a significant correlation between the variables of logistics service quality dimensions and marketing flexibility variables.

Table 5

Correlation coefficient values between the variables of logistics service quality dimensions and marketing flexibility variables

I.V. Logistics service quality dimensions	Functional dimensions	Operational dimensions	Overall Index
D.V. Marketing flexibility	**0.471	0.030	0.232

P **≤ 0.05 N= 60

The results of Table 5 indicate a significant positive correlation between the variables of logistics service quality dimensions and marketing flexibility variables which the overall index is (0.232) at the significance level (0.05). This means that the greater the attention paid to logistics service quality dimensions holistically, the greater the marketing flexibility will be in the researched factories. The findings also indicate a positive correlation between functional dimensions and marketing flexibility,

as the value of the correlation coefficient is (** 0.471) at a significant level (0.05), and also with regard to the operational dimension as the correlation coefficient value is (0.030) at a significant level (0.05). It is noted from the above table that the value of the correlation coefficient was greater for the functional dimension than the operational dimension and even at the overall level as well, which indicates the importance of this dimension in relation to marketing flexibility. Especially the items related to personal communication, processing of orders and giving the necessary information to customers, which had previously taken high mean score among respondents in statistical description. Thus, the first main hypothesis and its sub-hypotheses have been accepted, which states: There is a significant correlation between the variables of logistics service quality dimensions and marketing flexibility variables.

3.3. Impact hypothesis testing

The content of the second main hypothesis indicates that there is a significant impact of variables of logistics service quality dimensions on marketing flexibility variables.

Table 6

Regression analysis

I.V. Logistics service quality dimensions	Beta	B	R ²	T	F	Sig. level
D.V. Marketing flexibility	0.232	3.662	0.54	8.92	1.812	0.000

P ≤ 0.05 N= 34

The regression analysis results in Table 6 indicate a positive significant impact of variables of logistics service quality dimensions as explanatory variables on marketing flexibility variables as respondent variables. This is indicated by the analysis results of the coefficients value (B) and the value (F) which is (1.812) and its significance level (P-value) of (0.000) which is less than the standard level of the study that is (0.05) supported by R² value which is (0.54). This means that combined variable of logistics service quality dimensions contributed and explained (51%) of the variance found in the combined variable of marketing flexibility. The rest is due to random variables that cannot be controlled or are not initially included in the regression model.

Table 7

Impact of variables of logistics service quality dimensions separately on marketing flexibility variables.

I.V. Logistics service quality dimensions	D.V. Marketing flexibility					
	Beta	B	R ²	T	F	Sig. level
Operational dimension	0.47	4.08	0.38	7.529	9014	0.000
Functional dimension	0.32	3.07	0.30	7.26	8.73	0.000

Depending on the above findings the second main hypothesis and its sub-hypotheses have been accepted, which states: there is a significant impact of variables of logistics service quality dimensions on marketing flexibility variables.

4. Conclusion and recommendations

The concept of logistics service quality with its content compatibility between functional and operational dimensions has received a great attention recently, this trend has developed more in areas of logistics and marketing by finding different dimensions and indicators from the well-known Service Quality Dimensions (SERVQUAL) model. However, the researched factories in this study did not specify exactly what dimensions of logistics quality can be adopted or focused on. There is a logical correlation between logistical service quality in its functional and operational dimensions and the

marketing flexibility. The results of description analysis have shown that the answers of the study respondents on all research indicators were acceptable and with a positive trend, which explains the respondents' awareness and gives a great attention towards logistics service quality and marketing flexibility. The results of the statistical analysis have shown that there is a significant correlation between logistic service quality dimensions and marketing flexibility in research factories. The functional dimensions were more correlated than the operational dimensions, and the importance of this dimension was enhanced by quality of personal communication variables. The findings also ensure that there is a significant impact of logistic service quality dimensions combined and individually on marketing flexibility, its impact is greater when combined, and the functional dimension was more influential than the operational dimension.

The study has some recommendations to the researched factories:

- 1- Directing the attention of factories management, and logistic and production managers to diagnose and accurately determine logistics service quality dimensions approved in this study and distinguish them from dimensions of (SERVQUAL) and spread awareness of it according to the vision and direction of the factory.
- 2- Transferring logistics service quality dimensions in the researched factories into practical and field practices, to face the changes in the areas of logistics and production.
- 3- Researched factories have to pay more attention towards marketing flexibility as an appropriate strategic direction for the marketing activities to face the intense foreign competition that the researched factories actually suffer from.

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