Research Article

The Effect of Web Design Elements in Digital Marketing on Supply Chain Management Profit under Cooperative Advertisement

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Abstract: E-marketing practices in the businesses have strengthened supply chain management (SCM) and providing a competitive advantage over their rivals. Companies tend to look into smart technologies to convince their customers/consumers for selling their items. Electronic marketing is an integral part of SCM to attract consumers around the globe, which may extend to the next level when the incorporation strategy between the supply chain partners starts to exist. This study helps to analyze the relationship between SCM profitability, design elements, and the moderating effect of collaborative advertising on its association. The survey-based methodology was used for the collection of data from the Telecom industry in Islamabad and Rawalpindi. 250 valid questionnaires was collected from different telecom industries. Data were analyzed using the Cronbach alpha reliability technique with the help of Statistical Package for Social Sciences (SPSS) version 23.0. Regression has been conducted to test the hypothesis. The result of the study confirms a significant relationship exists between the variables, while the search engine optimization shows an insignificant impact on SCM profit. With the use of digital medium, the telecom industry in Pakistan can utilize its website platform to attract the customer's demand and its supply chain revenue to achieve a competitive advantage.

Introduction

Globalization has created huge hurdles for traditional supply chain management (SCM) for which firms are searching for the best digital marketing strategies to influence customers in the market. Firms are transforming into digital-based SCM. In this direction, the product website design is vital to grab online consumers in the market. In addition, to the absence of corporations, managers face challenges to market their products via e-advertisement due to budget constraints. The issue secures the important business data against the cyber prevalence, due to integral elements as business assets. This study analyzes the significant web-design elements and incorporates them into the statistical analysis of cooperative SCM to exploit the total profit shared by the SCM partners. The emergence of the internet

in SCM exploits the numerous opportunities for digital marketing and information technology. Today, e-business is evolving supply chain management with useful applications worldwide (Lancioni, Smith, and Oliva). Since the promotion cost is too high to manage the business promotions. Therefore, the incorporation between the SCM partners helps to share the cost. In a cooperative scenario, the manufacturer and retailers are contributing based on advertisement cost, selling price, product quantity, carbon cap, etc., to obtain maximum savings. For instance, Proctar and Gamble (P & G) now doing a strategic collaboration with Wal-Mart to enhance profit by increasing demand (Sarkar et al., 2020).

The website design and development plays a vital role in gaining traffic, reach, searches, buyer servicing, and targeting a potential consumer in the international market. The attractive website explores content, text, and pictures that create chances of making buyers interested in the ordering. The Business to Business (B2B) integration in e-business has created the sharing information platform to the buyer/seller about the product/ services and make an online deal and provide the marketing services (Cai et al., 2018).

The development of digital marketing in the business has reshaped supply chain practices around the globe. Various studies demonstrate the significance of their research in contextual analysis, especially defining the cooperative advertisement in digital marketing by using the sequential quadratic programming in their research methodology (Sarkar et al., 2020). This study discusses the two-echelon SCM policy to optimize the advertisement cost and demonstrate the impact of e-retailor and manufacturing on the firm performance. Similarly, various studies influence the study by integrating digital marketing in their modeling and found the impact on the supply chain profitability (Kianfar, 2019; Cai et al., 2018; Karray and Surti, 2016). These studies have given little focus on the web-design elements to find out the impact on the supply chain profitability. As the firm's website plays an integral role in developing the demand for the product/ services. Moreover, their role in developing the market for the newly introduce or existing product in the competitive environment has its implication.

The telecom industry in Pakistan has catered to immense growth and now aiming to research the 100 million subscriptions. The study work of Pham

and Nguyen (2019) emphasizes the need to develop the digital SCM strategy for their business model and created the web-design index about supply chain profitability that would create a huge impact on the grabbing the consumer toward their product or services. Therefore, this study demonstrates the practical implication for the telecom industry in the result (Simon and Omar, 2020). Another study discusses E-agriculture supply chain management with the block-chain effect to optimize the total profit of SCM. In this study, the effect of web-design elements on the E-Agriculture SCM with the integration of cooperation strategies was implemented (Alkahtani et al., 2021). And similarly, several studies such as (Cai et al., 2018; Simon and Omar, 2020; Aust, 2015) has worked on the web design index and cooperative advertisement, however with the cyber security, web graphics, and search engine optimization effect about the supply chain profitability was found lacking in their research area.

This research will be beneficial for any firm whether, it can be a supplier, manufacturer, retailer, and customer. However, it covers the manufacturer, retailer, and service provider. Because it tends to improve the business processes in SCM and research, the focus is on increasing the total output to the optimal level. The research also working to bring quality services to the consumer. As the consumer is the real asset to any organization and they have an integral role in creating a better community.

Today companies are striving for a competitive edge over others. Further, an organization should provide cooperative support to the retailer and supplier in their supply chain to be more effective and in this regard, the cooperative advertisement derives to boost the company's profit and can decrease the cost of ownership. Firms are working to enhance the mutual gain relationship and enrich the collaboration among the SCM partner (Chutani and Sethi, 2018; Aust, 2015; Sarkar et al., 2020).

Digital marketing is currently much discussed topic in academic research and effective management of enterprises. However, its practical implication in the industry such as; the telecommunication industry is very nominal. The supply chain management for the telecom sector needs the efficient use of digital technology for their prompt billing, payment, delivering services at a minimum cost. Cai et al. (2018)

suggest as to address as the problem of designing the significant attributes of a firms' website can create the visitor satisfied is a possible predictor of generating revenue. Firms are working to enhance the mutual gain relationship and enrich the collaboration among the SCM partner.

Currently, firms are functioning with their traditional manual work dealings and information processing. Therefore, rare studies executed in the telecom industry in Pakistan in the context of the relationship between the web design elements and total profit of supply chain management with the moderation effect of cooperative advertisement. Recently study discusses E-agriculture supply chain management with a block-chain effect and cooperative strategies to optimize the total profit of SCM. In this study, the impact of web-design elements on e-agriculture SCM with the incorporation of cooperation strategies was implemented (Alkahtani *et al.*, 2021). Similarly, several studies such as (Simon and Omar, 2020; Cai *et al.*, 2018) have suggested on the web design index and cooperative advertisement, the effect on the supply chain profitability is found lacking in their research area.

This article assesses the significant relationship between the web-design elements and SCM profitability with moderating effect of cooperative advertisement for the telecom industry in Pakistan discussed in Supplementary Table 1. The related studies and review are discussed in Supplementary Table 2 and the research model containing analysis of regression, correlation, reliability, and Andrew and Hayes's macro process are discussed in Supplementary Table 3. Following Supplementary Table 4, reflect on the discussion and findings of the research result and, the conclusion and recommendation explained at the end of a research paper.

Materials and Methods

Digital marketing is the landmark for future industrial growth. The managers are developing the e-business supply chains in their businesses to optimize the logistics, inventory, and distribution expenditure. The overall profit of supply chain management relates to accumulating value creation throughout the supply chain management. Various studies have worked on the supply chain profitability in which the recent work done on the supply chain network

design influence the overall profitability of the supply chain and service level delivery (Jiang *et al.*, 2020; Kianfar, 2019). A similar past paper has discussed the relationship of supply chain profitability with effective cost-saving by comparing the empirical study of the Sony Ericson telecom industry in the SCM. The study depicts that effective cost-saving leads to supply chain profitability (Pettersson and Segerstedt, 2014). Recently, the effect of the Internet of Things (IoT) on SCM profitability has developed by the researcher by surveying 250 questionnaires with the inference of IoT inclusion in supply chain operations has increased the annual revenue of 5$ million of the targeted companies of the research (Oncioiu *et al.*, 2019). Two cooperative advertisement models discussed by the past researcher to examine the profit sharing and bargaining value between the e-retailer and manufacturer; the Stackelberg and strategic alliance – leader and follower; are formed (Sarkar *et al.*, 2020).

The role of e-advertisement in the supply chain management has increase the reputation of web design elements in the total profit of SCM. For instance, 36$ billion dollars has been spent on incentives for advertisement costs to the retailers in favor of coop-advertisement. Same study reported that the 2156 cooperative plans were developed across the 50 product categories in the market and which gives the 70% subsidize arrangement rate (Chutani and Sethi, 2018; Yeboah-Ofori and Islam, 2019). Previous work also analyses the channel coordination between the supply chain partners under the different dynamic models that are based on the goodwill function in terms of brand image used by international and national advertising agencies (Sarkar *et al.*, 2020). Digital Marketing has boost the business trading and transactions between the stakeholders. Nowadays, the researchers focus on the developing the tools for creating comfort in the life of consumers by providing reliable and cheap products to them, and now the internet has boosted the business revenue through the digital medium of the service delivery and interaction with the product (Bowman and Helfat, 2001). Firms use advertisement ways to increase the sale of their products/services in a market (Giri and Sharma, 2014).

Web graphics represent the most significant element for online selling and buying items. Engaging users with website trafficking is the significant

comprehensive model discussed by the website engagement consumers. Besides, visual design is expressed as an eye-catcher, visual attraction, and appealing effect on a web page (Demangeot and Broderick, 2016). The web visual contains the emotional appeal touch, beautiful graphical look, homogeneity in web appearance, and animation screen. A relevant study discusses the conditions for enormous Business to Consumer (B2C) websites by making the production grid method to capture the desire market. The same study explains the web developers' analysis in B2C marketing that point to the following significant visuals such as; graphical improvisation, schematics, content presentation, animations, layout visualization (Tan *et al.*, 2009; Yeboah-Ofori and Islam, 2019). The website engagement with the users play important role in creating a good impression of a company. The review rating for the particular item in delivery, service quality, specification, and cost play its part in getting the highly profitable income. The fast impression has been seen by the executive in their important task orientation (Iten *et al.*, 2018).

The Speed optimization refers to the fast explorer of information searches in the search engine of a browser that enhances the quality, visibility, and optimization of a firm's website. It paces the traffic for the website and increases the satisfactory results of search engines. It is evident from the figures that about 90% of visitors shows satisfactory remarks about the searches engine results, 5% of visitors feel hesitant to click on beyond the 3 pages, and nearly 2% move beyond it (Zhu and Tan, 2012). Speed optimization is the integral shift for Search Engine Optimization (SEO), as the firms started their operations through digital platforms. Optimization became a significant part of the web-design elements. Some issues put the website in slow buffering pages containing the image size, external scripts, theme, hosting, and Java Script language for animations. The lighthouse tools in the browser run the website audit for the effective use of the speed optimization process. Similarly, Speed optimization reflects the company's reputation having a fast firm web page interface. Search optimization is based on the keywords that are suitable for the website to effectively use search engine optimization must be followed by certain technical conditions (Yalçın and Köse, 2010).

Web analytics assist firms to improve the quality and accessibility of a website. It involves the performance

and speed of the website, to increase the website involvement with the visitors/users of a company. The performance of a website directly influences the demand for the product or services (Herná *et al.*, 2009; Bhatti *et al.*, 2000). The attraction of customers toward the product needs to optimize the website fast, so that the user did not spend more time waiting for the opening of a web page (Bhatti *et al.*, 2000). Since speed optimization affects the total sale and profitability, therefore, the website owner has to find out a comprehensive strategy for web performance. The Information Processing Theory (IPT) is deal with the information accessing of the consumer buying and selling behavior. This study depicts the IPT theory that is based on the personnel's analysis, perception, utilization, remembering, and decision regarding information. Past researchers had adopted the IPT in designing the web design for the information processing in the internet shopping centers (Chau *et al.*, 2000; Gibbon *et al.*, 2014).

Cyber Security in Supply Chain Management (SCM) facilitates the secure network process to businesses in order to meet the firm's goals and carry out their operations in a secure environment. The SCM digital practices have boosted business performance, mitigate ordering, and distribution cost. Some business competitors and supply chain stakeholders have created the cyber threat and ignored the independent audit mechanism. It manipulates the customized order quality, alteration and design order requirement. The Cyber-Physical System (CPS) is the integrated system of networking that made the secure physical, network, and cloud computing system, software embedded and linking of devices and memories to share valuable information (Humayed *et al.*, 2017). The cyber-attack can manipulate the supply chain player integrated system because of system failure/error and vulnerability in other stakeholders. For instance, Saudi "Aramco Electric Grid Company" face a cyber-attack in 2017, and the power grid cyber threat in Ukraine in 2015 (Yeboah-Ofori and Islam, 2019).

Electronic marketing has significant role in a firm's supply chain performance. Researcher determines that the digital connection made the operating system more efficient and create better business relationship and exploring state of the art information to demonstrate optimal use of e-marketing techniques for business growth (Chong *et al.*, 2016; Lin *et al.*, 2017). The two-

echelon SCM model based on Internet of Things (IoT) and digital agricultural were discussed by (Song et al., 2020). Past research work were highlighted the significant contribution classified through the authors contribution. For instance, Kamilaris et al. (2019) applied the game theory method to explore the vertical integration of manufacture and supplier in terms of pricing cooperation. Li et al. (2020) contributed in finding the sustainable web-design elements by using geometrical programming Approach to serve better the customer through blockchain technology in the agricultural supply chain. Afterward, Alkhatani et al. (2021) conducted a similar research approach of sequential quadratic programming that focus on the digital agricultural SCM model with the integration of significant web-design elements along with block-chain technology to optimize the overall cost of the supply chain. A recent study conducted the same similar study by applying the Stackelberg monitoring methodology (Muduli et al., 2022). However, this study explores the impact of significant web-design elements on SCM profit by using Hayes' PROCESS Macro Analysis and Multiple Regression Analysis (ANOVA) techniques. Several Author's contributions in the past research work are shown in Table 1.

Research model
The research is based on the comprehensive model used to analyze the relationship between significant web-design elements and the overall supply chain profitability with the presence of cooperative advertisement as a moderator is mentioned in Figure 1. The Survey-based study examines the web-design elements practices that are associated with the telecommunication industry in twin cities

of Pakistan. This study's popular data collection method is linked with the philosophy of Positivism contains the highly structured, large samples size, and quantitative measurement methods that focus on the numbers and facts results. The proposed research will be helpful to determine the optimal selected significant website design elements to grab online customers by increasing annual sales. There used the following independent, dependent, and moderating variables based on the proposed model.

The researcher has selected the significant inputs parameters among the various web-design elements. During the research survey, it was revealed that the most responses are in favor of Web Graphics (WG), Search Engine Optimization (SEO), and Cyber Security (CS) elements. The Telecom Executives are looking to adapt only certain significant parameters (WG, SEO, and CS) of web design elements in relation to the supply chain profitability that can act as a strategic tool to help their firm to compete in the market. Also, the response rate of the respondents is at a maximum of a 62%, by a total number of 400 questionnaires of which 288 responses were returned, among them the 38 responses were not useable. Besides, past work also admits that the WG, SEO, and CS web elements are the vital input parameters of supply chain profitability with increasing consumer demand, and the same article also confirms the significant of similar elements by using techniques of Pareto analysis and Analytical Hierarchy Process (AHP) (Alkahtani et al., 2021). However, the same study did not explore the significant impact on the supply chain profit under the cooperative policy in the telecom industry of twin cities in Pakistan.

Table 1: *Author's contribution.*

Authors	SCM type		Two Echelon SCM	E-adver- tisement cooperation	Integration		Web Design Element	Methodology
	Cen- tralized	Decen- tralized			Hori- zontal	Verti- cal		
(Zhao et al., 2016)	✓		✓			✓	-	Nash equilibrium approach
(Lin et al., 2017)		✓	✓	✓	✓		✓	The analytical approach
(Cai et al., 2018)	✓		✓	✓	✓		✓	A game theoretical approach
(Kamilaris et al., 2019)		✓		✓		✓	-	A game theoretical approach
(Choi, 2020)	✓			✓		✓	✓	Interior-Penalty-Function Method
(Li et al., 2020)	✓		✓			✓		A geometric programming approach
(Alkahtani et al., 2021)		✓	✓	✓		✓	✓	AHP-FIS-SQP
(Muduli et al., 2022)	✓		✓			✓		An electricity monitoring methodology
This research	✓	✓	✓	✓	✓		✓	Multiple regression analysis (ANOVA- Hayes' Process Macro)

Table 2: *Model summary.*

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics				
					R square change	F change	df1	df2	Sig. F change
1	.652[a]	.425	.418	1.00751	.425	60.593	3	246	.000

The cooperation of the supply chain partners participates in the digital marketing to increase the consumer demand for the products/services. The cooperative advertisement considered as the moderator in the research model. The proposed research explores the significant outcome of cooperation on the web-design elements regarding supply chain profitability. The statistical analysis of their interactions shows a significant result in the overall research model of the study.

Dependent variables
• Total Profit of Supply Chain Management

Independent variables
• Search engine optimization
• Wed-graphics appearances
• Cyber security.

Moderator
• Cooperative advertisement

Hypothesis
H1: The total profit of SCM is directly associated with web graphics.
H2: The total profit of SCM is directly associated with search engine optimization.
H3: The total profit of SCM is directly associated with cyber security.
H4: The cooperation strategy moderates positively the relationship between web graphics and total SCM profit.
H5: The cooperation strategy moderates positively the relationship between the search engine optimization and total SCM profit.
H6: The cooperation strategy moderates positively the relationship between cyber security and total SCM profit.

Data collection and analysis
This study demonstrates the sample size of 250 questionnaires that had been filled by the supply chain managers/ executives working in the telecom industry of Pakistan. A total number of 400 questionnaires circulated that 288 was returned, among them, the 38 responses were not useable making the response rate

at 62%. The executives in the various departments of the telecommunication industry such as; network and security, compliance, quality assurance and control, audit, information technology, front end and back end, user interference and user experience (UIUX), SEO experts, and web developer.
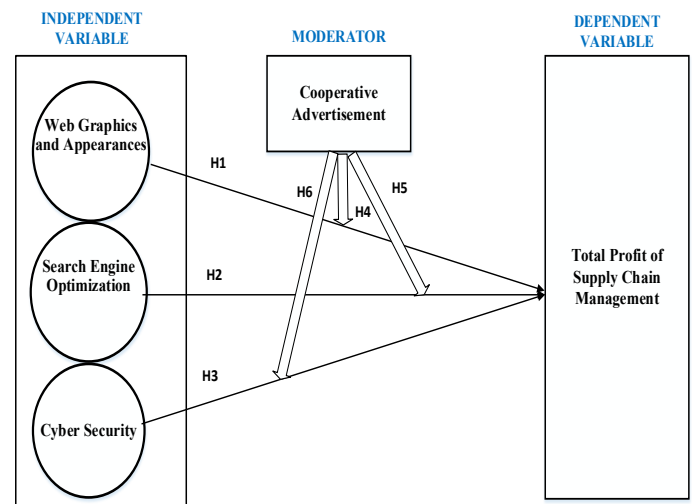

Figure 1: *Research model.*

The Cyber Security (CS) had five items that were adopted from Howard (2018). The measurement of Search Engine Optimization (SEO) had six (6) items that were adopted from Khraim (2015). The scale for Web Graphics (WGA) was adopted from Pham and Nguyen (2019) and contains four items. The supply chain profitability (SCP) scale was measured in terms of process and product development, customer satisfaction, revenue, and productivity improvement that was adopted from the past paper of (Kianfar, 2019) which consists of six (6) items scale. The construct of the cooperative advertisement scale was adopted from the reference article of Wei *et al.* (2013) which contains six (6) items.

The simple linear regression was applied to check the type of relationship between the independent variables and dependent variables. The model as a whole was significant to predict the total profit of supply chain management: F (3, 246) = 60.593 = .000 as shown by ANOVA Table 3. The R-Square value for the total model is 42% with an adjusted R-Square of 41%. Hence, the medium side effect is

shown by the model of variation in overall profit of supply chain management is accounted for by the linear combination of the predictable variables such as; web graphics, cyber security, and search engine optimization.

Table 3: *Analysis of variance (ANOVA).*

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	184.522	3	61.507	60.593	.000[b]
	Residual	249.710	246	1.015		
	Total	434.232	249			

Table 4: *Coefficients.*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.621	.217		2.862	.005
Cyber security	.356	.078	.289	4.549	.000
Search engine optimization	.070	.084	.064	.833	.405
Web graphics	.393	.078	.382	5.063	.000

In the final model, the two independent variable are statistically significant with cyber security (t=4.459, $p<$ .000, β =0.289) and Web Graphics (t=5.063, $p<$.000, β=0.382). However, only one independent variable represents the insignificant result of Search Engine Optimization (SEO) (t=.833, $p>$.000, β =.0.64) represents an insignificant effect on the entire profit of supply chain management. The *P* depicts the insignificant value, the result for SEO not be generalized and finally the hypothesis considered rejected. The overall predicted mathematically expressed as:

$$Total\ profit\ of\ supply\ chain\ management = .621 + .356(Cyber\ Security) + .070(Search\ Engine\ Optimization + .393(Web\ Graphics)$$

The positive slope for cyber security and web graphics is 0.356 and 0.393 respectively which was a significant increase in the whole profit of supply chain management for each 1-point increase in the cyber security, and web graphics. Briefly, the total profit of supply chain management increases as cyber security and web graphics increase. In contrast, the search engine optimization shows a partial positive slope with a Beta value is β =0.064 which depicts the

minimal (0.64) positive variation in the total profit of SCM for each 1-point increase in the search engine optimization.

Results and Discussion

The study indicates that the integration of the significant web-design elements for the Executives in the telecommunication industry in Pakistan is necessary. The researcher analyzes that the goal is required to train and supervised the supply chain executives at the telecommunication industry to integrate the supply chain and overall performance of the SCM partners. Two of the independent variable has a high level of Significant integration in the firm's performance, one (SEO) has shown an insignificant impact on the supply chain profitability. The research believes that there is coherence found in the website development and supply chain management profitability as the level of interaction with the customer at the maximum level of connectivity. In addition, customer satisfaction is the ultimate objective that strives to achieve growth at an optimal level for the organization. Importantly, the search engine optimization in the overall supply chain profitability impacts the significant results. As executives strive for a better optimization, level of the website will bring a high level of profitability in the overall SCM partners. Following the search engine optimization, the web graphics affect the overall value chain toward a positive direction. The visual interaction with the clients increases the orders and demand level of the consumer and which brings the ultimate profitability to the supply chain. Thirdly, the cyber security risk in the web design elements provides the optimal web security to the user's data, information, and client's database system. The proposed hypothesis result is given below in Table 5.

Search Engine Optimization (SEO) contributes to the online advertisement by consumers when they intendent to order and buy products or services through google search, MSN, explorer, Altavista etc. The result is matching to recent previous research (Oncioiu *et al.*, 2019). This was extremely integral for a country like Pakistan having 17% internet penetration (Chong *et al.*, 2016). Companies who are using SEO are gaining more consumers than those implementing the other method of attracting customers. In contrast, after applying the statistical tools of analysis, the researcher found out that the SEO has made insignificant results

Table 5: *Hypothesis result.*

Hypoth-esis	Statement	Result
H1	The total profit of SCM is directly associated with the web graphics.	Accepted
H2	The total profit of SCM is directly associated with the cyber security	Accepted
H3	The total profit of SCM is directly associated with the search engine optimization.	Rejected
H4	The cooperation strategy moderates positively the relationship between the web graphics and total SCM profit.	Accepted
H5	The cooperation strategy moderates positively the relationship between the search engine optimization and total SCM profit.	Accepted
H6	The cooperation strategy moderates positively the relationship between the cyber security and total SCM profit.	Accepted

on the overall supply chain profit by applying the regression and correlation analysis. The result of this hypothesis cannot be generalized and insignificant. Therefore, the results reflect that the finding of the research is very much objective, however, there was an insignificant impact of SEO on a firm's SCM profits in the telecom.

The researcher has shown the results that define the Web Graphics and Appearance (WGA) has made a significant impact on the telecom industry in the twin city of Pakistan. Several past studies demonstrate the results that are complement this study. The telecom industry can use to optimize its supply chain by increasing the display ranking of the website. The innovative use of web graphics can help the firms to build their brand and achieve desire goals in their digital marketing domain function. After applying the statistical tools of analysis, the researcher found out the objective of the result is very much true and there is a significant effect of WGA on SCM profitability in the telecom industry (Oncioiu *et al.*, 2019).

The results also show a strong and significant relationship exists between the Cyber Security (CS) and the total profit of SCM in the telecom sector in Pakistan. The cyber security misbehave might affect the organization's performance if it is not significantly controlled and administered. Few of the past researchers demonstrate the impact of the difference level of control factors and derive similar results in their study e.g., (Howard, 2018; Simon and Omar, 2020; Yeboah-Ofori and Islam, 2019; Boyes, 2015). By using statistical analysis, regression, correlation, and the researcher derive the output that cyber security helps to boost the overall supply chain of the telecom industry. Additionally, the results aim is objective and the CS impact is significant on the

supply chain profitability.

The researcher has also developed the andrew and hayes process moderation analysis by finding the cooperative advertisement effect on the relationship between the supply chain profitability and web-design elements (WGA, CS, and SEO). There is mathew and hayes process macro analysis used to identify the moderation effect. The researcher discovers that the result is a positive and significant effect of moderation on the independent and dependent variables in the model. From the given that, it is concluded that the cooperative advertisement has bring a significant impact on the supply chain profitability and web design elements in the overall model of the research. Which depicts the statistically significant and positive analysis of the test of hypothesis 4, 5, and 6 results. A relative research work was done by the recent researcher and concluded with the relevant statistical result (Alkahtani *et al.*, 2021). By using the andrew and hayes process macro analysis for the moderation, the researcher confirms that the cooperative advertisement impact significance as a moderator in the relationship between the web-design elements and the entire profit of SCM in the telecom industry of the twin cities in Pakistan.

To conclude, there is a statistically significant and strong relationship exists between the web-design elements and the overall profit of SCM. However, Search Engine Optimization (SEO) has an insignificant impact on overall profitability. Therefore, the hypothesis considered rejected. The researcher deducted that the executives working in the telecom industries might be not in favor of increasing the SEO involvement in their digital marketing strategies. They might be looking into the other web-design elements such as; visual design, navigation, content, branding,

boosting figures, user-friendly design and speed optimization etc. There is a need to drive engagement of the consumer for the better service and delivery of the products. For that reason, the web-design elements in digital marketing have evidently been significant in the overall increasing the SCM growth and revenue. The managers in the telecom sector believe that the involvement of the moderation (cooperative advertisement) between the supply chain revenue concerning web-design elements affects the stronger and significantly co-efficient result to the overall model of the research.

Conclusions and Recommendations

In this study, the moderating impact of cooperative advertisement on the association between the total profit of supply chain management and web design elements was evaluated. With referring to the past studies, it revealed that the web-design elements that emphasize the overall supply chain with moderating cooperative advertisement has not been addresses in the previous research. On the contrary, past studies explored the significant impact of web-design elements on other parameter factors, such as, the content, navigations, input controls, toggles, and buttons linked with supply chain performance. In this research, the effort utilized to find the significant web elements used to identify the primary data architect of the supply chain. The effort of increasing the demand for the product and supply chain revenue that incorporated while delivering and serving the customer through the traditional means of interaction solved. The issue of budget constraints solved; when the cooperative effect of the partners significantly incorporated with the overall SC profit. Therefore, theoretical analysis of the variables used to articulate the data that was helpful for the optimal decision-making and organizational issues.

The purpose of this study is to offer a valuable solution to the telecom industry regarding increasing the consumer demand for the product or services. A statistically positive and strong relationship existed between the web design elements and total SCM profit with the significant moderating role of cooperative advertisement; however, SEO effect on the total profit of SCM has not proved to be true for this study in hypothesis result and considered as a rejected hypothesis. This study also found that the encouraging implementation of significant web design elements in the telecom industry of Pakistan brings growth in the sales revenue, lower website expenses for developing or maintenance, and increasing the number of customers. Furthermore, the adaptation of the web design elements with the supply chain profitability can act as strategic tool to help firms to compete in market. The result predict that the level of website development and digital technology adopted in the telecom industry in Pakistan is not high and there is need to implement such type of model in their business environment. The government should also increase the digital infrastructure in the smaller places so that everyone can access the internet service. Hence, the digital based companies can use the website platform to attract the customer and develop their market base to get a competitive advantage.

Limitation and future work

This proposed research is used as a basis for future research by focusing on the incorporation of several significant web-design indicators other than variables (SEO, CS, and WG) that can incorporate into the supply chain models and integrate into the sustainable indicators in respect of economics; social, environmental factors in the model to achieve sustainable objectives. These web-design indicators are found intangible and can utilize through the centroid method of the fuzzy inference system for future research work. In the context of a digital supply chain network, the just in time (JIT) approach can be recommended to integrate into the supply chain model to provide a digital based solution for optimal business growth. By creating web-design models, electronic supply chain management in terms of revenue outcome always improved. Creating a digital-based system requires in-depth research to bridge the gap that many companies support.

This study was limited to two cities Islamabad and Rawalpindi of Pakistan. Telecom Sector in other cities might have different digital services for the customers. Due to time and budget constraints, the researcher surveys the cities where the majority of the telecommunication industries was found. Therefore, this study can be extended to the multiple cities surveyed and further carry to the provincial level. Based on the limitation, the future work is proposed and how to elaborate on the further implementation of e-commerce in the firms with the help of government support in making the infrastructure for technological development in the telecom industry.

Therefore, the CEOs and Executives should also allocate the budget for E-SCM and E-Commerce growth in their business operations. So that the firms get the desire outcome for their business growth and prepare the strategic supply chain strategy for optimal decision-making.

Novelty Statement

This research is the first kind of novel work in exploring the significant impact of webdesign elements on supply chain profitability under moderating effect of cooperative advertisement.

Supplementary material
There is supplementary material associated with this article. Access the material online at:

Conflict of interest
The authors have declared no conflict of interest.

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