Performance of supply chain management and digitalization of human resource information in SMEs

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CHRONICLE	ABSTRACT
	The aim of this study is to determine the influencing factors of Supply Chain Management and digitalization of human resource information practices in the small and medium enterprises of Oman. Digitalization of human resource information is the adoption of electronic means to the human resource activities of Supply Chain Management. In this system, the whole human resource activities are implemented through electronic means with the support of information technology (IT) infrastructure. To measure the Digitalizationof Human Resource Information Practices and the performance level of Supply Chain Management, two adopted constructs from two different studies were used. The study samples were taken from the SMEs of Oman. Almost 180 employees of different provinces responded to the questionnaires translated into vernacular language through google forms and a few hardcopy surveys were distributed to different locations with the support of SMEs and few entrepreneurs. The study found a significant positive relationship between the Performance of SCM and the Digitalization of Human Resource Information of a prominent variable electronic communication and other variables were found with no significant relationship. The finding of the study acts as a significant contributor to the existing literature on SCM as well as human resource management.

1. Introduction

In the present era, technology has emerged tremendously and enhanced organizations promptly with several developments. Many industries and organizations benefited from technological advancements. The digital revolution has impacted Supply Chain Management tremendously towards its development. This study focuses on the Digitalization of Human Resource Management in Supply Chain Management. Information Technology (IT) has emerged at its extreme level of customization as well. This has become a new way towards Supply Chain Management policies and practices with the support of several Human Resources (HR) activities of recent trends. The major activities which need interaction with different parties have moved to web-based applications. The web-based and computer-based applications made all the activities which have been done earlier by the HR professionals. The technological support helps employees concentrate on their important works. Reduction in paperwork, less cost, and quick response time are the major advantages of digitized Human Resources Management (HRM). The strategic plans implemented by the organization's top management need to get aligned with the HR department. The digitalization of human resource information is served as a holistic approach which includes all the HRM functions such as recruitment, selection, training, and development, compensation, performance appraisal, etc. This study will be helpful to the policymakers at different SCM organizations who were mainly in the SMEs of Oman. The study is trying to bring in the most influencing factors of Supply Chain Management performance and digitalization of human resource management. It also tries to learn the relationship between these two in the organization. Also, the contribution of digitalized human resource information towards the performance of SCM is explored.

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2. Literature Review

2.1 Supply Chain Management

A group of activities that is relevant for activities required in business starting from the process of manufacturing till the market to the customer is stated as Supply Chain Management. Logistics is highly connected with Supply Chain Management (SCM) as they are bringing a fast and quick supply of products to the customers without any delay in the process. According to Van der Vorst (2000), the SCM served as a part of the top-level management from the year 1990s. The proper management, integration, and coordination of the process of business will determine the ultimate success of an organization. The incorporation of suppliers in the stages of production make the procurement a difficult task to accomplish. SCM is comparatively a term evolved recently and is considered a comparatively recent area of study. The term initially appeared along with literature related to logistics in a research study (Oliver & Webber, 1982). The word appeared as simple as the supply of raw materials in the approach of inventory management. Cooper and Ellram (1993) in their study explained SCM clearly as how it differs from the traditional approaches of inventory flow and managing associated activities from a theoretical point of view. Three factors involved in SCM for evaluation are value, cost, flexibility, and period. According to Porter (1986), the meaning of value is the price agreed by the customer to pay for a product the company provides. This value is measured as revenue. Another term which has evolved as a concept is 'value-added activity' from Porter's 'value chain'. The majority of the literature made stress regarding the need for cooperation among manufacturers to end customers which should bring in more demand from the side of the customers at a reduced cost (Bechtel & Jayaram, 1997). Optimization of outcome is the main objective of SCM models in an organization. The performance of SCMs is based on the goals of individual organizations. Salim et al. (2020) stated in their study that the women entrepreneurs of small and medium enterprises were not considered effectively but they have extremely excellent potential which is untapped towards the empowerment of the society financially.

2.2 Supply Chain Management in Middle East

Many literature reviews are available based on the performance of SCM which measures the performance of both Supply Chain and logistics (Beamon, 1998). Various systematic processes of different stages are required for doing SCM and is complicated to a greater extent when the implementation of IT is involved (Cooper et al., 1997). When IT is added to the SCM, a new system needs to be adopted for measuring supply chain performance. Several available researchers stated the requirement of extensive research regarding measuring of SCM and logistics especially in the middle-east countries (Tan, 2001). Many papers are dealing with SCM and Logistics but there are still few studies related to digital human resource management and SCM. According to Carter and Ellram (1998), logistics is a significant element that is required in SCM. The research studies are mostly very specific or related to a country alone (Simatupang & Sridharan, 2002).

2.3 Supply Chain Management in Oman

Due to the fall in the oil markets of the Sultanate of Oman, the majority of the firm's competitiveness got affected drastically. The research related to logistics and SCM has concentrated more on market strategy and effectiveness of customer service. The economic activities of the nation were significantly impacted during the time which found diversification which got the attention of the supply chain and logistic industry by the ministry. The government found the logistics sector as a whole for potential revenue. Thus, they introduced many schemes to improve the system. Most importantly the small and medium industries (SME's) which connected with fast-moving consumer goods depend completely on suppliers and thus connected with logistics.

2.4 Performance of Supply Chain Management

According to Storey et al. (2006) Supply Chain Management is influencing the behavior to a specific direction which can be desirable for a business. The performance is very important especially in the case of SMEs. Their marketing strategies and economic awareness will be so high to bring the productivity of resources by full utilization of resources.

2.5 Digitalization of Human Resource Information in SME's

Technological advancement has reached its prime and researchers also focusing more on information technology and digitalization. The digitalization of human resource management or information is having its roots in electronic human resource management. Electronic data interchange is always connected with the information technology of SCM. Implementation of IT in human resource management of SCM is continuously showing a significant positive relationship in different studies. Rogers et al. (1992) in their study explained the impact of the application of information systems and several factors such as customer service, availability of the product, etc. Many kinds of literature concentrate on different factors related to digitalization in HRM and Supply chain in Europe and Asia. The Middle-east related studies are limited in this area. Limited literature is available specifically towards the performance of SCM and digitalization of human resource information in the middle-east. This study concentrates on the Sultanate of Oman and trying to fill the gap in the literature.

3. Research Methodology

A good structure scale developed by Das (2017), was used in the research and it is made to find the performance of SCM. Another set of questionnaires which is developed by Adil et al. (2014) were used to find out the digitalization of human resource information. These two constructs were explicitly constructed for specific to find out scores SCM and digitalization of human resource information. This will surely lead to finding out the performance of SCM. The scale is divided into two major parts, the first part is associated with demographic variables and the second part is related to two major factors under the study. The second part with two major factors is again divided into four sub-factors each. For the digitalization of human resource information, subfactors include E-Recruitment, e-compensation, e- training, and e- communication. The second major factor of the study consists of four major sub-factors which include Environmental Performance, Operations Performance, Employee-centred Social Performance, and Community-centred Social Performance. Many studies in the past attempted to study the performance of entrepreneurship and SMEs using different constructs and measuring scales developed by Sulphey and Salim (2020). The performance of SCM based on different demographics was studied in the past but very limited studies concentrate on Oman. A study related to the investment behavior of Saudi Arabian working women provides insights into the middle-east interest in investing in small entrepreneurial as well as small and medium enterprises (Aldabel & Salim, 2021). This study tries to fill the gap identified in the review literature. The major objectives identified for this proposed research study are as follows. The study examines the relationship between the Performance of SCM and the Digitalization of Human Resource Information among the SMEs of Oman. To study also examines the relationship between e-recruitment and performance of SCM among the SMEs of Oman. The study also shed light on the relationship between e-compensation and performance of SCM among the SMEs of Oman. We also look at the relationship between e-Training and performance of SCM among the SMEs of Oman and the relationship between e-communication and performance of SCM among the SMEs of Oman. Finaly, the study gives some essential suggestions to improve the Performance of SCM and Digitalization of Human Resource Management among the SMEs of Oman.

Null Hypothesis for the study is made based on the objectives of the research is shown below:

H_{01}: Digitalization of Human Resource Information does not positively contribute to the Performance of SCM among the SMEs of Oman.
H_{02}: E-recruitment positively does not contribute to the performance of SCM among the SMEs of Oman.
H_{03}: E-compensation positively does not contribute to the performance of SCM among the SMEs of Oman.
H_{04}: E-Training positively does not contribute to the performance SCM among the SMEs of Oman.
H_{05}: E-communication does not positively contribute to the performance of SCM among the SMEs of Oman.

The population of this study is from different levels of employees working in small and medium industries of Oman which includes both males and females. Further, an in-depth literature review was conducted to find out the survey questionnaire which is suitable for the variable under study. The primary data collection method was administered using the adopted well-structured questionnaire. A limited number of Hard copies and Google- forms were used to collect the data through the email address of different SMEs which are official and unofficial. The primary data thus collected were extracted to excel from google form and imported to SPSS were analyzed using appropriate statistical techniques like frequency, percentages, correlation analysis, and ANOVA, etc. A thorough literature review was done to find out an appropriate questionnaire for the study. To measure Digitization of Human Resource Information an adopted questionnaire from Adil et al., (2014) was used. This questionnaire was validated in a different context. Few sample items used in the questionnaires from Adopted studies are demonstrated below:

1. "Usage of electronic (like portals, social websites) model in the selection process may bring transparency in recruitment & selection process"
2. "Selecting candidates electronically can lessen the employee turnover".

The second part of the questionnaire consists of fourteen items adopted from Supply Chain Management Performance and a questionnaire developed by Das (2017), was used and few sample items used in the questionnaire are shown below:

1. "Reduction in the cost of effluent treatment and effluent discharge".
2. "Reduction in the discharge of toxic materials (solid and liquid and gases)".

Several other researchers ensured that the questionnaire was valid for measuring the performance of SCM. The scale was divided into 4 major sections with a different variable. Environmental Performance, Operations Performance, Employee-centred Social Performance, and Community-centred Social Performance. A five-point Likert scale was used to find the degree of agreement from the respondents. 180 respondents participated in the current research.

3. Results

Descriptive statistics related to supply chain management (SCM) and digitalization of human resource information were calculated and shown below in Fig 1. The figure includes frequencies and percentages. To find the relationship among the variables under study a correlation analysis was used. Among 180 sample respondents, 48 percent are male participants, and 52 percent as female participants. Among the respondents, 48 percent were Omani citizens who are working in the SMEs and 52 percent were Expatriates who were from different nations working in SMEs participated as a sample for the

study. Concerning experience, 36 percent of the sample stated 1 to 5 years of experience, 32 percent were with 5 to 10 years of experience and 25 percent of respondents have 10-15yers of experience.
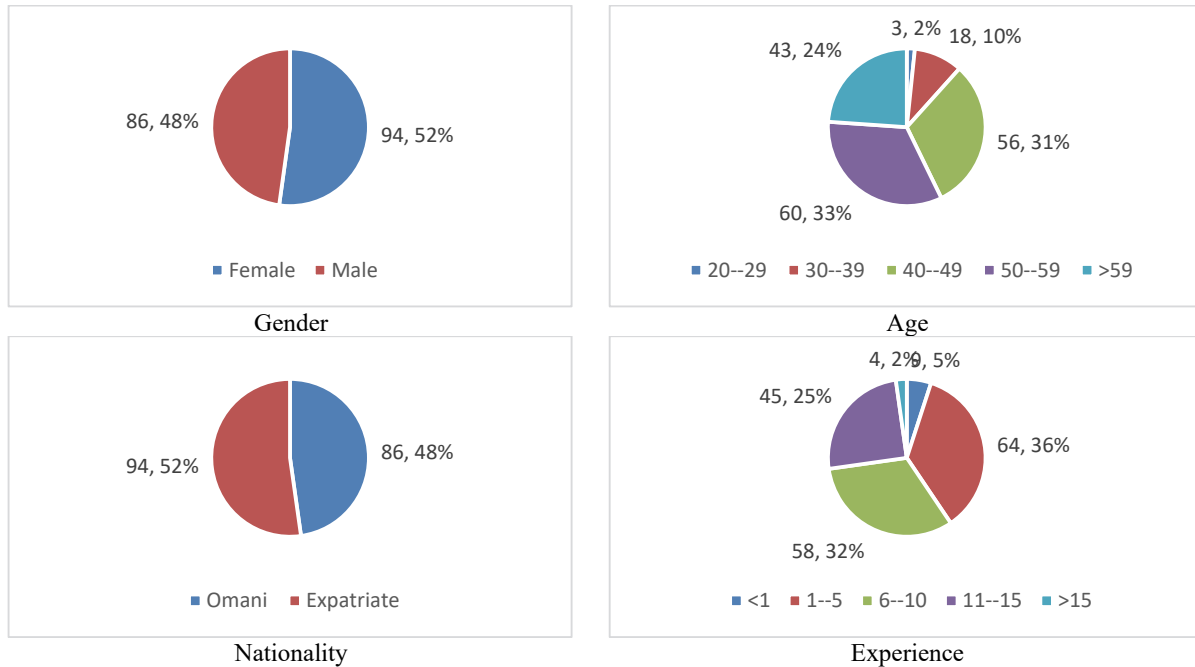

Fig. 1. Personal characteristics of the participants

5. Findings

The primary data collected using a questionnaire were analyzed with the support of SPSS Software. The quantitative data analysis was made to analyze the data collected using Google forms and a few hard copies. A total of 180 respondents participated in the questionnaire survey actively. The collected data were tabulated with the support of excel and SPSS software analyzed and results were extracted. Table 1 explains the finding of the study.

Table 1
The summary of the correlations

	e-Recruitment	e-Compensation	e-Training	e-Communication	EPR	OPR	ESP	CSP
e-Recruitment	1	.484**	.141	.004	-.025	.015	-.012	.095
e-Compensation		1	.245**	-.009	-.024	-.039	.104	.042
e-Training			1	.122	.160*	.039	.041	-.029
e-Communication				1	.470**	.362**	-.201**	-.278**
EPR					1	.508**	-.456**	-.310**
OPR						1	-.498**	-.284**
ESP							1	.377**
CSP								1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Environmental performance- (EPR) Operations performance - (OPR) Employee-centred social performance - (ESP)
Community-centered social performance- (CSP)

To find out the relationship between different variables a correlation analysis was done. Table 5, present the details of the relationship. It was found that electronic recruitment and electronic compensation are having a moderate positive relationship r = 0.484, which is significant at the 0.01 level. Electronic Compensation and electronic training are having a low positively significant relationship with an r-value of 0.245, which is significant at 0.01 level. There exists a low positive significant relationship between electronic training and environmental performance r=160 which is significant at 0.05 level. Electronic Communication and environmental performance is having a moderate positive correlation r=0.470 which is significant at 0.01 level. Electronic Communication and operations performance r=0.362 which is significant at 0.01 level. The analysis also shows a less negative correlation between electronic communication and employee-centered social performance, r=-.201. There is a significant moderate positive correlation between electronic communication and all variables of SCM performance. Thus, rejecting the null hypothesis H05 and accepting alternative hypotheses as electronic communication is contributing to the performance of supply chain management. Other variables, e-recruitment, e-compensation, e-training don't have a contribution towards the performance of SCM. Thus, accepting the null hypothesis H_{02}, H_{03}, H_{04}. Regarding environment performance and operations performance there exists a significant positive correlation

which is a moderate level with an r=0.508, which is significant at 0.01 level. A moderate negative correlation among employee performance and employee centred social performance (r= -456) and operations performance (r= -498). Community-centered social performance (CSP) is having a low negative correlation among all the variables under study except employee-centred social performance (ESP) with an r =0.377 which is less significant at 0.01 level. As per the correlation analysis, it was found to have a moderately significant positive relationship among the variables of Supply Chain management Performance and Digitalization of Human Resource Information. Also, negative correlation among the few variables under study. All the variables are significant at the 0.001 level.

Table 2
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.270[a]	.073	.068	6.3875

Predictors: (Constant), Digitalization of Human Resource Information
The Regression analysis shows a statistically significant r^2 which is evident at a significant level of 0.05 p=.005

The correlation analysis shows evidence of a positive relationship which is significant at 0.001 level among the majority of the variables under study. Thus, a regression analysis was done using SPSS with the most significant factor under study. The results of the analysis are tabulated below in Table 2, which indicates a result of 7 percent of the variation in digitalization of Human Resource Information which states the independent variable on Performance of SCM. The evidence is shown in the table as R^2 value is 0.073 that remains as the contribution of Digitalization of Human Resource Information System.

Table 3
The results of ANOVA test

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	572.690	1	572.690	14.036	.000[b]
Residual	7262.510	178	40.801		
Total	7835.200	179			

a. Dependent Variable: Performance SCM
b. Independent Variable: Digitalization of Human Resource Information

The technique of ANOVA was used to analyze the level of significance among each factor and it was found with a static value of F statics value ie., 14.036 as shown in the above Table 3. Thus, it was clear there exists a significant regression model which is also evident as adequate. The major independent variable of this research was evident as significant after testing. Thus, the hypothesis set for the study was rejected and accepted the null hypothesis. It was clear from the regression analysis as the Digitalization of Human Resource Information is a significant contributor towards the Performance of SCM.

Table 4
The results of regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	48.985	3.225		15.191	.000
DHRI	.282	.075	.270	3.747	.000

a. Dependent Variable: Performance SCM
b. Independent Variable: Digitalization of Human Resource Information (DHRI)

It is found from the coefficient Table 4, that when a single unit increase of Digitalization of Human Resource Information will make an increase of 0.282 unit of Performance of SCM with other variables were made constant. According to the correlation analysis, it was found to have a significant moderate positive correlation among the majority of the variables under study. Thus, a full model technique of regression analysis was administered to find the level of significance with the support of digitalization of human resource information as an independent variable and performance of SCM as the dependent variable, Table 8 shows the results, which is part of multiple regression shows as an indication that the table of coefficient with a significance in its predictor. The table of co-efficient is indicating the digitalization of human resource information as a significant predictor, the p-value is less than 0.05 which is 0.000. The result of the study concludes from all the analysis is that digitalization of human resource information is a variable of a high level of significance towards the Performance of SCM and confirms the regression model as adequate. This result coincides with the research result of Cooper et al., (1997).

6. Discussion and Conclusion

The majority of the organizations across the globe ensure the value additions required through Digital Human Resources Management. SCM also started implementing the practices to improve different augmentations as the demand for enhancing the practices to improve the performances. Since digitalization of human resource information is entirely a new area which will surely enrich the need for development. Many other elements effectively contribute to the SCM and its performance. According to Salim and Rajput (2021), there exist significant relationships among the transformation happening in the

leadership styles of different organisations and the performance of an organisation. This research provides insight into the existing literature and contributed extensively to the theory of SCM. Digitalization of human resource information is a novel concept that positively reveals Organisations' progress. Especially in the case of SMEs by improving the Quality of work and utilization of skilled resources to the maximum. This improves the overall efficiency of SMEs. This study reveals the positive significant relationship between digitalization of human resource information and SCM which very well contributes to the improvements in the background by serving employees performance much faster and easier. This study revealed digital human resource management as an extremely relevant contributor to SCM which is similar to the finding of Simatupang, T. & Sridharan (2020). The major factors that contribute to SCM performance are the speed or reduction in time consumption and cost. This is similar to the finding of Sundarakani, et al., (2012). This result of the study contributes to digital human resources management in SCM. This is providing further insight into the SMEs as a whole and to the policymakers to implement different strategies that are highly influential to the growth of an economy. The advancement in technology brings in a faster pace in all walks of life. Many other studies believe Digital Human Resource Management has a highly significant impact on organizational performance. This study specifically concentrates on the relationship between performance of SCM and digital human resources management which is resulted as the electronic communication is contributing to performance of supply chain management in small and medium enterprises in Oman. Limited information has been found concerning this topic in the previous literature. This research made a tremendous and extensive literature review. Thus, explored an untapped area of research to fill the gap and succeeded by doing enough analysis which is highly significant for future researchers in SCM and digitalization of human resource information.

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