METHODS

Digital resource granting in new education policy and socioeconomic in small industry development in India

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The economy of India cannot accomplish the objective of sustainable economic development until or unless it can put a generous sum into human resources. Education is a fundamental factor in development. It does not just improve the personal satisfaction of an individual, yet, addition, it improves the social advantage of the public. The motivation behind this examination is to discover how public expenditures on education can improve the economic and social state of the society in India. Regardless, the issue is whether further developed levels of education come about on the ground of education to craft skill artisans in small industries like giving digital training or digital education to Indian traditional artisans that may compete with the global handicraft sector. For the development of the handicraft sector, a separate global handicraft index has also been developed by the Indian scholar to give positive competition and advance new education to an artisan of global craft, and that more education spending can advance economic growth is yet sketchy. A few economic and social analysts and researchers have maintained the two-sided connectivity between these two factors, yet some are recommending that economic growth essentially animates the government to spend more on education, not the substitute way. The research question of this study is “do education and expenditures on education get economic and social advancement?” Considering this research issue, the current study utilizes Granger causality methods to conclude the causal connection between the government’s education spending and socioeconomic development in India for the period 1972–2021. Results uncovered that there is no short-run causality between government expenditure on education and socioeconomic growth, yet economic growth influences public spending on education. This provides guidelines to the new education policy (NEP) makers that they should prioritize their attention toward allocation of development and non-development expenditures of the government’s budget to enhance the quality of education and welfare of individuals in the society. Special focus should be given to compulsory primary education, which is already a part of sustainable development goals.

Keywords: Sustainable development goal, new education policy, education expenditure, social progress, economic growth

Introduction

Education any country is considered an engine of economic development since it shields individuals from the wrongs of substance and despondency and supplies data, information, and bliss that transform them into useful for society. There is a need for training in small industries, especially in the handicraft sector; even we should give digital training to the local artisan who have traditional knowledge but are unaware of the connectivity of digital technology with craft skills.

Moreover, the significance of primary education is extraordinarily high, basically as a great establishment fortifies the students’ capacity to get on an instructional stepping stool flawlessly, keenly, and progressively. Quality primary education is the key to the entire schooling system since the rest of them are built upon it. Since previously India was suffering from very surprising social
ills such as peace and lawfulness breakdown, corruption, weak governance, illiteracy, poor quality of education, social and income divergence, destitution/poverty, street kids, and road drug addicts, presently, there is a critical need to battle against these evils and follow the way of NEP and social advancement, which is conceivable through upgrading the capacity of a society to fulfill the fundamental needs of its voters, to set up building blocks, and to boost and support the norm of their lives as per their maximum capacity. Social development or social advancement is essentially a method of societal change and assists with evaluating that change.

Some of the digital skill education or resource allocation in small industry or handicraft sector are given below:

- Startup
- Digital India
- Stand-up India
- Digital India, Innovative India
- Vidyanjali scheme
- Hunar Haat, education in minority, some education through fare, in India
- SARAS MELA, AVADHSHILP MELA, SURAJ- KUND MELA, Trade facility center in Banaras craft skill education, toys industry in Channapatna village in Karnataka.

Tragically, the social progress index uncovered a horrendous circumstance for India. Out of 133 countries, India remains at the 98th position, and the peer countries such as Pakistan and Bangladesh remain at 113th and 101st, respectively. India is still not ready to accomplish the target of the Millennium Development Goals, albeit the Sustainable Development Goals are in process. Presently, it is an ideal opportunity to concentrate on the achievement of a 100% literacy rate in Pakistan, which is conceivable just through the strategy of "education for all," at least at the primary level. That is the reason it is a challenge for the government and strategy producers to reroute public expenditures and prioritize their objectives. Public spending on education is the fundamental source to improve the socioeconomic condition. The essential objective of this research study is to discover the causal relationship between public spending on education and socioeconomic development and to examine the impact and significance of government spending on education.

The rest of the study is organized as follows: Section "Review of literature" explains the detailed review of the literature of the existing research work. Research methodology and data description are described in Sections “Research Methodology” and “Analysis,” respectively. The results of the research are explained in Section “Research Results.” Section “Conclusion” concludes the research work.

### Review of literature

Numerous investigations have been conducted to check the connection between public expenditures on education and economic growth. The majority of them show a positive relationship. Sylwester (2000) discovered a positive connection between public spending on education and future economic development. Barro (1) analyzed 100 nations’ information and uncovered that economic growth and education have a positive affiliation, particularly expenditure on primary education. Musila and Belassi (2) inspected the connection between government spending on education and economic growth during 1951–1987 and discovered a bi-directional relationship between them. Prontzas (3) discovered a positive connection between them in the Greek economy, however, statistically insignificant. Omojimite (4) utilized both cointegration and Granger causality investigation for the exact test and discovered a positive relationship. Urhie (2014) additionally utilized a similar strategy and uncovered a positive effect of capital investment on schooling yet negative on GDP. Zoran (5) tracked down a positive relationship between these two factors in the European nations and BRICKS nations. Mallick et al. (6) experimentally tried this relationship in the 14 Asian nations and discovered a long time ago run positive relationship between them. Sarwar et al. (7) additionally discovered a positive relationship between these two factors during 1980–2020 in India. Min- haj and Nishat (8) additionally tracked down a positive connection between government spending on education and per capita pay in India during 1972–2017.

In contrast, Devaranjan et al. (9) uncovered a negative connection between these two factors in the wake of investigating a 43-nation panel dataset during 1970–1990. Yildirim et al. (10) utilized Toda and Yamamoto’s causality examination to discover the causality interface between monetary development and management devoting to schooling in Turkey throughout the time frame 1973–2009 and uncovered that because of the low portion of public spending on education, it does not prompt economic development. An advanced and most effective technique may have a big impact on the learning and teaching method of handicrafts, as well as their existence, and identity preservation of their handmade skill characters (11).

“Magia Raptzen (2011),” the handicraft expert, observed that academicians, researchers, and students can learn the value and potential of craft in terms of marketing economy and supply methods and utilize their knowledge, aptitude, and skills to increase the income of workers and artisan involved in the handicraft industries. The findings show that there is a large gap in the worth and quality of craft for the learners in both the control groups and experimental groups (12).

However, Yadav et al. (13) published about the performance of women in one district one product (ODOP) of Uttar Pradesh, and they gave an initial approach to
developing a global handicraft index for small businesses. As a new concept for the development of the handicraft industry in the world and to enhance the positive completion in a new era, there is a need for a global handicraft index (13, 14). We know that women are involved in the handicraft sector, and their performance is increasing day by day, even during the pandemic period. So, it must make strategies for their development in the handicraft industry (15). In the case of formal and informal knowledge transformation in the handmade carpet industry, Yadav et al. analyzed the good criteria for the transformation of institutions (16).

To develop business strategies for upgrading the handicraft artisan’s skills, there is a need for special strategies (17). Yadav Nassir Mammadove et al. (18) described important small industries in Azerbaijan and different handicraft industries and how to develop special strategies in the sector. Some famous handicraft industries in Uttar Pradesh are also in the decline phase, and we need to improve this shazar stone sector (19). Yadav et al. (14) discussed the digital transformation and innovation of the handmade carpet industry during a pandemic period.

Wadad and Kalakech (20) discovered blended outcomes, which are positive outcomes over the long run but have a negative impact in the short run. Idrees and Siddiqui (21) examined the long-run relationship between expenditure on schooling and GDP growth in the developed and developing countries during 1990–2006 and found that this affiliation is solid in the developing countries, including India, in contrast to developed nations (22).

Existing literature widely observes the connection between public disbursement and economic development. The current examination pushes ahead and understands the significance of social development and for that reason, not just assesses the causation of the community spending on learning to economic growth yet additionally checks this expenditure’s impact on social development in India. So, the research question of this study is: Does public spending on education cause socioeconomic development in India? Which is also the research gap. This study is an endeavor to fill this void.

### Research methodology

For getting an answer to the research question of this study, the Granger causality methodology is adopted to determine the causative connection between public spending on education and socioeconomic progress and for the proper education of small industry workers who make their products for home utility in India. Simple regression analysis does not imply causations. Theoretical consideration is required to ascribe causality. Before the causality test, the augmented Dickey-Fuller unit root test is performed to check the stationarity of time series variables.

### Analysis

A multivariate version of Granger-Sim’s causality test has been carried out using the unrestricted VAR (vector autoregression) model. The lag selection criterion is based on AIC (15). Finally, a pairwise Granger causality test is conducted. Based on a theoretical approach, this study examines three models.

- **Model 1.**
  
  \[
  EG_t = \alpha_1 + \alpha_2 EG_{t-1} + \alpha_3 Education_{t-1} + \epsilon_t
  \]

- **Model 2.**
  
  \[
  LE_t = \beta_1 + \beta_2 LE_{t-1} + \beta_3 Education_{t-1} + \epsilon_t
  \]

- **Model 3.**
  
  \[
  CM_t = \gamma_1 + \gamma_2 CM_{t-1} + \gamma_3 Education_{t-1} + \epsilon_t
  \]

where EG is economic growth, LE is life expectancy, and CM is child mortality. \(\alpha_i, \beta_i, \gamma_i\) with subscript 1 are intercepts and with subscripts 2 or 3 are coefficients, and \(\epsilon\) represents the error terms that are uncorrelated. For the valuation of these relationships and their paths of causality of a variable quantity, the vector autoregressive technique is used.

- \(\Delta \ln EG_t = \kappa_0 + \sum_{i=1}^{p} \kappa_i \Delta \ln EG_{t-i} + \sum_{i=1}^{p} \kappa_i \Delta \ln Edu_{t-i} + \sum_{i=1}^{p} \kappa_i \Delta CM_{t-i} + \epsilon\)

- \(\Delta \ln LE_t = \omega_0 + \sum_{i=1}^{p} \omega_i \Delta \ln Edu_{t-i} + \sum_{i=1}^{p} \omega_i \Delta \ln LE_{t-i} + \sum_{i=1}^{p} \omega_i \Delta CM_{t-i} + \epsilon\)

- \(\Delta CM_t = \psi_0 + \sum_{i=1}^{p} \psi_i \Delta CM_{t-i} + \sum_{i=1}^{p} \psi_i \Delta \ln Edu_{t-i} + \sum_{i=1}^{p} \psi_i \Delta \ln LE_{t-i} + \sum_{i=1}^{p} \psi_i \Delta \ln EG_{t-i} + \epsilon\)

### Data description

The aim of this study is to discover the causal association among the outflow of learning by the government of India and socioeconomic development during the period.
Yearly statistics are utilized to test the influence of administration district outlays on education on GDP growth and social development. Independent variables are public expenditures on education, and dependent variables are GDP growth, life expectancy, and child mortality (13). For economic growth, this study used nominal GDP in log form and government expenditures on education in log form. For checking, the social development study used life expectancy and small industry as proxy variables. All data are taken from World Development Indicators (WDI).

**Research results**

For empirical research and application of the causality test, this is the prerequisite for running the unit root test. According to the resulting expenditure on education, economic growth and small industry series become stationary at the first difference $I(1)$, but the life expectancy series becomes stationary at level $I(0)$. Table 1 shows the result of stationarity.

Model 2 checked the causality between life expectancy and the other three variables. Resultant findings of the test reveal that a lag in life expectancy, government’s spending on education, and small industries, especially in the handicraft sector, cause life expectancy, but economic growth does not.

For finding out the direction of influence of education expenditures on economic growth, life expectancy, and child mortality, regression analysis in the form of the VAR model is used. Before that, lag length criteria are set based on AIC, SC, and HQ. According to all three lag selection criteria results, 3 lags are suitable for the model. Outcomes are shown in Table 2.

**Table 1 | Unit root test.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Economic growth</th>
<th>Education</th>
<th>Life expectancy</th>
<th>Child mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary</td>
<td>$I(1)$</td>
<td>$I(1)$</td>
<td>$I(0)$</td>
<td>$I(1)$</td>
</tr>
</tbody>
</table>

Data adapted from MEA 2021 education ministry.

**Table 2 | VAR lag order selection criteria.**

<table>
<thead>
<tr>
<th>Lag</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akaikke information Criterion</td>
<td>$-12.15$</td>
<td>$-27.78$</td>
<td>$-32.28$</td>
<td>$-34.21^*$</td>
</tr>
<tr>
<td>Schwarz information Criterion</td>
<td>$-11.98$</td>
<td>$-26.94$</td>
<td>$-30.77$</td>
<td>$-32.04^*$</td>
</tr>
<tr>
<td>Hannan-Quinn information criterion</td>
<td>$-12.08$</td>
<td>$-27.47$</td>
<td>$-31.73$</td>
<td>$-33.42^*$</td>
</tr>
</tbody>
</table>

Table compiled by the author.

Regression analysis results of the VAR model are reported in Table 3. Three models are defined as found.

**Table 3a | Model 1: Dependent variable: Economic growth in the small industries of India, especially in the handicraft sector.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>EG</th>
<th>Education</th>
<th>LE</th>
<th>CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lag 1</td>
<td>$-0.28$</td>
<td>0.03</td>
<td>1.23*</td>
<td>0.090</td>
</tr>
<tr>
<td>Lag 2</td>
<td>$-0.30$</td>
<td>0.08</td>
<td>$-2.05^*$</td>
<td>0.092</td>
</tr>
<tr>
<td>Lag 3</td>
<td>$-0.06$</td>
<td>$-0.01$</td>
<td>0.82</td>
<td>$-0.011$</td>
</tr>
<tr>
<td>Constant</td>
<td>0.06</td>
<td>Durban-Watson Stat</td>
<td>2.01</td>
<td></td>
</tr>
</tbody>
</table>

*denotes a statistically significant coefficient. Source: Table compiled by the author.

**Table 3b | Model 2: Dependent variable: Average life expectancy in industry.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>LE</th>
<th>Education</th>
<th>EG</th>
<th>CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lag 1</td>
<td>2.65*</td>
<td>0.014*</td>
<td>$-0.01$</td>
<td>0.004</td>
</tr>
<tr>
<td>Lag 2</td>
<td>$-2.50^*$</td>
<td>0.010*</td>
<td>0.013</td>
<td>0.012*</td>
</tr>
<tr>
<td>Lag 3</td>
<td>0.84*</td>
<td>0.005</td>
<td>0.009</td>
<td>$-0.011^*$</td>
</tr>
<tr>
<td>Constant</td>
<td>0.23*</td>
<td>Durban-Watson Stat</td>
<td>2.12</td>
<td></td>
</tr>
</tbody>
</table>

*denotes a statistically significant coefficient. Source: Table compiled by the author.

**Table 3c | Model 3: Dependent variable is a small industry, especially the handicraft sector.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>CM</th>
<th>Education</th>
<th>EG</th>
<th>LE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lag 1</td>
<td>0.91*</td>
<td>0.18</td>
<td>$-0.18$</td>
<td>$-2.82$</td>
</tr>
<tr>
<td>Lag 2</td>
<td>0.44</td>
<td>0.11</td>
<td>0.30</td>
<td>4.57</td>
</tr>
<tr>
<td>Lag 3</td>
<td>$-0.49^*$</td>
<td>0.13</td>
<td>$-0.67$</td>
<td>$-1.74$</td>
</tr>
<tr>
<td>Constant</td>
<td>0.07</td>
<td>Durban-Watson Stat</td>
<td>1.9</td>
<td></td>
</tr>
</tbody>
</table>

*denotes a statistically significant coefficient.

**Table 4 | VAR granger causality/block exogeneity Wald test.**

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Education</th>
<th>EG</th>
<th>LE</th>
<th>SI</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic growth</td>
<td>.63</td>
<td>–</td>
<td>0.34</td>
<td>0.03*</td>
<td>0.05*</td>
</tr>
<tr>
<td>Life expectancy in handmade industry</td>
<td>0.00*</td>
<td>0.23</td>
<td>–</td>
<td>0.00*</td>
<td>0.00*</td>
</tr>
<tr>
<td>Small industry</td>
<td>0.44</td>
<td>0.44</td>
<td>0.13</td>
<td>–</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Coefficient values of dependent and independent variables in model 1 represent that public expenditure on education does not cause economic growth as its coefficient values are not statistically significant. Small industry and economic growth lag also do not cause economic growth. On the other hand, life expectancy lag 1 and 2 cause economic growth.

Model 3 checked the causal relationship between small industries and other variables. Public spending on education...
TABLE 5 | Pairwise granger causality test.

<table>
<thead>
<tr>
<th>Null hypothesis</th>
<th>F-Statistics</th>
<th>Probability</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEP OR education does not granger cause economic growth</td>
<td>0.74</td>
<td>0.53</td>
<td>Accepted</td>
</tr>
<tr>
<td>Economic growth does not granger cause NEP education</td>
<td>3.04</td>
<td>0.04</td>
<td>Rejected</td>
</tr>
<tr>
<td>Education does not granger cause life expectancy of a worker</td>
<td>6.6</td>
<td>0.00</td>
<td>Rejected</td>
</tr>
<tr>
<td>Life expectancy does not granger cause education training of skills in small industry</td>
<td>0.29</td>
<td>0.83</td>
<td>Accepted</td>
</tr>
<tr>
<td>Education does not granger cause small industries to increase their working capacity if they are skilled and trained</td>
<td>1.01</td>
<td>0.40</td>
<td>Accepted</td>
</tr>
<tr>
<td>The small industry does not granger cause education</td>
<td>0.85</td>
<td>0.48</td>
<td>Accepted</td>
</tr>
<tr>
<td>Economic growth does not granger cause life expectancy or artisans</td>
<td>2.52</td>
<td>0.07</td>
<td>Accepted</td>
</tr>
<tr>
<td>Life expectancy does not granger cause economic growth</td>
<td>1.6</td>
<td>0.21</td>
<td>Accepted</td>
</tr>
<tr>
<td>Economic growth does not granger cause working increment motivation in small industry</td>
<td>2.70</td>
<td>0.12</td>
<td>Accepted</td>
</tr>
<tr>
<td>The motivation of small industry working does not granger cause economic growth</td>
<td>3.2</td>
<td>0.036</td>
<td>Rejected</td>
</tr>
<tr>
<td>Life expectancy does not granger cause motivation of workers in small industry</td>
<td>2.08</td>
<td>0.12</td>
<td>Accepted</td>
</tr>
<tr>
<td>Small industry motivation does not granger cause life expectancy</td>
<td>4.65</td>
<td>0.00</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

does not cause small industries. It means the opposite is happening, and small industry is reducing in India, which is a good sign for social progress. In sum, the VAR model results revealed that although expenditures on education are not leading to economic growth, they are improving social development (17).

For finding out the short-run causality, the VAR Granger causality/Block Exogeneity Wald test is performed. The findings of this assessment are reported in Table 4. According to the test result, public spending does not granger cause economic growth and small industry in the short-run period, but it causes life expectancy, which is enhanced among the adults who are working in a small industry, especially in the handicraft sector and connected with digital technology (13).

Finally, a pair-wise Granger causality assessment was performed, which is presented in Table 5. Its results reveal that there is unidirectional causality between economic growth and education expenditure, education and life expectancy, economic growth and life expectancy, and motivation in small industry and economic growth. Expenditure on education does not cause economic growth; however, economic growth causes an increase in public expenditure on education. In sum, expenditure on education causes an increase in life expectancy and a reduction in motivation in a small industry, which is good for the socioeconomic point of view of the economy.

**Conclusion**

This study is an endeavor to discover the causal connection between public spending on learning and socio-economic development in India. The research question of this study is, does public spending on education improve the economic and social condition of society. The time span of this study is from 1972 to 2017. Annual time series of GDP, expenditure on education, life expectancy, and motivation in the small industry are used. For social development, life expectancy and child mortality are used as proxy variables (19). Results reveal that there is no little managed connectedness between administration disbursement on learning and economic expansion, but economic growth affects public spending on education. Life expectancy increases as education expenditure increases. In contrast, expenditure on education also reduces the skills of workers in the small industry as the public becomes aware of health due to digital education in economic education.

This study may provide some guidelines to the policymakers. They should prioritize their attention toward the allocation of development and non-development expenditures in the government budget to enhance the quality of education and welfare of individuals in society. A special focus should be on compulsory primary education (14).

A developing country like India should realize the importance of quality education and a qualified workforce. They are useful in keeping the speed of economic growth with the fast expansion of manufacturing products and technological advancement. The development process of a country is completely founded on a powerful and effective educational system. Without the improvements in educational level, the productivity of labor and capacity of knowledge, and economic growth cannot be conceivable (23). Other than that, a powerful education framework has a few positive commitments in social, political, and economic regions. With this respect, strategy creators ought to fundamentally concentrate on the mission of planning qualified, useful, and beneficial laborers to the basics of the education framework. Making policies to expand the education costs about the education levels from essential to advanced education can be informed as second guidance for that. As an equivalent result to the examinations in writing, it was observed that there was a positive and critical connection between tutoring costs and economic growth.
(14). More asset portions on education, particularly essential, auxiliary education, and professional preparation will have significant commitments to the economic growth process and a wellspring of extending the trade chances of data creation and sharing.

Author contributions

All authors have contributed fully and helped during the field survey and writing of this work.

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