



THE IMPORTANCE OF INTEGRATED INFORMATION SYSTEMS IN TIME OF COVID-19 CRISIS

14th INTERNATIONAL SCIENTIFIC CONFERENCE **WOODEMA**

Authors

Karla Kremenjaš, Kristina Klarić , Ivana Perić

Koper, Slovenia, *June 16th - 18th 2021*



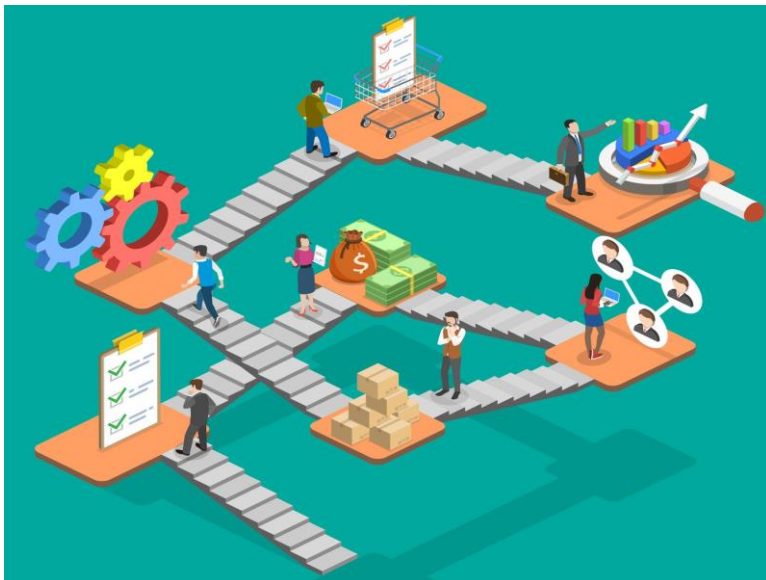
```

06:45:40 PM T1 32:62 T2 * AT 1000 AD 3355 UD 185 AG 3 MS 2 RN 1 H1 * H2 *
06:47:40 PM T1 32:62 T2 * AT 1000 AD 3355 UD 185 AG 3 MS 2 RN 1 H1 * H2 *
06:48:10 PM T1 32:56 T2 * AT 1000 AD 3357 UD 185 AG 3 MS 1 RN 1 H1 * H2 *
06:54:25 PM T1 32:45 T2 * AT 1001 AD 3355 UD 185 AG 2 MS 1 RN 1 C H1 * H2 *
06:55:58 PM T1 32:25 T2 * AT 1001 AD 3355 UD 185 AG 2 MS 2 RN 1 C H1 * H2 *
06:58:49 PM T1 32:13 T2 * AT 1000 AD 3355 UD 185 AG 3 MS 3 RN 0 H1 * H2 *
06:59:19 PM T1 32:07 T2 * AT 1001 AD 3355 UD 185 AG 3 MS 2 RN 1 C H1 * H2 *
06:59:49 PM T1 32:00 T2 * AT 1000 AD 3355 UD 185 AG 3 MS 2 RN 1 C H1 * H2 *
07:00:19 PM T1 31:98 T2 * AT 1000 AD 3355 UD 185 AG 2 MS 1 RN 0 H1 * H2 *
07:00:49 PM T1 32:03 T2 * AT 1001 AD 3360 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:01:19 PM T1 32:05 T2 * AT 1001 AD 3355 UD 185 AG 1 MS 0 RN 0 H1 * H2 *
07:01:49 PM T1 32:04 T2 * AT 1000 AD 3360 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:02:19 PM T1 32:02 T2 * AT 1001 AD 3360 UD 185 AG 2 MS 2 RN 0 C H1 * H2 *
07:02:49 PM T1 31:98 T2 * AT 1000 AD 3355 UD 185 AG 3 MS 1 RN 0 H1 * H2 *
07:03:19 PM T1 31:94 T2 * AT 1000 AD 3360 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:03:49 PM T1 31:95 T2 * AT 1000 AD 3355 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:04:19 PM T1 31:97 T2 * AT 1000 AD 3355 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:04:49 PM T1 31:93 T2 * AT 1001 AD 3355 UD 185 AG 2 MS 2 RN 0 C H1 * H2 *
07:05:19 PM T1 31:90 T2 * AT 1001 AD 3355 UD 185 AG 3 MS 2 RN 0 C H1 * H2 *
07:05:49 PM T1 31:93 T2 * AT 1001 AD 3355 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:05:19 PM T1 31:94 T2 * AT 1000 AD 3355 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:05:49 PM T1 31:94 T2 * AT 1000 AD 3355 UD 185 AG 1 MS 1 RN 0 C H1 * H2 *
07:07:19 PM T1 31:94 T2 * AT 1001 AD 3355 UD 185 AG 1 MS 0 RN 0 H1 * H2 *
07:07:49 PM T1 32:09 T2 * AT 1000 AD 3358 UD 185 AG 2 MS 1 RN 0 C H1 * H2 *
07:08:19 PM T1 32:05 T2 * AT 1000 AD 3355 UD 185 AG 1 MS 0 RN 0 C H1 * H2 *
07:09:00 PM T1 32:07 T2 * AT 1001 AD 3355 UD 185 AG 1 MS 0 RN 0 C H1 * H2 *
07:09:31 PM T1 32:13 T2 * AT 1001 AD 3355 UD 185 AG 1 MS 0 RN 0 C H1 * H2 *
07:10:01 PM T1 32:17 T2 * AT 1000 AD 3355 UD 185 AG 1 MS 1 RN 0 C H1 * H2 *
    
```



According to Majdandžić (2004), an **Integrated Information System** can be defined as a set of elements (data, personnel, equipment, methods, information) and activities that ensure the transformation of data into information and presentation of information to the user.

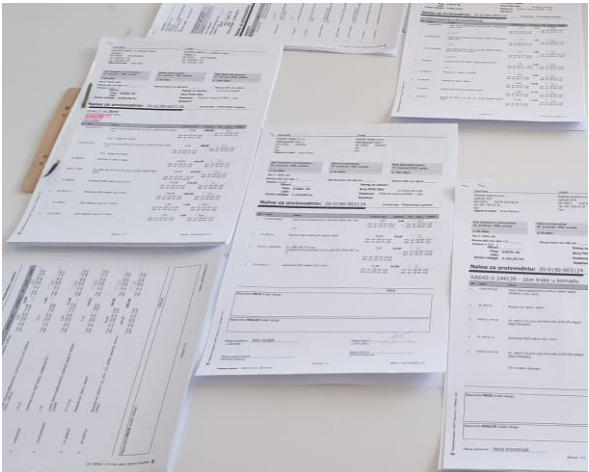
Integrated information systems are applied for easy connection of companies and are better known under the abbreviation **ERP**.





IZLOŽBENI
SALON NE RADI!

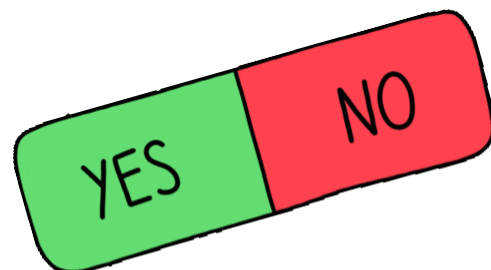
RADNO VREMJE
INFO PULTA DO 18.04.
08:00-18:00 h





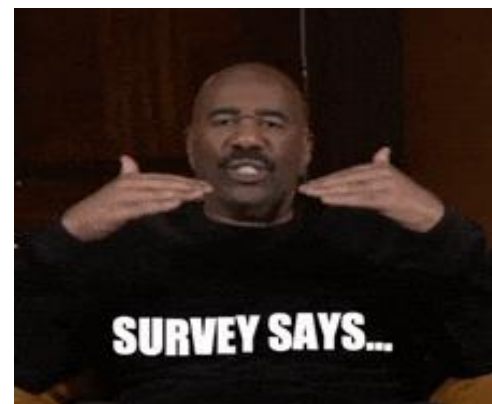
The **survey method** was used to determine the implementation of IIS in the wood industry of the Republic of Croatia.

Respondents, companies from the wood industry of the Republic of Croatia were sent a request to fill out a questionnaire by e-mail.



The questions were formed using five-step Likert scales (1 = 'not important' to 5 = 'extremely important').

Twenty-three correctly completed surveys were collected and IBM SPSS Statistics Desktop for Trial (IBM, 2017) was used for statistical processing

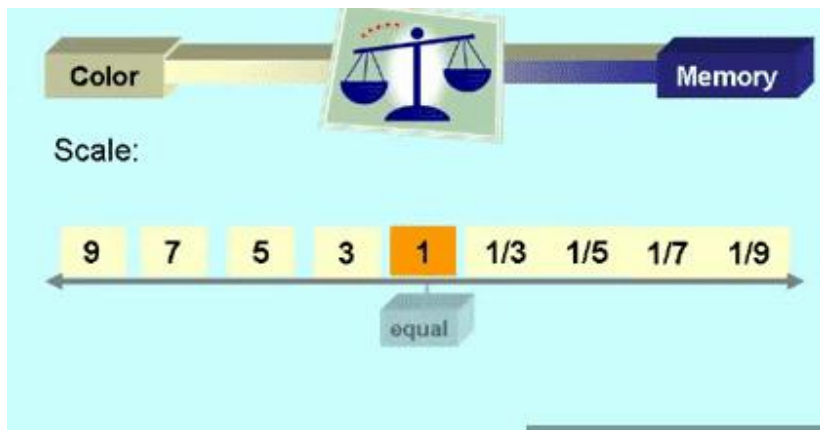




MATERIAL AND METHODS

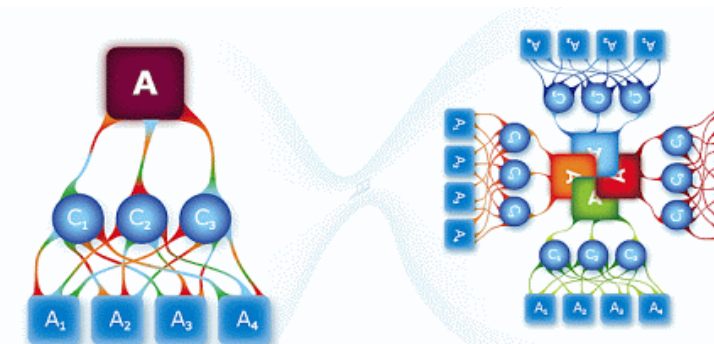
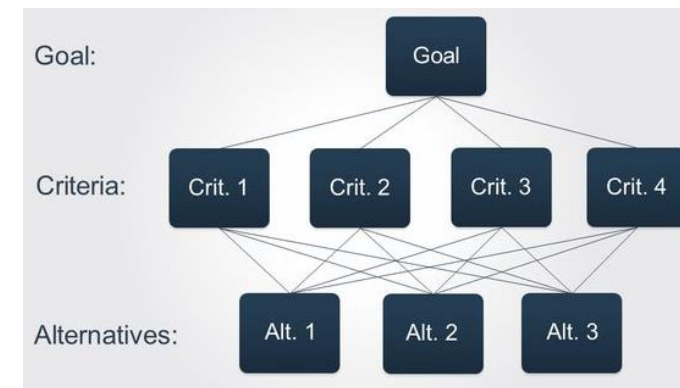
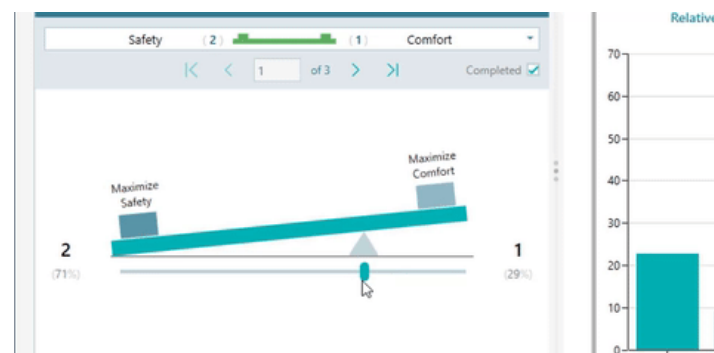
Analytic Hierarchy Process is one of the most used methods in decision making and it is developed by Thomas I. Saaty (Saaty, 2008). Decision-making is quite complex in most cases, especially in business.

| Importance | Definition | Explanation |
|-----------------|-------------------------------|--|
| 1 | Equal Importance | Both elements have equal contribution in the objective. |
| 3 | Moderate Importance | Moderate advantage of the one element compared to the other |
| 5 | Strong Importance | Strong favoring of one element compared to the other. |
| 7 | Very Strong Importance | One element is strongly favored and has domination in practice, compared to the other element. |
| 9 | Extreme Importance | One element is favored in comparison with the other, based on strongly proved evidences and facts. |
| 2,4,6,8 | Intermediate Values | |
| 1/3,1/5,1/7,1/9 | Values for inverse comparison | |



Surveyed experts were from the academic and business sector of the wood processing and furniture manufacturing area.

For the determination of preference 9-point scale from Saaty (2008) was used, where 9 means extreme preference of one alternative above the other and 1 means equal importance of both compared alternatives.



After collection, the data were processed using AHPcalc Version 2018.09.15 (Goepel, 2018).



Ranking effects of IIS
research conducted by



ts were obtained in previous

The effects of the implemen

1. Finance management
2. Information availability
3. Quality of information
4. Stock management
5. Integration of business processes
6. Response to customer requests
7. Purchase management
8. Personnel management

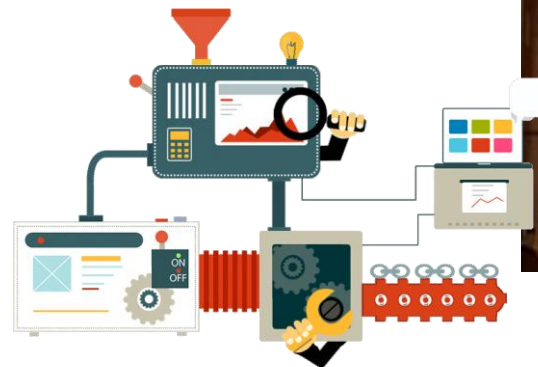
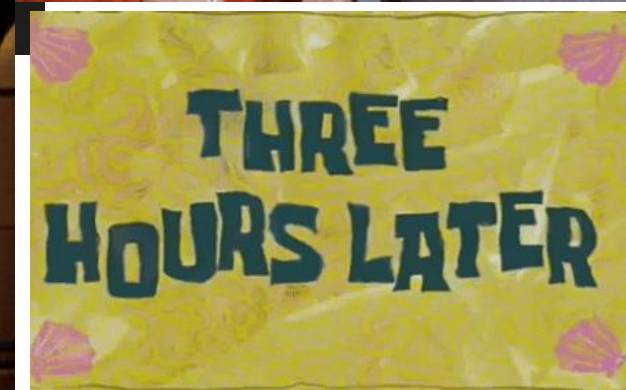
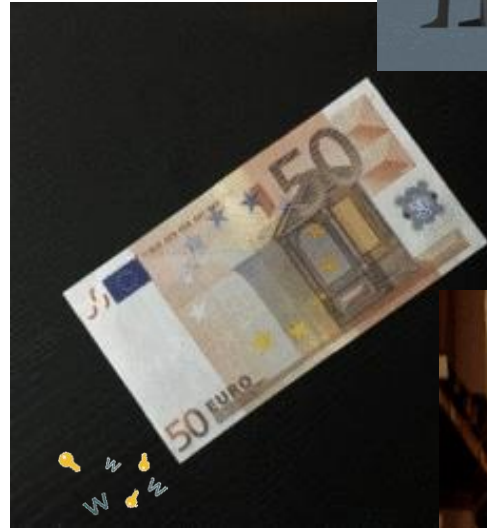




Chart 1

IIS implementation effects – survey results (arithmetic mean)

❁ The results of the survey given in chart 1 showed that the most important effect for the participants in the implementation of the information system in the company is financial management ($M=4.70$), followed by the availability of information ($M=4.57$).

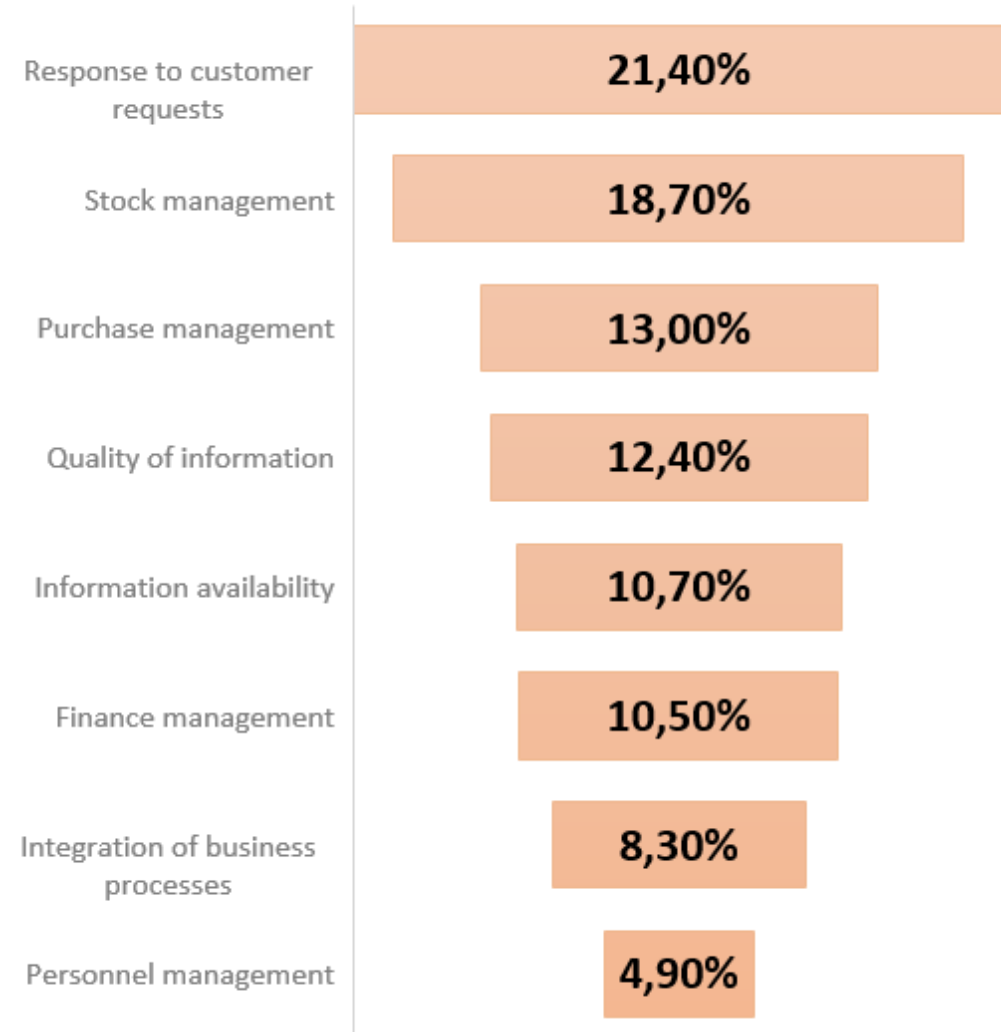
❁ The lowest value on the scale of IIS effects ($M=3.91$) was given to personnel management, which is not surprising precisely because few companies in Croatia engaged in wood processing decide to allocate a large amount of capital to introduce a personnel management module in their information system.



Chart 2

❁ The results of ranking using the AHP method are shown in chart 2 and were collected by six experts that had experience in using the integrated information system in their work before or during the COVID-19 crisis.

❁ If we take a closer look at the results on the effects of implementation IIS by experts, we can observe that all the internal factors of the enterprise are at the bottom of the materiality. External factors that include purchase management and stock management are at the top of importance.

Ranking of IIS implementation effects with AHP method



CONCLUSION

🦠 According to the results of Stojčić (2020) and the results from **the case study**, it can be seen that the COVID-19 pandemic harmed companies in the manufacturing industry in almost all sectors and led to declining revenues, inventory utilization, financial problems, and shook the company's relations both with customers and suppliers.

🦠 According to sector analysis conducted by Croatian wood cluster 60% of respondents recorded a significant decline in export orders by more than 20%, while only 7% of companies continued their business despite the crisis.

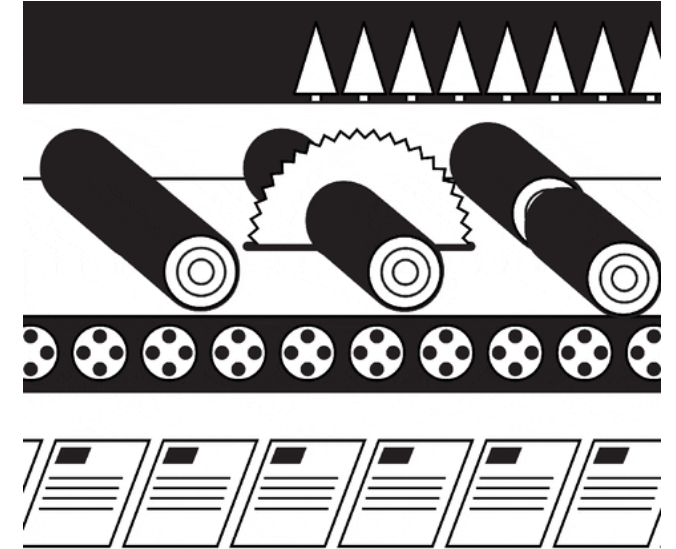


CONCLUSION

- According to a survey **before the COVID-19 crisis**, the users of the information system pointed out financial management and the availability and quality of information, or easier and faster communication with each other as the most important effects of implementation.



- In contrast to the survey research, where the most important was financial and information management, according to the **AHP method**, the priority effects of IIS implementation are responses to customer requirements, inventory management, and procurement.





This research gives a brief insight into the state of IIS implementation before the COVID-19 crisis, gives an overview of the importance of certain factors during the crisis, which opens opportunities for further research in this area.





THANK YOU



Karla Kremenjaš

Kristina Klarić

Ivana Perić



kkremenj1@sumfak.unizg.hr

kklaric@sumfak.unizg.hr

iperic@sumfak.unizg.hr

<http://www.woodema.org/>