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EDITOR'S NOTE

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With all our hearts and sincerity, we wish to express our deepest gratitude to all the authors, reviewers, and editorial board members for their valuable contribution for this journal. We look forward to a successful cooperation.

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The Adoption of Management Controls From a Complex Adaptive Systems Perspective

Abstract:

The purpose of this paper is to investigate whether self-organisation predicts of adoption of management controls in manufacturing firms. The study employed the lens of complex adaptive systems theory to investigate the research question. The study used a cross-sectional survey to collect data from 202 manufacturing firms with the use of a multi-dimensional self-administered questionnaire

Data were analyzed quantitatively using PLS-SEM. The findings indicate a positive relationship between innovativeness, emergence and adoption of management controls. The hypothesis for networks of interaction was not supported.

Keywords:

Management control; Adoption; complex adaptive systems

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Introduction

Management control adoptions are regarded as important, often beneficial, choices by a manufacturing firm's management, because they play a significant role in ensuring their financial viability [1]. For businesses to survive, they need to quickly identify new threats and opportunities, make decisions about their response and implement these decisions quickly [2]. Nevertheless, although some organizations use extensive, formal planning practices or incorporate formal rules, procedures and standards, other firms have been found to rely more on individual judgment [2] and many start-ups choose not to adopt MCs at all [3]. Therefore, understanding the emergence of MC's is important to managing firms [4].

This study departs from previous studies that employed structural contingency theory variables, such as firm size, age, technology, structure, and strategy [5] to explain the adoption of management controls from a complex adaptive systems (CAS) perspective because CAS models explicitly recognise the importance of human interactions during the adoption of management controls [7] [8]. A complex adaptive system consists of a number of heterogeneous agents (employees), and each of those agents makes decisions about how to behave. The agents interact with one another, leading to the emergence of management controls: In a very real way, the whole becomes greater than the sum of the parts. The key issue is that you can't really understand the whole system by simply looking at its individual parts [6].

Complex adaptive systems theory is a theory of change, evolution, adaptation and development for survival [7]. At the heart of complex adaptive systems theory lies self-organisation which is the process by which agents in a system interact, exchange information, mutually affect one another, according to their own local rules of behaviour and, in doing so, generate new behaviour in the system, as a whole [8]. Extending complex adaptive systems theory to studying the adoption of management controls is promising, because of its focus on understanding relationships between and among individuals and the resulting collective behaviours and outcomes [9].

Application of a CAS perspective, by including self-organisation as a construct, may provide a better theoretical explanation, than a contingency framework, in identifying the different processes involved in the adoption of management controls for three reasons. First, the notion that society is a "marketplace of ideas" is commonplace, but models of organizations in which knowledge structures compete with one another and evolve are rare. The CAS perspective explores how ideas, initiatives, and interpretations form an internal ecology within an organization. Secondly, CAS models represent a genuinely new way of simplifying the complex, of encoding natural systems into formal systems. Instead of making nonlinear systems tractable by reducing them to a set of causal variables and an error term, CAS models typically show how complex outcomes flow from simple schemata and depend on the way in which agents are interconnected. Thirdly, agents in CAS models need not be the prisoners of a fixed set

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of rules. Complex adaptive systems encode their environments into many schemata that compete against one another internally. Evolving actors develop vicarious selective systems so that they can experiment and fail without being killed; they allow schemata to compete and reinforce those that seem to be associated with favourable outcomes [10].

In line with this perspective, the aim of this paper is to establish whether self-organisation leads to the adoption of management controls. This is achieved through a quantitative cross-sectional survey of 202 large manufacturing firms. Analysis of the data using PLS-SEM indicates that, of the dimensions of self-organisation, emergence has the largest effect on adoption of management controls, followed by innovativeness. However, the effect of networks of interaction on adoption of management controls, is insignificant. It thus improves on our understanding of the adoption of management controls in a dynamic environment, from a complex adaptive systems perspective.

The rest of the paper proceeds as follows: Section 2 is a brief description of the study concepts, a theoretical framework and the literature review. This is followed by Section 3, research methodology. Section 4 presents the results and finally, Section 5 is the discussion and conclusions chapter.

Literature review and hypothesis development

The adoption of management controls

In this study, the adoption of management controls is centred on explaining how those systems, rules, practices, values, and other activities management put in place, in order to direct employee behaviour, can be identified, acquired and implemented, so as to enable firms improve their profitability and long-term survival [14] [15]. As such, management controls include all the devices and systems managers use to ensure that the behaviours and decisions of their employees are consistent with the organisation's objectives and strategies. Given that the array of mechanisms that form part of management control efforts is extensive, the control categories used in this study are as follows: planning, measurement, compensation, structure, policies and procedures, and socio-ideological [11].

Self-organisation and adoption of management controls

Self-organisation essentially refers to a spontaneous, dynamically produced (re-) organisation [12]. Natural self-organising systems function without central control and operate based on contextual local interactions. The particularity of self-organised systems is their capacity to spontaneously (without external control) produce a new organisation, in case of environmental changes [13].

Social behaviour of humans is also self-organised and gives rise to emergent complex global behaviours. The emergence is the fact that a structure, not explicitly represented at a lower level, appears at a higher level. With no central control, a complex collective behaviour then raises

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from simple local individual interactions [13]. These behaviours, such as an organization culture, performance measurement systems, and strategic planning, are then referred to as management controls.

By employing mechanisms based on reinforcement, coupled with local interactions and local computations done by agents, management can engineer self-organisation, in order to provide a final coherent global state [13] such as management controls. In this approach, self-organisation is based on the capabilities of the agents to dynamically modify their behaviour, according to some reinforcement. It consists in the following basic principles: rewards increase agent behaviour and punishments decrease agent behaviour. The consequence is that an individual agent can adapt its capabilities and we can observe specialisation of roles, for example [12].

The task of those responsible for the strategic direction of an organization is not to foresee the future or to implement enterprise-wide adaptation programs, because nonlinear systems react to direction in ways that are difficult to predict or control. Rather, such managers establish and modify the direction and the boundaries within which effective, improvised, self-organized solutions can evolve. They set constraints upon local actions, observe outcomes, and tune the system by altering the constraints, all the while raising or lowering the amount of energy injected into the dissipative structure they are managing. Changes that produce positive cascades of change are retained, while those that do not are altered [10]. Indeed, it is well established that many innovations can arise from the bottom up, via self-organised groups that take it upon themselves, with little direction to solve a problem. The total quality management literature, particularly that emphasizing quality circles and teams, explicates this process thoroughly [14].

Academic observers identify innovativeness [15], networks of interaction [6] and emergence [16] as key dimensions of self-organisation.

Innovativeness and adoption of management controls

Innovativeness relates to the firm's capacity to engage in innovation; that is, the introduction of new processes, products, and ideas in the organization [17], which result in significant improvement in outcomes [18]. Innovativeness reflects a basic willingness to diverge from the status quo and embrace new ideas [19]. Organisations that thrive, via innovative activities (the outcomes of innovativeness), do so because they have developed an architecture that helps them to innovate and adapt to situations no leader can fully foresee or understand [20] which is consistent with the self-organizing paradigm.

Innovativeness is a multi-dimensional organizational trait, including creativity, risk-taking, and openness to change [21]. Individual and team creativity form the starting point for innovation [18]. Thus, for instance, there is a widespread belief that decentralized and informal organizational structures facilitate innovativeness. Delegating authority to other firm members also encourages creativity, and poises the firm to capitalize on diverse solutions. These

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features may contribute to the innovativeness of these firms [22]. Thus, it is expected that management of companies striving for innovations, will tend to apply more instruments in order to foster cultural control [23].

Openness includes whether the members of an organization are willing to consider the adoption of an innovation or whether they are resistant to it [17]. The flexibility and openness of these types of organizations, is believed to enhance innovativeness by encouraging new ideas [24]. Innovativeness in such organisations is demonstrated by an inclination to challenge the status quo and support new ideas in technology, new product development, and internal processes (Baker and Sinkula 2009).

Since innovation and adoption involve risks, risk-aversion and conservativeness reduce innovativeness [22]. Research suggests that innovation is more likely to occur in contexts (firms) in which innovative attempts are rewarded rather than punished [25]. This creative and risk-taking behaviour is only possible if it is facilitated by managers who are tolerant of mistakes and failure [26]. The stronger the top managers' support, the better chance that the innovation will be adopted [32] [26]. Hence, innovative behaviour requires some degree of risk tolerance and uncertainty [27].

Applied to management accounting settings, innovations include not just management accounting techniques, but also changes to work practices. This places innovation as a key overarching contextual variable to be considered in MCS design [18]. Several studies on MCS's have acknowledged the role that the specific characteristics of innovative enterprises play regarding the implementation and design of MCS's [23]. [34] found a positive relationship between innovativeness and the level of supervisory support and reward systems. [35] also indicate that adoption is associated with an organic innovative culture and, marginally, with formal controls such as capital budgeting, financial decision tools, standard costs, and systematic evaluation of personnel. More recently, [36] found that innovativeness and control mechanisms in Tourism and Hospitality Family Firms are positively correlated. This leads us to posit that:

H_1. There is a positive relationship between innovativeness and adoption of management controls.

Networks of interactions and adoption of management controls

Scholars suggest that the conditions required for effective adoption of management controls reside less in hierarchical management strategies and more in the 'freedom of interaction among agents with diverse views' [28]. In social systems, the main driver of the self-organisation process is the interaction among members [29], and not any tendency of individual agents to prefer or seek order [30]. When the interactions of large numbers of components involve positive feedback loops, some behaviours self-amplify, quickly crowding out others, with mutual feedback leading to self-organised change and, thereby, the emergence of new organisations and systems [28]. Networks of interactions then enable ideas to disseminate and

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spread [6]. For example, people or departments refine existing ideas and knowledge and recombine them; they then transfer them into new practices [31]. In other words, these ideas must then flow into the formal organizational systems and structures to create this change [32].

In a study of self-organisation in three Adelaide-based small or medium-sized enterprises, [38] find that one of the important indicators of a self-organising system is open, honest communication using multiple channels. [42] found that the social interaction of varying stakeholders resulted in a breaking down of barriers to integration through mutual adjustment. Therefore, we derive the following hypothesis:

H_2. There is a positive relationship between networks of interaction and adoption of management controls.

Emergence and the adoption of management controls

The construct of emergence suggests an alternative way that organizational structures, strategies, and practices can arise without being due to an imposition from command/control hierarchies. Appealing to emergence, accordingly, explains varied aspects of organizational dynamics through emphasizing spontaneous innovations which emerge out of interactions within social networks of persons and between persons and technologies. Typically, these innovations in organizational functioning are understood as the emergence of collectivities at the macro-level out of connectivities at the micro-level. Moreover, because these innovations are not the result of imposition, it is believed they are more likely to exhibit creative solutions, are more likely to evoke employee commitment, and consequently are more likely to empower rather than disempower employee contributions [33].

Emergence happens after the system's parameters change and triggers behavioural changes in the organization, whereby its components take on new behaviours that none of them had before [34]. The emergent properties (management controls) are independently observable and empirically verifiable [45] [7]. Self-organization succeeds when the system supports the independent activity of its members by giving them, quite literally, a strong frame of reference [35]. The shared frame of reference is created by the shared values of the individuals in a social system [29]. Strong shared values then lead to the emergence of similar behaviours of individuals at various levels of an organization [36]. These shared values hold the behaviour of the organisation within boundaries, pulling the system into a visible shape [35]. Shared values then create norms of behaviour [29]. These norms and values form the organisations' identity which is critical to self-organization as it provides an internalized cognitive structure of what the organization stands for and where it intends to go - in short, a clear sense of the organization's identity [37]. A sense of identity then serves as a rudder for navigating difficult waters [38].

Results from an empirical study in three Australian SMEs indicate that the value system in an enterprise is needed for self-organization to occur [39]. [51] confirm the emergence of MCS, such as

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financial planning, and financial evaluation, in young growing firms. And, in an effort to conceptualize the role and practice of accounting in dynamic and complex business networks, [52] illustrated how change is not a random process but the emergent, self-organised outcome of interactions, leading us to the hypothesis that:

H_3. There is a positive t relationship between networks of interaction and adoption of management controls.

Methodology

Research design, population, sample size

A cross sectional survey was conducted in order to examine the relationship between self-organisation and adoption of management controls. This method was selected because it enables collection of data from a large sample at a relatively low cost and is commonly employed for theory testing in management accounting research [40].

The study focused on large firms as they are more likely to have more comprehensive MCs than smaller firms, which often use mainly informal MCs or simpler management systems [41]. A single industry focus has the advantage of implicitly controlling for confounding factors as well as improving internal validity [42]. Since the target was large manufacturing companies, the study population included companies with an annual turnover of more than $100,000 and employing at least 50 persons [43]. Consequently, 770 met the criteria for inclusion in the sampling frame.

Sample design and data collection procedure

Given that the increasing levels of non-response in management accounting studies [40], questionnaires were issued to all 770 firms. Managers were selected as key informants because it is believed that they can provide the most reliable information in regard to the controls used in their firms [44]. Ultimately, 202 usable questionnaires were retained, generating a final response rate of 28.6%.

Non-response bias

In order to examine for non-response bias, the responses from the first 20% of returns and those from the last 20% were compared, to test if responses differed between the two groups. The results of an independent samples t-test for each of the study variables show no differences between the groups, providing support for the absence of a non-response bias.

Measurement of constructs

The measurement of constructs drew on well-established survey instruments from previous research. The items were anchored on a six-point Likert type scale because, in avoiding to score the midpoint, respondents are required to deeply process each question and response option, thereby reducing response biases, and improving the validity and reliability of their responses [45]. All the measurement items were reflective, as the indicators are caused by the latent variable [46].

The items for adoption of management controls were drawn from the framework proposed by [15]. A sample question was "in our company, the

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following are part of our day-to-day operations…budgets are prepared regularly, a staff canteen is available to all staff, staff are provided uniforms, we have job descriptions. As regards the source of the management controls, a sample question was "When your company was making the decision to take on the above management controls, the following sources of information were important… Fellow Managers, Internal reports, Other Staff in the company." In measuring self-organization, a sample item for networks of interaction was…" I openly share information, with other managers". For innovativeness, a sample item was "Innovation in our company is perceived as too risky and is resisted (R)". For emergence, a sample item was "I have observed new management controls emerging in this company."

Common method variance

To minimise the bias caused by responses systematically varying because of the use of a common scaling approach on measures derived from a single data source [47], considerable effort was made to ensure a well-conceived questionnaire design and data collection procedure, as elaborated by Van der Stede, et al., (2007). In addition, a test for CMV in PLS-SEM was employed [48]. The results presented in table three indicate that all the inner VIF values for the study variables are below 3.3, suggesting absence of CMV.

Controlling for endogeneity

The potential for endogeneity exists in virtually all accounting studies, especially when using survey data [49]. The study controlled for the following firm factors in the structural model, since they are shown to have a positive relationship with the adoption of management controls. Firm size measured as the number of employees working at the end of the year [50] and sales revenue (turnover) in the preceding year [51], Age is defined as the date on which the company was registered [50], ownership by indicating whether they were foreign or locally owned firms [52], Legal registration in terms of ownership differences among private and public firms [53], as well as manufacturing sub-sector.

Data analysis and results

The data analysis consisted of four stages; first, the data was cleaned following [67]'s procedures. Specifically, an examination was made to see if the data contained missing values, followed a normal distribution, existence of outliers, homogeneity of variance, as well as non-linearity. Second, descriptive statistics as well as correlations were obtained to get a feel for the data and assess whether it warranted SEM, using SmartPLS v3 software [54]. The third stage involved assessment of the measurement model, for validity and reliability of the measurement instrument, and finally evaluation of the structural model, to enable hypothesis testing.

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Descriptive results

Since the unit of analysis for this study is a manufacturing firm, it is important to consider the characteristics of the participating firms. 63% of the firms has been in operation for above 16 years. 52% had above 100 employees, and a turnover above 100,000$ in at least one of the previous three years. Also, the majority of the firms are involved in agro-processing (34%), followed by machinery and equipment (12%), textile and wearing apparel (11. 67% were registered as private limited companies.

Firm Age	Count	%	Registration Status	Count	%
6 - 10 Yrs	45	22.3	Sole Proprietorship	21	10.4
11 - 15 Yrs	29	14.4	Partnership	35	17.3
16 - 20 Yrs	55	27.2	Private Limited Company	135	66.8
Over 20 Yrs	73	36.1	Public Limited Company	11	5.4
Total	202	100	Total	202	100
Sub-sectors	Count	%	Nationality	Count	%
Agro-processing	69	34	Ugandans	120	59.4
Furniture	13	6	Foreigners	51	25.2
Metal Products	17	8	Ugandan & Foreigners	31	15.3
Paper Products & Printing	21	10	Total	202	100
Machinery & Equipment	25	12			
Leather & Related Products	10	5			
Textile & Wearing Apparel	22	11			
Bricks, Cement & Concrete	25	12			
Total	202	100			

Table 1: Descriptive statistics for the study population

The characteristics of the managers indicate that 55.5% and 44.5% were male and female, respectively. 41% Generation Xers, and 59% Millennials. Over 60% had more than 5 years' job tenure. At least 70% had a university degree. The distribution based on department was 16% from Finance, 25% Production, 23% HR/ Admin, 25% Sales and Marketing, 10% Transport and Logistics.

Measurement model assessment

The reflective measurement models were assessed with regard to their reliability and validity [55], as summarized in Table 2. Indicators with loadings above 0.708 were retained, as they indicate that the construct explains more than 50 per cent of the indicator's variance, thus providing acceptable item reliability. For internal consistency reliability, the Cronbach's α and the composite reliability values for all the constructs lie

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within the recommended range of 0.7 to 0.95, thus establishing sufficient content validity. The average variance extracted (AVE) values, for all the study constructs, are above 0.5, demonstrating adequate convergent validity. The heterotrait-monotrait (HTMT) ratio of the correlations [56] for all the study constructs are all below 0.85, demonstrating sufficient discriminant validity.

Variables	Values			
Self-Organisation	α	CR	AVE	VIF
Innovativeness	.72	.84	.640	1.428
Networks	.84	.90	.765	2.209
Emergence	.89	.91	.654	2.347
Adoption of Management Controls				
Initiation	.91	.94	.797	2.455
Decision	.95	.95	.697	2.861
Implementation	.93	.94	.657	3.202

Table 2: Construct Reliability, Validity and VIF Values

Structural model assessment

Following [69] the results, in table 2 indicate that collinearity was not an issue, as the VIF values for all the study constructs are below the threshold of 3. The next step involved assessing the model's explanatory power, by examining the R^2 value of the endogenous construct. As a guideline, R^2 values of 0.67,0.33, or 0.19, are described as substantial, moderate, or weak. The results, presented in table 3 indicate that the R2 for adoption of management controls is moderate (0.41) providing support for the model's in-sample model fit.

An assessment of the f^2 effect size was also carried out in order to evaluate how the removal of a certain predictor construct affects an endogenous construct's R^2 value. Values of 0.02, 0.15, and 0.35 can be viewed as a gauge for whether a predictor latent variable has a weak, medium, or large effect at the structural level. The results indicate that emergence (0.037) and innovativeness (0.037) have the highest effect on the adoption of management controls.

Stone-Geisser's Q^2, using the blindfolding procedure, assessed the model's predictive ability. Q^2 values above zero offer evidence that the observed values are well reconstructed and that the model has predictive relevance. From the study results, all the values for the predictor variables, are above 0, innovativeness (0.469), networks of interaction (0.469) and emergence (0.275), further supporting the model's predictive accuracy.

Having substantiated the structural model's explanatory and predictive power, the final step was to assess the path coefficients in the structural model, in terms of sign, magnitude, and significance. This was achieved by running the nonparametric bootstrap procedure. The results indicate that the direct relationships between innovativeness (95% CI [0.045,0.343]) and emergence (95% CI [0.050,0.302]), and the

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adoption of management controls are all positive and significant, since the confidence intervals do not contain zero. Thus, H_1 and H_2 were both supported. The relationship between networks of interaction and adoption of management controls is insignificant, since the bias corrected confidence interval contains a zero (95% CI [-0.028,0.292]). Therefore, hypothesis H_3 was not supported.

Paths	β	t-value	*p*-value	95% CI	Decision
Emergence -> AMC	0.170	2.636	0.008	0.050,0.302	Supported
Innovativeness -> AMC	0.195	2.562	0.010	0.045,0.343	Supported
Networks of Interaction -> AMC	0.126	1.553	0.120	-0.028,0.292	Rejected
Firm Age -> AMC	0.009	0.132	0.895	-0.129,0.150	
Legal Reg. -> AMC	-0.199	2.979	0.003	-0.328, -0.065	
No. Employees -> AMC	-0.217	2.282	0.022	-0.406, -0.038	
Ownership -> AMC	0.110	1.818	0.069	-0.012,0.227	
Sub-Sector -> AMC	-0.085	1.538	0.124	-0.188,0.029	
Turnover -> AMC	0.448	6.100	0.000	0.299,0.588	

Table 3. Bootstrapping results. Note: AMC= Adoption of Management Controls
R^2=. 0.406, Adjusted R^2= 0.378

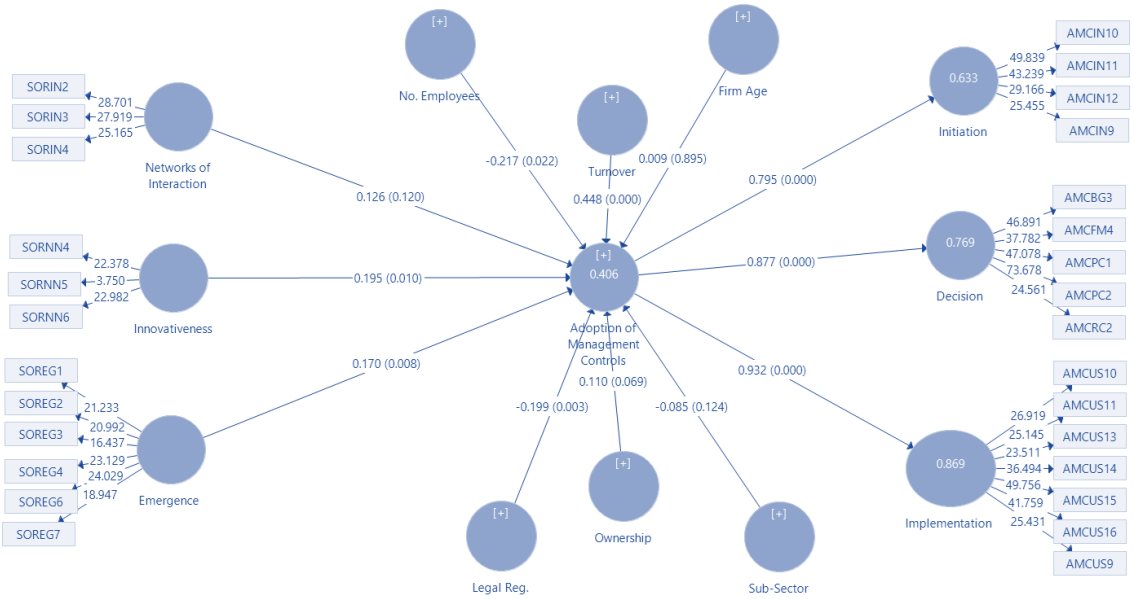

Figure 1: Structural Model for Self-Organisation and Adoption of Management Controls

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Control variables

The results indicate that, overall, the only positive and significant contingent factor associated with the adoption of management controls is firm size, as measured by turnover. This suggests that management controls are adopted as the firm increases revenue and can therefore experiment with administrative innovations [57]. Due to the inclusion of these control variables, the relationships of the main model are no longer influenced by the included control variables.

Discussion

From the results, a positive relationship between innovativeness and adoption of management controls was also established. This means that the higher the innovativeness among manufacturing firms, the higher the degree of adoption of management controls by that manufacturing firm. Thus managers, in manufacturing firms, should encourage staff to take risks, search for ideas on new products and technologies, while being supportive and tolerant of mistakes. The managers can exercise their innovativeness through socialisation mechanisms, commonly referred to as cultural controls [58], such as education and training, providing staff uniforms, and rituals such as the annual Christmas party. This will provide a conducive environment for staff to engage in deliberation on ideas and work together, and with management. This will be evidenced by such firms being the first to market consistently with new products, as well as increase their introduction of new products. These findings are consistent with [73] who find that recognising innovation, and maintaining interpersonal relationships, had the most positive effects on a firm's innovativeness.

From a practical point of view, while innovativeness may encourage generating ideas, management controls such as product life cycle analysis, discounted cash flow, and forecasting, can help in identifying potential areas for improvement, test the efficacy of ideas, focus staff on organizational goals, as well as provide motivation, when linked with reward systems like sales commissions, and performance bonuses, thereby promoting the manufacturing firm's performance. It is this potential for management controls to provide discipline during resource planning and implementation, that assists in the translation of ideas into effective performance. These findings are in agreement with [74] who find that management control systems are of great value to innovation companies. Similarly, [75] find that organisational innovativeness will help decrease system-wide costs and enhance service levels since organisations, are looking for ways to cut costs, enhance service levels, improve performance and make their activities sustainable.

Emergence is also positively correlated with adoption of management controls. Thus, the level of adoption of management controls by a manufacturing firm will increase with emergent behaviour, within the firm. This implies that the emergence of management controls is only complete if staff identify with the adopted management controls. The staff's identification with these management controls is occasioned by

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their involvement in the development of the management controls, and will be demonstrated by their effort in using these controls to, among others, plan how operations are to be conducted, identify significant exceptions from expectations, communicate the company's core values to the staff, track progress towards goals and monitor results. These findings are in tandem with [76] who find that identity may provide guidelines for organizational action, that is, potentially operate as a device for the exercise of managerial control. Practically, these management controls will readily be observable by the staff because, a manager who identifies with the management control will likely ensure that other staff become aware of such controls by, for example, incorporating them in the company's code of business conduct. Thus, employees will better understand the meaning, and the value of the management control and, as a result, will engage more actively in its adoption. This finding is consistent with a study by [77] who find that interactions between team members generated new behaviour such as new communication strategies and complex procedures which none of them have ever done before.

The relationship between networks of interaction and adoption of management controls is insignificant. The manufacturing firms lacked mechanisms that positively influence interactions, via open and timely information sharing, amongst the staff. This finding is surprising given that there is a high level of innovativeness within the manufacturing firms, albeit focused mainly on manufacturing innovation. This finding also contradicts earlier studies. For example, Omeke et al., (2019) find that managers in SACCO's interact, exchange, and share information, in order to become aware of problems and opportunities within their business environments. This contradiction could have several explanations. [78] findings suggest that mutual interactions, which seem to enhance the ability to share generated ideas or mind-sets in addressing prevailing challenges, correspond to or promote employee's innovativeness only through the degree of freedom provided to achieve desired goals. This is possible only if measures are in place to permit and quickly set up improved means in work methods developed by junior employees. This may be challenging for two reasons. First, managers in African, generally, and Ugandan contexts specifically, are used to a top-down command and control leadership style, which may not be suitable for a bottom-up emergent management controls style. A study by [79] using CAS, in Kenyan hospitals, lends some support to this. They find that while 'hard' leadership and management skills (e.g., budgeting and planning) were weak in both hospitals, the differences in the case study hospitals lay in the so-called 'soft' relational skills. For example, the PSRA process in Hospital B was more inclusive and deliberative, and perceived by hospital actors to be fair because the medical superintendent in this hospital reached out to different actors and "negotiated" with them to participate in the processes. This is in contrast to Hospital A, where the PSRA process was perceived by actors to be unfair and non-inclusive. The medical superintendent in this hospital made

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no effort to actively involve or empower the different actors in the hospital and hence the PSRA. Secondly, the bottom-up approach to management control, which encourages employees to express their opinions, suggestions, and concerns about work-related issues and offer feedback on their input, has been implemented in 'western' or 'developed countries' manufacturing firms, e.g., total quality management. However, this study's findings do not indicate such techniques being present in Ugandan manufacturing firms. It could be that the data for this study came from manufacturing firms that need to emphasize discipline and coordination to function smoothly. According to [80] manufacturing firms have very specific goals and need coordinated activities across departments. The decisions that are made must be implemented

Conclusions

The aim of this study was to establish whether self-organisation leads to the adoption of management controls. The results of this study provide empirical evidence on how self-organisation enables the adoption of management controls. Overall, this study contributes to the literature by adapting complexity theory to develop a generalizable model that explains the adoption of management controls in manufacturing firms.

Theoretical and managerial implications

The results in this paper have important implications for both theory and practice. On the theoretical standpoint, the results suggest that a combination of innovativeness, and emergence, drawn from complexity theory, can explain the adoption of management controls in manufacturing firms. On the practical side, managers in manufacturing firms need to encourage risk taking behaviour by their staff if they are to innovate and respond to the dynamism in the environment. Additionally, these firms should create a climate where information is exchanged easily in order to make proper decisions. Second, for bottom-up initiatives instigated by an individual team member or small group of team members within a department, managers should not only encourage such innovation, but provide some boundaries around how the innovation is prioritized, the time span for innovation, how the resultant changes are implemented, and how to best share the findings with other relevant departments. Based on the study findings, this will give the staff members the additional support needed to navigate complexity while still executing on the innovation idea.

Limitations and directions for future research

The results of this study should be considered in light of several constraints. First, quantitative methods are limited in exploring social systems in situ. A future study employing a case study methodology can help derive richer, more contextualized, and more authentic interpretation of the social processes that lead to the adoption of management controls [59]. Second, as the sample selected was not random, the findings of this study should be interpreted as relating to the largest manufacturing companies, not to the general population of manufacturing companies, in

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Uganda. Thirdly, our conceptualisation of self-organisation was quite narrow. However, complex adaptive systems are quite expansive, with several dimensions, which may also influence the adoption process. Future studies could explore these relationships further.

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Category: original scientific paper

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Employee Performance in High Stressed Indian Garment Industry; A Study on Design & Production House - Style Variations in New Delhi (India)

Abstract:

Being universal phenomenon, stress is experienced in everyday human life especially among individuals who work in different industrial set-ups at various levels of jobs. With changing work expectations, competition & environment, increasing workloads and work place politics, stress has become an integral part of employees' life and affects individual performance. Also, due to an employee's psychological and physiological reactions to work situation factors directly or indirectly influence the stress to appears, as resultant. Though certain level of work stress instigates the efficiency of work in positive but more stress causes negative impact on individual employee and in turn to organization too. Employees handle such stress without letting it influence their performances but fail to do so with growing work stress beyond certain level. On organization side, it also depends upon type of industry and nature of competition faced by the organization in market. On individual side, this stress impact on performance varies with work experience, demographics and length of service years. In order or assess workplace stress and its influence on individual employee, this study is done on a garment manufacturing organization in India, which is prone to high work stress due to its competitive nature of business.

Keywords:

work stress; work experience; job performance; skill based industry; competitive businesses

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VALLIS AUREA

Introduction

Since industrialization era, "job performance' is a content that has been extensively on priority in all industrial and organizational psychologies due to its importance in success of an organization. Success of a company depends on the employees' job performance and as job responsibilities of employees require to carry out several functions at a workplace environment, it brings satisfying as well as stressor effects on them.

Being universal phenomenon, stress is experienced in everyday human life especially among individuals who work in different industrial set-ups at various levels of jobs. With changing work expectations, competition and work place, increasing workloads and work place politics stress has become an integral part of employees' life and affects individual performance at work place, beyond any doubts. Also, due to an employee's psychological and physiological reactions to uncomfortable, undesirable work situations, threats & uncertainties of workplace environment and many more factors directly or indirectly influence the physical & mental health cause this stress to appears, as resultant

Experts have argued that stress is a dynamic process, which keeps on changing in accordance to the roles played by individuals in changing environment of the work place. Especially if we talk in context to workers in a precision industries or skill based industries, they undergo high work stress levels which is derived from key elements like work, non-work or personal factors. The impact of workplace stress affects the productivity and quality of employees' physical performance and its psychological impact could stretch beyond the work environment and lead to unhealthy lifestyle habits, frustrations, changed behaviors and in-turn resulting into declining health conditions, undue defense mechanisms and destructive attitudes.

In highly competing industries like ready to wear garments, job profile of an employee gives rise to tremendous pressures also to the employees, which mostly gets induced from deadlines to meet, overload of work, difficult tasks, vulnerable clients and internal politics etc. In dealing with those, it generates significant pressures on the employees. Such pressures make a job and its working environment stressful and result in dysfunctional work performance, behavioral changes and loss of effectiveness, if the stressors aren't taken care of on time.

In India, the market environment of the ready wear garment sector is very dynamic compared to other products, because of it short product cycle, ever changing trends, high levels of precision & skill requirements in output and highest levels of market competition. In result, most professionals in this sector of high precision & skill experience high levels of work stress as resultant. Multitasking, limited opportunities and personal factors like gender, age and work experience are also making significant impact to such stress in this field. This work stress is very critical in context to human behaviors and induces positive or negative reaction towards one's job.

If we talk about core stressors of the sector, there are many factors that contribute to the "high

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level" of work stress in this unique sector. A few core stressors of this sector are summarized as:

- Higher employer expectation to maintain quality & quantity of work output,
- Expectations of high skill levels from employees,
- Changing customer expectations and trends,
- High precision levels in competitive mass product manufacturing,
- Meeting deadlines and fear of losing market to competitors,
- Fear of substitution by cheaper products from countries like China/Korea

Such factors (not limited to) are accounted for instigating work stress among professionals in this sector. Such factors affect the job performance of employees in negative, as expressed and observed, in general as workplace stress and job performance are two interlinked crucial issues that affect the individual working and day to day operations of an organization. Although , numerous studies related to stress and performance issue have been carried out in companies belonging to almost all sectors including manufacturing, production, banking, education etc. but rarely has the study related to these issues been carried out in ready to wear industry in India especially in New Delhi. This study is carried out to get some insight from this industry as well.

Literature Review

Employees are vulnerable to high levels of stress and this is associated to burnout, job turnover, job dissatisfaction, lower organizational commitment and more importantly decrease in job performance. In turn, this impacts the fastest of declines of organizations engaged in garment manufacturing. This has been observed in past years in all countries. Retaining skilled professionals in production, marketing and technology has become vital in the sector where cut throat competition is prevailing at its peak. Updating with changing trends, handling disruptive challenges, tackling with everyday new entrants and countering to competitor offerings are the key requirements and causes of pressures in all sectors. Such factors lead to high work stressors resulting into high turnover of employees due to stressful working and companies are rather forced to strategize retaining skilled employees. [1]

Considering the need to retaining skilled professionals in companies, it is important for the employer to identify the sources of stress and reduce the level of their employees' stress, depending upon work environment and desired expectations of their companies arising out of market requirements. Organizational conditions, market climate and work culture have been associated with work stress on the employees which results in actions such as intention to leave job, degradation in quality, inconsistency of product output, low job performance and loss of work satisfaction etc. which in turn, harm the company performance to lose the competitive edge. [2]

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Job stress is also induced in employees because of the dynamic nature of market, where the company operates, which includes factors like need of rapid growth and quick reorganization of resources, demand for timely technological advancements. Such elements lead to loss of productivity after certain level of work stress which is considered to be essential for work performances in organizations. [3]

For a company certain level of stress is essential among its staff to trigger their performance levels. The employers may take pressure to shortening the deadline span for a project completion. To complete the project well on time, the employees will work within the limited timeframe to complete their work by taking stress and perform well but this does not mean that stress levels should increase at a constant pace to get more work from him. Figure 1 below depicts the philosophy to achieve efficiencies. [4]

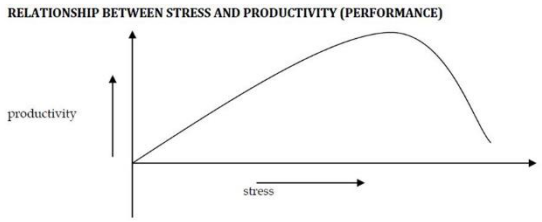

Figure 1: Relationship between stress and performance levels. Source: International Journal of Management Focus, A study on Relationship between Stress Management & Workability, 2013.

The above figure shows the inverted U relationship between stress and productivity. As we see in the above figure, up to a certain stress level, the performance curve increases positively but once, the stress cuts of its maximum level for the employee, we see a slump in his performance. This is what an organization should try to minimize. So it is best to maintain the work stress levels at moderate to achieve better efficiency in the company's performance levels.

The theory of role dynamics gives us a framework to understand role conflicts and ambiguity in companies that affects the stress levels of the employees. This theory suggests that performance will be a function of both the individual and of the organization. The role theory also provides the basis to measure the performance of the professionals. According to the role theory, individuals' role expectations are influenced by both their personal attributes and the work context in which they exist [5]. Based on this theory, the following reviews related to this research has been made:

- Job-Related Tension Index (JRTI) has been used to measure the levels of job stress generated by ambiguous roles and contradictory job demands. Developed by Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964), it identifies four stressors:
  - work conflict,
  - resource inadequacy,
  - work overload and
  - work ambiguity.

Based on the theory of role dynamics, the 15 elements are identified under four stressors to measure the job stress on employees.

- Role-Based Performance Scale (RBPS) has been used in order to measure job performance. Developed by Welbourne, Johnson and Erez (1998), it is a 20 item scale which includes the measurement

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of various roles performed by an employee in a work setting such as: Job, organization role, career role, team role and innovator role. [6]

People are considered very important in business today as the whole business depends on their effective performance .Low levels of employee performance could lower firm's profitability and lead to failure .The factor that explains organizational performance is job performance, which indicates how well an employee performs [7] Stress creates severe pressure on workplace health. Although the connection between quality management, workplace stress and health is beginning to be well established through various studies. Examining associations between quality management values, workplace health and workplace stress is vital for industries. [8]

Objectives of study

This study is done on a garment manufacturing organization in New Delhi-India which is prone to high work stress due to its competitive nature of business i.e. ready to wear segment. For this purpose, company namely Style Variation -New Delhi was identified considering their competitive sustained presence in garment manufacturing & marketing in Indian as well as global markets. This study aims to determine effect of work place stress on the job performance of employees in this high skill & precision based industry. Along with that, this study also aimed to look into analyzing any effect of demographical factors and work experience on the job performance of employees considering the highest of competition prevailing in the sector, covering production as well as marketing areas. This research is focused on understanding impact of workplace stress on job performance of employees in this demanding sector. Also, aspects like gender, demographics of employees, service of work are also studied to understand their impacts on job performance.

Following key objectives are set for the study:

1. To study impact of work place stress on the job performance of employees in highly skilled and competitive industries like garments
2. To study effect of demographical factors like age , gender and length of service on the job performance of employees in such industries
3. To study individual and interaction effect of age & work experience (length of Service) on job performance of the employees in these competitive industries

Methodology

This research is focused on how workplace stress impacts the job performance of employees at Style Variation - New Delhi (SV) which is linked to psychology and organizational behavior contexts. To obtain a better understanding of the occurrence, the required data was collected from middle and lower management employees of the company which is engaged in designing , production and marketing of ready to wear garments in Indian and overseas markets.

Following research design was taken up as conceptual frame work in the study, as indicated in Figure 2 below.

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- The figure represents factors that were measured through the JRTI and RBPS scales.
- Under the four factors of JRTI, 15 items were loaded and accordingly the responses on each of the items were analyzed.

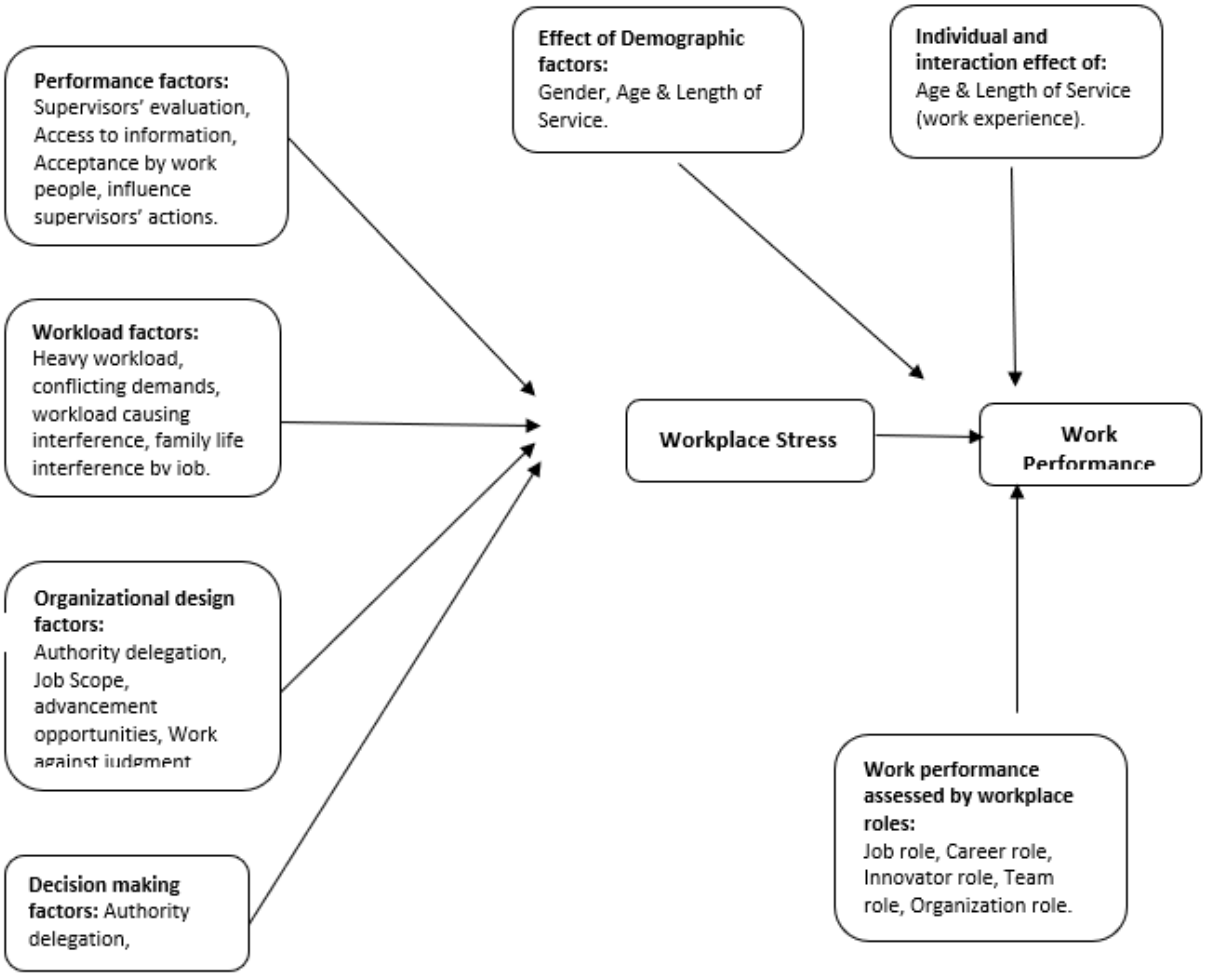

Figure 2: Conceptual Figure of the Study

Conceptual elements in design

i. Performance factors

It looks into evaluation of information access, work place acceptance, performance and ability to influence supervisor's actions in favor of the employee.

Performance factors: Supervisors' evaluation, Access to information, Acceptance by work people, influence supervisors' actions

ii. Workload factors

The level at which employees have to deal with heavy work demands that interferes with the efficiency of work execution.

Workload factors: Heavy workload, conflicting demands, workload causing interference, family life interference by job

iii. Organizational Design factors

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Based on it, how much authority are each level of employees delegated with, clarity of job scope and how freely can employees execute their responsibilities without much management pressure.

Organizational design factors: Authority delegation, Job Scope, advancement opportunities, Work against judgment.

iv. Decision Making factors

It addressed the issues of work conflict that arises an employee doesn't feel equipped enough for his/her job and has to make decisions that affect lives of people around at work.

Decision making factors: Authority delegation, job responsibility

Work performance assessment by workplace roles:

For the 20 item of RBPS included the measurement of various roles performed by an employee in a work setting such as:

i. Job and organization roles

Both these roles represent the distinguishable extents of job performance. Job roles signify the traditional view of employee performance in terms of quality, quantity and accuracy of work. Whereas organization role indicate the organizational citizenship behavior where employees go beyond the call of their work duty to work for the well-being of the company.

ii. Career role

The ability of an employee to obtain the required skills in order to make necessary progress through the organization and at the same time how well can an employee increase their value to the organization by taking charge of their personal career planning.

iii. Team role

A crucial component to assess job performance, the importance of team roles as well as use of teams have dramatically increased over the last several years. This role evaluates the work performance based on quality team work result, helping out the group needs to ensure success for the firm.

iv. Innovator role

Organizations need employees who are creative on behalf of the entire firm, in order to remain competitive in the ever changing and complex work environments. It requires employees to behave in innovative ways, by not just applying ingenious skills but also contributing to the efficacy and flexibility of the organization as a whole.

Field study

Adopting convenience sampling, suiting to organization chosen, primary data was collected through a structured written questionnaire given to employees, one to one. After establishing sufficient rapport employees could give responses by sparing time after due permission of top management (which was also an indication of level of work stress prevailing in the sector). The data was collected after explaining each item on the questionnaire to the respondents.

i. Primary data

A total of 40 samples were collected from the middle and lower management at SV, out of which 36 responses were found complete and flawless. It was observed that respondents were eager to fill

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out the questionnaire, as it was the first time that this type of study was being conducted and they wanted to contribute towards better organizational change management process to improve the quality of their work environment, product development processes, quality Assurance practices, sustaining capabilities in changing market dynamics and reducing work stress causing out of pressures in these fields. They were more interested in identifying & minimizing bottlenecks that the company is experiencing towards improving on efficiency & effectiveness levels.

After framing the questionnaire including JRTI & RBPS items, a direct scoring format was created and distributed for the survey.

Following hypothesis are framed in for this study:

ii. Hypothesis:

H1: There is significant effect of job stress on job performance of SV employees.

H2: There is significant independent as well as interaction effect of age and length of service (work experience) on job performance of SV employees.

H3: There is significant effect of demographic factors like gender, age and length of service on job performance of SV employees.

Data Analysis , findings and discussion

The data collected; through questionnaire and one to one interaction & explanation; were processed on SPSS. Different statistical analysis tools and techniques were used to achieve the stated research objective. Mainly, Independent sample T-test, Analysis of Variance (ANOVA) and Multiple Regression Analysis were used to test hypothesis.

The relationships between the study factors were analyzed using independent sample t-test, descriptive statistics, ANOVA and multiple regression.

Independent t-test is used to find out the level of significance in the relationship between the employee stress levels and the performance mean scores.

ANOVA is used to identify the subject effects of the independent demographical variables on the performance scores of the employees.

Multiple regression is used for drawing conclusions about the impact of selected demographical factors on the performance of SV employees.

Findings

i. T- test

The Independent Sample T- test was used to assess whether the means of the two groups viz. job stress and job performance were statistically different from each other or not.

Before conducting the T- test, the mean stress scores were categorized into high and low stress level categories. Then the independent T-test was run between the mean stress scores and the job performance scores.

Table 1: Independent t-test Summary table on effect of Job stress on Job performance

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Variable	Stress Levels	N	Mean	S.D	Df	T	Sig. (2 tailed)
Job Performance Scores	Low	15	70.80	11.736	24.69	1.763	0.073
	High	21	64.48	8.79			

Source: Survey Data

From the above independent t- test table, the mean values show the significant effect of stress levels on the performance scores of the employees.

- High performance mean scores (70.80) is seen at low stress levels and low performance mean (64.48) are seen at high stress levels. This significance effect is seen at 90% confidence interval.
- The table result shows that there is a significant difference in the job performance mean scores with high and low job stress levels, [t (34)= 1.763].

Therefore, 1st hypothesis , i.e. "There is significant effect of job stress on job performance of SV employees" is well supported.

ii. Analysis of Variance

- Analysis of Variance (ANOVA) shows that there is no significant effect of age on the job performance of employees of SV, [P= 0.896, P>0.05]. This indicates the age differences of employees do not determine job performance levels.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig. P
Age	27.835	2	13.918	110	.896
Length of Service(w.e)	26.506	2	13.253	.105	.901
Age & Length of service(w.e.)	232.360	3	77.453	.613	.612
Error	3539.056	28	126.395		
Total	165964.000	36			
Corrected Total	3823.556	35			

R Squared = .074 (Adjusted R Squared = -.157) Source: Survey Data

Table 2: Analysis of Variance (ANOVA)

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- The table 2 above also shows that there is no significant effect of length of service ((years in the type of job- work experience (w.e.)) on job performance, [P=0.901, P>0.05].
- This indicates that the differences in years of employment experience do not determine levels of job performance.
- This table further showed that no significant interaction effect of age and length of service on job performance, [P=0.612, P>0.05].

This result supports the hypothesis 2 i.e. there is significant independent as well as interaction effect of age and length of service on job performance

iii. Multiple Regression Analysis (MRA)

Multiple Regression Analysis (MRA) to check the influence of demographical factors on job performance and stress levels.

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	69.253	17.547		3.947	.000
Age	-.117	.693	-.034	-.169	.867
Length of service	.169	.982	.035	.172	.864
Gender	2.627	4.378	.106	.600	.553

Dependent Variable: Job Performance scores Source: Survey Data

Table 3: MRA with demographical factors as predictor variable for Job Performance

- From table 3, the demographical factor- length of service is shown to have positive significant influence on the job performance scores on SV employees.
- The other demographic factor, age, has a negative impact on the job performance and is not statistically significant.

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- Gender here shows a comparatively relative relationship between the performance scores of male and female. As the B value of gender is 2.627, which means that given the equal age and the length of service in years for both genders, male are seen performing better in terms of their performance scores by 2.627 times than that of the females working at SV.
- Overall result shows that demographical factors do not have significant influence on the job performance.

Through this finding, hypothesis 3 is not supported as there is no significant effect of demographic factors on job performance .

Conclusion and recommendations

From this study it is clearly identified that the stress levels of the employees had a significant impact on the job performance among the employees of SV. The result fits into the theoretical framework of this study which states that highly stressed industry workers would show less performance than workers with low stress.

The demographic features such as age, gender and length of service of the employees did not have a significant effect on the stress levels or the job performance of the employees, however individual features such as gender did have a positive influence on the job performance levels of the employees and work experience had a positive influence on the stress levels of the employees.

This result indicates that rather than specifying age to determine whether one works poorly or well, it's more about providing skills & work experience of work assigned to employee. Male or female will not matter after getting due skills of work requirements in such competitive industries.

This research was conducted while SV was planning to undergo an organizational change management process through which the company intends to implement the new objective setting and performance review system in order to be competitive in highly vulnerable market. Stress levels of such company needs to be considered while formulating the plans because employees' performances are shown to be expressively dependent on work stress. Evaluation of the stress levels at regular intervals is deemed necessary to come out effective and sustainable in manufacturing and market operations. As SV has gradually grown into a global company in recent years and employees have also sensed the pressure to work at par with international standard in order to meet product quality, work systems, technologies and deadlines, it is important to provide skills of work. and focusing on areas of systems and process. The company should also look out for ways to even out the gender composition of the employees to smother any possible adverse element on performance.

Greater the stress, the less productive the workforce becomes and there is no exceptions in business world. As a result of low productivity, cost of operation & production for the company increases. With the growing requirements of quality, volume and deadlines in competitive business scenario, it is suggested that the company should go for skill training and work experienced recruits instead of depending on old employees only in order to reduce the burden of

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increasing workloads and deadlines of international clients. This will also help in enhanced performances by the staff especially in lower and middle management.

In one to one interaction, this was also pointed out that job performance also depends on the working environment, which requires to be encouraging, inclusive and supportive. Activities that allows inclusive engagement of employees is much needed and hence company should work on creating organizational citizenship behaviors for handling challenges of market and production/operation activities.

Developmental opportunities for employees to enhance knowledge & skills in order to improve capacity to handle large amount of work pressures can also be implemented by the organization.

Limitations and further scope

Study is conducted in an organization with limited samples of convenience that could lead to different results on objectives from other studies and may not hold good to other organizations.

The path for further study by other researchers on this topic has to be strengthened in order to find out how variables like company support and social support influence the stress levels an impact the job performance within the surveyed population of this study.

So in conclusion, this research has assisted SV to identify the loop areas which will help them to make proper decisions in order to moderate stress levels and improve company performance. This could help other organizations in the ready to wear garment sector.

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Category: preliminary communication

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Application of Deep Learning

Abstract:

In the last decade, there has been a significant increase in the number of papers related to machine learning and the application of machine learning in various fields of science. Belmonte et al. observed that between 2010 and 2018, the growth in the number of papers related to machine learning topics and big data was exponential. They analysed 4240 scientific publications from the Web of Science citation database [1]. Xu et al., in the analysis of publications in the International Journal of Machine Learning and Cybernetics, noted that from 2010 to 2017, the number of publications, the cooperation rate, the total number of authors, and the degree of cooperation had shown an increasing trend [2]. Dokic et al. analysed the publication of papers in which deep learning is applied in the field of agriculture and noticed that the first papers were published in 2014, and in the second half of the second decade of the 21st century, exponential growth in the number of published papers was observed [3].
The objectives of this paper are primarily to analyze the literature related to the application of deep learning in apple growing, to propose the division of these papers depending on the area, and to analyze the observed trends in publishing papers related to this topic. In the analysis, only papers published in scientific journals were considered, and the condition is that they be found in the citation databases of the Web of Science or Scopus. The second section gives a brief overview of deep learning and its development and a presentation of the importance of apple growing in agriculture. The third section is an overview of papers that use deep learning methods and solve some problems in growing apples. The third section is divided into four parts, depending on the area the paper deals with. The fourth section is a discussion and conclusion.

Keywords:

Apple; deep learning; convolutional neural network

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Introduction

In the last decade, there has been a significant increase in the number of papers related to machine learning and the application of machine learning in various fields of science. Belmonte et al. observed that between 2010 and 2018, the growth in the number of papers related to machine learning topics and big data was exponential. They analysed 4240 scientific publications from the Web of Science citation database [1]. Xu et al., in the analysis of publications in the International Journal of Machine Learning and Cybernetics, noted that from 2010 to 2017, the number of publications, the cooperation rate, the total number of authors, and the degree of cooperation had shown an increasing trend [2].

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Overview of the areas of analysis

Deep learning

Deep learning (DL) is one of the methods of machine learning (ML) based on neural networks, and machine learning is a subcategory of artificial intelligence (AI). The relationship between these terms can be seen in Figure 1.

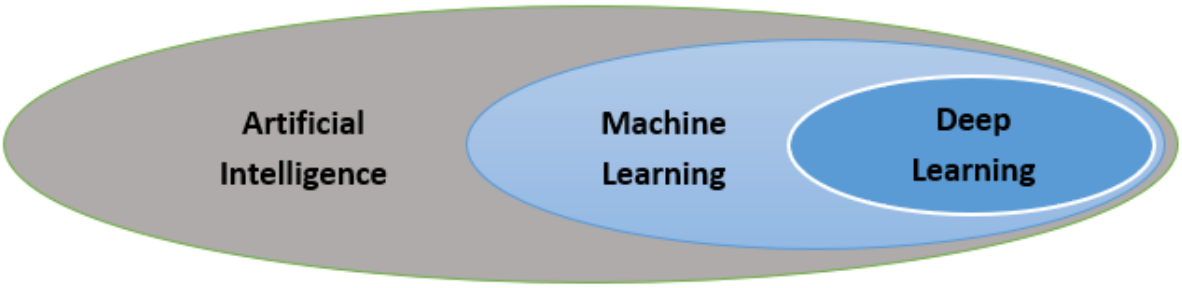

Figure 1. Relations of the terms AI, ML and DL

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The adjective “deep” refers to the fact that there are multiple layers between inputs and outputs in deep neural networks. Goodfellow et al. state that we are currently in the third wave of deep learning development. The first wave lasted between the 1940s and 1960s, and then the concept of stochastic gradient descent was set. The second wave lasted from the 1980s to the 1990s and began with the discovery of backpropagation. The third wave is thought to have started in 2006 with Hinton’s deep belief network and is still ongoing [4].

Deep learning is applied in several areas: computer vision, machine translation, drug design, material inspection, speech recognition, and natural language processing. In this paper, most analysed papers apply deep learning to recognise and segment objects in images that belong to the computer vision application category.

Apple growing

The apple is an edible fruit that is grown all over the world. The apple tree is the most widely grown species in the genus Malus. It is believed to have originated in Central Asia and has been cultivated for thousands of years. The FAO website states that in 2019, 87 million tons of apples were produced, over 10 kilograms per person in the world [5].

The fruits and apple tree are prone to pest, bacterial and fungal problems, and most often, various organic and non-organic means are used for this reason. With the advent of machine learning, there is an opportunity to automate much of the work involved in disease detection and fruit picking. This paper provides an overview of research in this area, and the focus is on the application of deep learning because the best results are achieved with it.

Paper analysis

Before the analysis of published papers related to the application of deep learning in apple growing, it was decided that only papers published in scientific journals indexed in the Web of Science and Scopus databases would be analysed. The terms "deep learning" and "apple" were chosen, and search engines were used in the mentioned databases. Words are searched in abstracts and keywords. The number of papers is listed in Table 1.

Year	Web of Science	Scopus
2021	8	15
2020	34	35
2019	12	10
2018	2	5
2017	3	2
2016	3	2
2015	1	2

Table 1. The number of papers in WOS and Scopus databases

About a quarter of the papers were excluded from the analysis because they were thematically related to the Apple Inc corporation's products. Also, some of the papers were listed in both databases, and some were not available at all. Papers published in 2021 are also excluded because these data are not complete.

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There are 43 papers left that have been analysed in terms of content and are divided into four categories: Recognition of fruit and apple tree parts, Recognition of diseases and pests, Recognition of fruit damage before packaging and Miscellaneous. Below are paper descriptions divided into the four categories listed.

Recognition of fruit and apple tree parts

Anazco et al., in their paper, proposed a model for moving objects with the help of a robotic arm similar to a human hand. The model is based on Deep Reinforcement Learning, and the authors achieved an average success rate of 89.40% for the grasping and relocation tasks. One of the objects they used was an apple, and their model can be applied when picking apples [6].

Apollo-Apollo et al. proposed a model for estimating the amount of apple yield using images obtained by the unmanned aerial vehicle. Images are analysed using a convolutional neural network, and the goal is to get the most accurate yield estimate [7].

Biffi et al. proposed a model for recognising apple fruit on a tree using the Adaptive Training Sample Selection deep learning method. This method uses images of the apple tree as input and helps producers to predict production. The authors state that the accuracy of the proposed model is 0.3% to 2.4% higher than other known models (High-Resolution Network, RetinaNet, Cascade RCNN, Libra Regions with Convolutional Neural Network, Faster R-CNN, and Feature Selective Anchor- Free) [8].

Bresilla et al. have proposed a model for fruit detection on a tree. The input data are tree images, and the output is rectangles surrounding the fruit with a percentage probability of estimation accuracy. The model's accuracy is over 90%, and its speed is above 20 frames per second. High speed allows the use of models to automate apple picking. The authors used convolutional neural networks based on single-stage detectors [9].

Chen et al., in their paper, proposed a model for counting the fruits of apples and oranges using deep neural networks. The proposed model achieves a mean Intersection over Union (IU) of 0.838 on the apples. The proposed model uses images and can be used to automate yields apple picking [10].

Fan et al. proposed a model for segmentation of apple fruit on the tree to easier harvesting automation. The method considers the appearance of shadows, and its accuracy is 99.26% [11].

Gao et al., in their paper, proposed a model based on deep neural networks, which recognises apple fruit on a tree categorised into four categories, namely branch / wire-occluded, non-occluded, leaf-occluded, and occluded fruit. The average accuracy in non-occluded detection is 90.9%, while for other types, it is lower. The authors proposed the described approach because automated picking a robotic vehicle can adjust the strategy depending on the fruit category [12].

Gene-Mola et al., in their paper, presented a model for detecting apple fruit on a tree based on the R-CNN model with the use of additional sensors next to the camera. The input to the neural network consists of depth (D), colour (RGB) and range-

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corrected intensity signal (S). The authors state an average accuracy of 94.8% [13].

In their paper, Jia et al. proposed a model for detecting apple fruit on a tree based on the Mask Region Convolutional Neural Network. The model is specially trained to detect fruits that overlap in the images. They used a combination of Residual Network and Densely Connected Convolutional Network to reduce the input parameters. The authors state a model accuracy of 97.31% [14].

Majeed et al. cited the problem of trunk and branch segmentation in images in apple orchards. They proposed a solution based on convolutional neural networks that use data obtained from a Kinect V2 sensor. The authors state accuracy between 92% and 93%, intending to remove trunks and branches in the background, i.e. in adjacent rows, from existing tree images [15].

Kang et al. proposed a model for detecting and segmentation of apple fruit on a tree based on the deep-learning model Dasnet. With the help of the model, the central point of the fruit is defined and, using the Hough Transform, the place of fruit capture. The accuracy of determining the centre of the fruit is 95.5%, while the accuracy of defining the position for grasping the fruit is 92.3% [16].

Kang et al. presented in their paper a model for segmentation and determination of proper grasp pose based on deep neural networks. The model is intended for robotic fruit harvesting, and the authors state a model accuracy of 90% for detection and 82% for segmentation [17].

Kang et al. proposed a model for recognising apple fruits based on the Label Generation algorithm that utilises the multi-scale pyramid and clustering classifier. The model achieves 85.3% accuracy on apple detection in orchards. The authors state an inference time of 28 ms, and the model is intended for robotic apple picking [18].

Lyu et al. proposed in their paper a model for recognising apple trees in orchards by testing six different models based on machine learning. They chose the best model, and the specificity of the model is that it is intended for a small-scale agricultural unmanned ground vehicle. The neural network takes as input data grayscale images with a resolution of 320 × 240 pixels, and the authors state that the model's accuracy is 90% [19].

Majeed et al. proposed a model intended for apple tree segmentation in trellised fruiting-wall cultivation systems. They emphasised several advantages of this cultivation, especially in automated processing and harvesting. The authors used a Kinect V2 sensor to obtain the RGB and point cloud data of target trees. The achieved segmentation accuracy is between 82% and 89% for simple RGB images and about 92% for foreground-RGB images [20].

Zhang et al., in their paper, described a modified single shot multibox detector model of general-purpose, which they used to detect the apple fruit in the image. The reduction of the parameters was 50%, while they used a light multiple dilated convolution operator to compensate for the drop of accuracy. The paper was not written to improve agricultural production, but an apple dataset was used. The input data are images of 300 x 300 pixels, and the achieved accuracy is 98.99% with a speed of 85 frames per second [21].

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Wang et al. proposed in their paper a model used to estimate the growth of apple fruits on a tree. An edge detection network that fused convolutional features has been proposed for fruit segmentation. The authors state the F1 score of the model of 53.1%, and the primary purpose of the model is seen in the plan of applying nutrients and pesticides during apple maturation [22].

Wang et al. in their paper described the model developed to categorise apple black rot levels. The achieved accuracy is 90.4%, and the authors achieved the mentioned result with a deep VGG16 model trained with transfer learning. The severity of the disease is categorised into four levels [23].

Wang et al. proposed a model for detecting flowers on an apple tree to estimate the amount of flowers and possible chemical thinning. The proposed segmentation method on a pixel level is based on a fully convolutional network. The output is a network that can be used in chemical thinning systems. The authors state an F1 score at pixel-level of 85.6% [24].

Wu et al. presented a model for detecting and segmenting apple trees and further analysis using remote imagery acquired from unmanned aerial vehicles in their paper. The authors used the Faster R-CNN object detector to detect an individual tree from images and the U-Net deep learning network for segmentation. The model then calculates the crown parameters. The accuracy in counting trees is 91.1% while segmenting their branches is 97.1% [25].

Wu et al. presented in their paper a model for rapid detection of apple flowers with the aim of eventual thinning. The authors used the channel pruned YOLO v4 deep learning algorithm. The number of model parameters was reduced by 96.74%, the inference time was decreased by 39.47%, and the accuracy was 97.31% [26].

Xuan et al. proposed in their paper a model for recognising the fruit of an apple on a tree. They used existing models, namely Faster RCNN based on AlexNet, Faster RCNN based on ResNet101, YOLOv3 based on DarkNet53 and improved YOLOv3. The best results were achieved with the improved YOLOv3 model. The authors state the F1 value of 95.0%, 94.6% and 94.1%, depending on the illumination for the red apple. For green apples, the results are slightly worse, 94.9%, 94.0% and 91.1% [27].

Recognition of diseases and pests

Attiqu Khan et al. have proposed in their paper a method for detecting fruit diseases based on a deep convolutional neural network using pre-trained models. VGG and AlexNet were used, and the authors state an accuracy of 97.8% in detecting three-leaf diseases in apples. These are apple scab, apple black rot and apple rust [28].

Bi et al. have proposed a model based on the well-known MobileNet model to detect two apple leaf blotch and rust leaf diseases. The authors emphasise the advantage of a model that is not demanding and can be implemented on smartphones. Compared to the InceptionV3 and ResNet152 models that achieve an accuracy of 75.59% and 77.65%, the authors state their model of 73.50% [29].

Boniecki et al. analysed classification models based on perceptron and radial neural networks to classify pests in apple orchards. The authors

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concluded that they achieved the best results using a multilayer perceptron neural network, citing an RMS value of 0.0001063 for test data. The inputs used are pest images [30].

Chao et al. presented in their paper a model that uses a convolutional neural network to recognise apple leaf diseases. The model recognises five common diseases, and its accuracy is 98.82%. After extracting the features using a convolutional network, a support vector machine algorithm was used for classification. Images of apple leaves were used to train the models [31].

Francis et al. have proposed a new model for recognising apple leaf disease with the help of deep neural networks. The authors state the accuracy of the model of 99.6% [32].

In their paper, Jiang et al. proposed a model to detect five apple leaf diseases based on convolutional neural networks. The model is trained to recognise Brown spot, Alternaria leaf spot, Gray spot, Mosaic, and Rust. The model includes Rainbow concatenation and GoogLeNet Inception structure. The authors state accuracy of 78.8% with a speed of 23.13 frames per second [33].

Khan et al. proposed a DeepLens Classification and Detection Model based on scalable transfer learning on Amazon Web Services. Its purpose is to recognise leaf diseases in fruit trees (apple, grape, peach and strawberry) and vegetable plants (potato and tomato). The authors state accuracy of 98.78% and availability in the cloud makes this model easy to implement [18].

Liu et al. proposed a model based on the well-known deep learning convolutional neural network AlexNet to detect apple leaf diseases. The model recognises four diseases: Brown spot, Mosaic, Rust, and Alternaria leaf spot. The authors managed to reduce the number of parameters to 51,206,928, while the model's accuracy is 97.62%. The authors used a dataset of 13,689 images of diseased apple leaves [34].

In their paper, Tian et al. proposed a model for detecting anthracnose lesions on apple surfaces in orchards. The model is based on the YOLO-V3 model, with which a densely connected neural network was used and is utilised to optimise feature layers. The authors state the accuracy of disease detection of 95.57%, which is slightly better than other known models (AlexNetOWTBn, VGG, GoogleNet) [35].

Turkoglu et al., in their paper, used LSTM-based Pre-trained Convolutional Neural Networks to detect apple diseases and pests. For feature extraction, the authors used AlexNet, GoogleNet and DenseNet201, and features were entered into LSTM. The authors state accuracy of 99.2% [36].

Yan et al., in their paper, described the model for recognising scab, frogeye spots, and cedar rust on an apple leaf. The proposed model is based on VGG16, and the authors state accuracy of 99.01%. Compared to the classic VGG16, the number of parameters is reduced by 89%, and the accuracy is improved by 6.3%. The training time was reduced to 0.56% of the original model [37].

Yang et al., in their paper, described a disease detection model in tomato, potato, grape, corn and apple. The authors propose a new model of deep learning called wide residual networks, and the accuracy in detecting scab and Frogeye Spot on an

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apple is 97% and 98%, respectively. The overall accuracy in detecting 35 different diseases is 91%, significantly more than the GoogLeNet Inception V4 model used for comparison, which is 57% [38].

Recognition of fruit damage before packaging

Fan et al. proposed in their paper a model for the detection of defective apple fruits on a conveyor belt for packaging. The model is based on a convolutional neural network, and the achieved accuracy is 96.5%. The proposed model processed an image with six apple fruits in 72 ms on a test computer [39].

In their paper, Hekim et al. proposed a model for categorising healthy and bruised apple fruits using iterative thresholding approaches based on different types of convolutional neural networks. The authors state an accuracy between 95.58% and 98.33%. The proposed method is intended for use on a conveyor belt before packaging [40].

Hu et al. proposed in their paper a model for bruised apple detection based on convolutional neural networks using a 3D infrared imaging system. Images are transformed from three dimensions into two-dimensional ones and further processed, and the method is based on the fact that bruised apple has deformations at the places of damage. The authors state the accuracy of the model as 97.67%. The model is intended for use on conveyors before packaging [41].

Ismail et al. proposed a model of visual inspection of apple and banana fruit based on deep neural networks. The authors used transferred learning and the DenseNet, MobileNetV2, ResNet, EfficientNet, and NASNet models. The proposed model achieves an accuracy of 99.2% and 98.6% for apples and bananas and is based on the EfficientNet model. In addition, the authors implemented this model on a cheap Raspberry Pi development board with a camera and touch-sensitive display [42].

Lashgari et al. proposed in their paper two models for the detection of mealiness in apple fruit. One is based on AlexNet and the other on VGGNet pre-trained convolutional neural networks, and the input information is the sound obtained by a weak blow of a plastic ball on an apple. The classification accuracy in these models in the classification into mealiness and non-mealiness was 91.11% and 86.94%, depending on the pre-trained convolutional neural network used [43].

Li et al., in their paper, proposed a model for classifying apple fruit depending on whether they contain a larva of codling moth or not. Codling moth larvae bore deep into the fruit, making it unmarketable. Using acoustic methods and convolutional neural networks, it is possible to categorise apples with high accuracy. The authors state an accuracy between 91% to 100% for the training set and 83% to 100% for the test set [44].

In their paper, Roy et al. proposed a model for classifying healthy and rotten apples during processing and before packaging. A modified version of the UNet model was used for classification, and the input was an apple image. The accuracy of the model was 97.54% [45].

Miscellaneous

Bai et al. used spectral analysis in their paper to better predict solid soluble content in the apple.

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The problem they solved was the prediction of solid soluble content with multiple geographical origins in apples. The authors used deep learning with multivariate regression analysis [46].

Liu et al., in their paper, provided an analysis of global interest in organic food using Google Search Engine Data and deep learning methods. The authors conclude that organic milk, oil, chicken, and apples are the most exciting products. The countries where residents are most interested in organic products are New Zealand, the United States, Singapore, the United Kingdom, Australia, and Canada. The authors point out that there is no correlation between life expectancy and GDP with the population's interest in organic products. As part of the paper, a recurrent neural network was developed for predicting people's interests in major organic foods over time [47].

In their paper, Liu et al. proposed a model for recognising apple varieties based on a deep convolutional neural network, using an image of an apple leaf as an input. TensorFlow was used to develop the model, and they used a data set of 12,435 sheet images. The model has an accuracy of 97.11% and is trained to recognise 14 varieties of apples [48].

Discussion and conclusion

Four basic categories were identified by analysing papers describing the application of deep learning related to apple growing. The first category includes papers in which deep learning is applied to discover and segment apple fruits or parts of an apple tree. The objectives of these studies are primarily related to the automation of apple picking, and some papers aim to create models for estimating apple yield. In the second category are papers that apply deep learning in detecting diseases and pests. All analysed papers from this category use images of leaves, fruits, and plantations as input data. The third category includes papers in which deep learning is applied to detect fruit damage after picking but before packaging. In that category, photographs are most often used as input. There are only four papers in the fourth category, and they could not be categorised into the previous three categories.

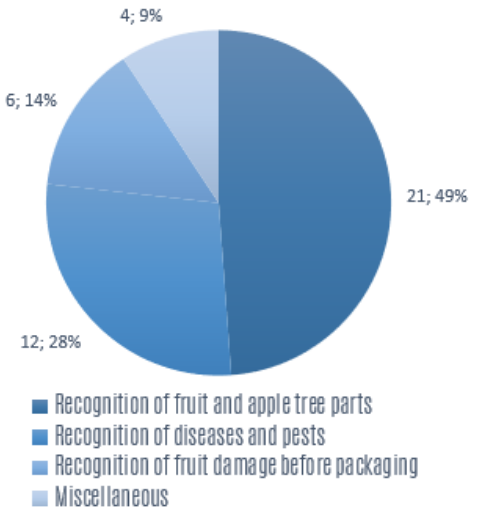

Figure 2. The number of published papers in each of the categories

Figure 2 shows the number of published papers in each category and is also offered as a percentage. Over three-quarters of the published papers are related to the automation of picking and detecting diseases and pests. Considering that unmanned aerial or ground vehicles can treat diseases and pests and harvest fruits, we can expect that almost

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all manual jobs will be taken over by unmanned vehicles soon.

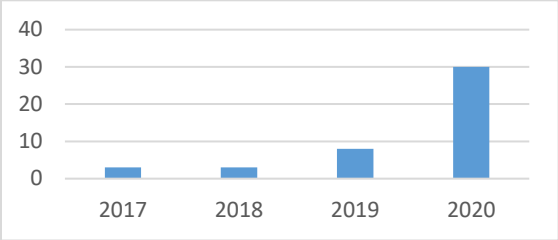

Figure 3. Number of papers by year

An increase in published papers can be observed from 2017 to 2020, as seen in Figure 3. If we compare the number of published papers in 2017 with 2020, we see a tenfold increase. Papers published in 2021 have not been analysed, but if we consider only their number, it can be seen that the number of papers will remain at the same level in the current year or continue to grow further.

In the paper, only papers from the journal are analyzed, which is a weakness that can be remedied in future research. In addition, a small number of papers were published in Chinese and were not included in the analysis. Finally, paper analysis would be more valuable if it included various types of fruit, as well as several different subcategories of artificial intelligence.

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Category: preliminary communication

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Segmentation of Trek and Trail Race Runners as Tourists

Abstract:

This paper seeks to supplement the theory of sports marketing with additional knowledge on the participants in trek and trail races, provide basis for better understanding of their motives and behavior. The research instrument is a questionnaire consisting of 30 questions where the first part concerns with behavior at races; the second part consists of statements about the motives and the third part of descriptive questions. There were 194 participants who were interviewed by an online survey. The statistical analysis was conducted using factor analysis and cluster analysis.

Five different factors / types of motivation and behavior of trek and trail race runners were extracted. Cluster analysis was also conducted and three cluster solutions were retained. Implications for marketing practice, limitations of the research and recommendations for future research were also given.

Keywords:

Small-scale sporting events; Trek and trail races; Active sport tourists; Factor analysis; Cluster analysis

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Introduction

The potential of sport tourism is considerable, as many studies suggested, such as [1] , [2] and [3]. Some authors, such as [2] argue that travel related to sport and physical activity is one of the fastest growing segments of the tourism industry, which was confirmed by the increase in the number of tourists attracted by sporting events, [1] and [3]. Although mega-sporting events proved to attract many tourists and have a positive effect on the economy of a nation [4], small-scale sporting events in which tourists are more likely to be participants than the audience are becoming more prevalent [5], [6], [7].

The popularity of small-scale sporting events in the world, as well as in the Republic of Croatia, is expanding - for example, 529 registered participants from 23 countries at the 100 Miles of Istria race in 2014 increased to 2388 registered participants from 61 countries organized in 2019 [8]. Participation in such forms of active sport tourism arises from the need for a healthy life and enjoyment in nature, which are becoming an increasingly important part of modern life due to the trends of hightened concern for health, awareness of the need for nature protection and its importance to community, increase in the average income, etc. [9]. Some of the aforementioned needs of a modern man can also be successfully satisfied with a specific type of small-scale sporting event- trek and trail races, which include the need for recreation and spending time in pristine nature. Namely, unlike classic races, these types of races are organized in a natural environment, and it is desirable that the areas in which they are organized are disturbed by people as little as possible. Both types of races are pretty similar but there is one distinctive difference: unlike trail races, in trek races the race runners themselves choose the path they will go through, provided they navigate the given check points.

Apart from the benefits they provide for participants, the only goal of organizing a race is not just a sports competition, but such sporting events have proven to have a significant impact on the economic and social development of the regional and local community where they take place, such as [10], [11], [7], [12]. Some authors, like [13], [6] and [12] state that small-scale sporting events are the drivers of local community development and have significant potential for the local community through economic benefits, infrastructure development and season extension (for example, the Istria trek, which takes place every year at a different Istrian location outside of the summer season - in February). In order to achieve those benefits, the organizers try to attract as many tourists as possible, who in the case of trek and trail races are prevalently the participants themselves, ie. race runners. Aside from the above mentioned, trek and trail races have a potential for further growth. Having all of the above in mind, tourism boards and small-scale sporting event organizers acknowledge trek and trail races' importance and choose to pursue strategies that will ensure them a favourable competitive position in order to reap the benefits. Among those strategies, segmentation stands out, because it affords the opportunity to understand the market

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and adapt the marketing strategies to homogenous groups - segments. Thus, in order to further our understanding of a specific group of active sport tourists - trek and trail race runners, the objective of this research was to extract factors of trek and trail runners' behavior and motivation and distinguishing distinct segments based on extracted factors. According to the objectives of the paper, two research hypotheses were set: Considering the motives and behavior of participants in trek and trail races, it is possible to extract different factors of trek and trail race runners; and Segments of trek and trail race runners based on their motives and behavior can be distinguished.

In order to test the hypotheses, empirical research has been conducted. For the purpose of this research, the questionnaire was developed. Factor analysis was conducted to discover the underlying types of motives and behavior of trek and trail runners and then using the cluster analysis clusters of trek and trail runers were extracted.

Review of Previous Research

The analysis of relevant research dealing with small-scale sporting events pointed to the conclusion that papers were mostly descriptive and provided information about the event itself but not the explanations of active sport tourists' behavior and their motives [14]. For example, [15] argued that sport tourism research is dominated by event research, but the focus is rarely set on running activities in nature, and the author referred to the need to explore precisely this aspect of sport tourism more thoroughly. [16] argued that it was necessary to explore the subjective experiences and perceptions of participants in outdoor tourism events in order to fully understand them. However, while studies on various organized sporting events in nature did exist, research on trek and trail races was rare.

Some authors ([17] and [18]) found that the act of participating in a sporting event implies different meanings for the participant, such as adventure, experience, but also a number of personal meanings. Other relevant factors and motives for active sport tourists' participation in a small-scale sporting event were connected to their engagement in sports [19], self-actualization needs [20], nature-related travel [21], social aspect [22], [20], achievement [23], [24], environment and safety motives [25] etc. Since motives can stimulate an individual to take action [26], they are important to understanding and predicting a trek and trail race runners' behavior. However, although the aforementioned authors investigated motives of participants in some types of small-scale sporting events, most of them either investigated the motives of trek and trail races only partially or not at all. [27] argued that trek and trail race runners' niche has not been substantially researched despite its growing potential - its both economic and social impact on local communities, which is why this research aims to fulfill this gap in the knowledge on trek and trail race runners.

[27] pointed to the fact that it proved vital to investigate the motivations and behavior of bicycle tourists, since it would provide a sound basis for

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understanding and segmentation of this market niche. Therefore, it would also be necessary to investigate both the motives and behavior of trek and trail race runners as a basis for their segmentation.

Research hypotheses

Some relevant research on trail runners has been conducted that focused on different aspects of this specific type of sport tourism. There were papers dealing with the influence of trail running sport events on destinations where those events are organized [12], [28], the trail runners ecological impact [29], [30], the expenditures of trail runners [31], but some of the reasearch dealt with motivations of trail runners [32], [33], [34].

[34] compared ski tourers to trail runners and, although their research provides some important insights into the motivational factors of trail runners, emphasize the need to further investigate motives of sport tourists with other samples and destinations. [31] researched expenditure patterns of trail runners but also extracted seven motivational factors common to trail runners.

Based on findings of relevant authors, it can be presumed that motivational factors of trek and trail runners could be extracted, thus the following hypothesis is set:

H1: Considering the motives and behavior of participants in trek and trail races, it is possible to extract different factors of trek and trail race runners.

[2] recommended researching the profiles of active sports tourists that would not only include segmentation into participants and non-participants, but should also provide an understanding of differences between active sport tourists based on differences between them in terms of gender, disability, social class, race and their life cycle phase. In addition, destination marketers suggest utilizing market segmentation identification as a means and method to perform marketing research [27] to assist with event tourism design and formulation, since tourists from different backgrounds will react to different offerings and at different times [35].

There were several studies on active sport tourist segmentation based on their motivation, the samples included winter sport tourists [36], surfers [37], [38], bicycle tourists [27], climbers [39], [40], golfers [41], marathon runners [42] etc. [43] pointed to the need to segment the market of active sport tourists and conducted his research on a sample of amateur athletes participating in many different small-scale sporting events. The author succesfully extracted several factors of underlying motives and also differentiated segments of active sport tourists: tourism-oriented, neutral, sport tourist enthusiasts and sport-oriented. Although the author successfully distinguished segments of active sport tourists, he did not differentiate active sport tourists based on the sport they chose to participate in, although tourists engaging in sports fishing differ substantially based on their motivations and behavior from trek or trail race runners. However, not even this author did not succesfully segment

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trek and trail race runners, leaving this question yet unanswered.

Based on all the above, the following research hypothesis is set:

H2: Segments of trek and trail race runners based on their motives and behavior can be distinguished.

Research methodology

Questionnaire design

The questionnaire consisted of 30 questions, which were divided into three thematic units. The first group consisted of 7 closed-ended questions (previous participation, the way of arrival to the race, amount spent, time spent in a destination...). The second group of questions consisted of 17 statements about trek and trail races, and the answers were given according to the Likerts cale (1 - totally disagree / claim completely incorrect, 2 - somewhat disagree / claim somewhat incorrect, 3 - neither agree or disagree, 4 - somewhat agree / claim is somewhat correct, 5 - completely agree / claim is completely correct). The third group consisted of 6 descriptive questions (gender, date of birth, place of residence, level of education, average monthly family income and number of household members).

The questionnaire was developed for the purpose of this research. As no similar research had been found in the relevant literature, claims that covered the potential motives and behavior in trek and trail races were developed. Interviews with trek and trail race runners were conducted and relevant research describing participants in races and other related sporting events was consulted [10], [44], [43], [25], which served as the basis for statements in the questionnaire.

Empirical analysis

The survey was conducted in the summer of 2019 based on the developed questionnaire. In order to collect data for analysis, participant surveys based on recall methods were used by some authors, such as [45] and [46], and thus this method was applied also in this research. Respondents selected on the basis of a convenient sample were questioned on several trek and trail races that took place between June 2019 and September 2019. A total of 194 trek and trail race runners were questioned. Due to the incompleteness of the answers given, 16 respondents were removed from the analysis and further analysis was carried out on the data collected from a total of 178 respondents (91,8% of the total respondents). Demographics for the sample are illustrated in Table 1.

Demographic characteristics	N	%	Avg	S.D.
Gender				
Male	78	55,68		
Female	98	44,31		
Age			40,86	8,62
20-29	11	7,53		
30-39	52	35,62		
40-49	62	42,47		

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Demographic characteristics	N	%	Avg	S.D.
50-59	16	10,96		
60-69	5	3,42		
Residence				
Slavonija, Baranja and Srijem	13	7,34		
Central Croatia	114	64,41		
Northern Adriatic	27	15,25		
Southern Adriatic	23	13,00		
Education degree				
High School	42	23,60		
College	127	71,35		
Master's or Doctorate Degree	9	5,05		
Average Monthly Family Income				
Up to 4000 HRK	16	9,14		
4000-8000 HRK	55	31,43		
8000- 12000 HRK	47	26,86		
More than 12000 HRK	57	32,57		
Number of Household Members			2,64	1,06
1	28	17,95		
2	42	26,92		
3	44	28,21		
4	42	26,92		

Table 1. Demographics for the sample. Source: authors' calculation.

Research results

Statistical analysis was performed using the SPSS program. In the first phase of the analysis, the reliability of the questionnare was examined. According to Cronbach Alpha coefficient, questionnare was reliable (0,746) and had satisfactory internal consistency. The Kaiser-Meyer-Olkin test of adequacy of sampling was performed, obtaining the value of 0,890 which indicated that the sample used in the research was adeqaute, since it was larger than the cut-off point of 0,60. Bartlett's test of sphericity (742,034; p=0,000) was also conducted, which indicated that the sample was appropriate for factor analysis.

When conducting factor analysis, one wants to reduce a large number of observed variables to a smaller number of factors. In this research this method was considered appropriate because it allows to reduce the number of variables and discover the underlying types of motives and behavior. Exploratory factor analysis was performed using the principal components method. Five factors with eigenvalues greater than 1 were extracted and 59,112% of the total variance

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was explained. Varimax rotation was chosen. Extracted factors were named Tourist Offer, Personal Growth, Self-Fullfilment, Social Needs and New Experiences. Factor I, Tourist Offer, was most strongly related to the set of five variables which reffered to tourist elements of the races such as the destination attractions, concerts, excursions, sightseeing in the area, education by famous athletes, shows and performances. This factor contributed 21,762% of the variance. Factor II, Personal Growth, was most strongly related to the set of three variables which ad the highest rating on overcoming challenges, sense of achievement, building confidence and advancing as a runner. This factor contributed 13,625% of the variance. Factor III, Self-fullfilment, was most strongly related to the set of four variables refering to proving oneself that one can do it, feeling happy, having fun, feeling healthier, feeling more mentally stable. This factor contribued 8,640% of the variance. Factor IV, Social Needs, was most strongly related to the set of three variables describing meeting other people, socializing with others, giving up luxuries to come to a race, coming to a race with family, teaching children the importance of doing sports. This factor contributed 7,871% of the variance. Finally, factor V, New Experiences, was most strongly related to the set of two variables reffering to first time participating and coming to a race out of curiosity. This factor contributed 7,214% of the variance. The results of the factor analysis are shown in Table 2.

	Factor I	Factor II	Factor III	Factor IV	Factor V
Factor I: Tourist Offer					
After the race I try to spend more time in the destination to visit all the interesting attractions. In fact, race is just one of the attractions I go to when I travel.	0,515				
In addition to participating in the race, I also participate in concerts and other forms of organized entertainment.	0,769				
I'd sooner decide to participatein a race if some additional content like excursions or sightseeing in the area is organized as part of this event.	0,679				
I'd sooner decide to participate in a race if some content like education by famous athletes is organized as part of this event.	0,616				

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I'd sooner decide to participate in a race if some content like shows or performances by different entertainers is organized as part of this event.	0,787			
Factor II: Personal Growth				
My main motive for participating in races is to overcome my challenges.		0,813		
My main motive for participating in races is my sense of achievement and building confidence.		0,789		
I participate in races to advance as a runner.		0,589		
Factor III: Self-Fullfilment				
When running, I particularly enjoy to visit new and unexplored places, a nature I would not usually visit.			0,778	
I am not running for results but to show myself and others that I can do it.			0,501	
I participate in races to feel happy and have fun.			0,720	
I participate in races to feel healthier and more mentally stable.			0,595	
Factor IV: Social Needs				
What I like about these races is meeting other people with similar interests and talking about their experiences as a runner. When I meet and socialize with others, I like to emphasize and describe my experiences in current and other races.				0,618
I'm ready to give up some other luxuries just so I can participate in the races (holidays, jewelry, clothing, etc.).				0,777

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I came to the race with my family to show them what it looks like and to teach children the importance of doing sports.				0,674	
Factor V: New Experiences					
It was my first time participating in this kind of race, but I believe I will come again.					0,594
I come to events like this just to see what it is like, out of curiosity. I'm not an active runner, I just wanted to see what this event looks like.					0,810
Cronbach Alpha	0,739	0,708	0,614	0,569	0,465
Eigenvalue	3,700	2,316	1,469	1,338	1,226
Variance (%)	21,762	13,625	8,640	7,871	7,214
Cumulative Variance (%)	21,762	35,387	44,027	51,898	59,112

Table 2. Factors loadings for variables in factor analysis. Source: authors' calculation.

In order to segment trek and trail race runners cluster analysis was conducted. Since two-step cluster analysis suggested three clusters, K-means cluster analysis with a three-cluster solution was performed. To validate three given cluster solutions, one-way ANOVA clustered membership was performed to obtained factor scores. The results of K-means cluster analysis are shown in Table 3.

	Personal Growth Oriented	Self-Fullfilment Oriented	Additional Content Oriented	F	Sig
Tourist Offer	0,03974	-0,60128	**0,44359**	16,151	0,000
Personal Growth	**0,32996**	-0,90924	0,26719	35,989	0,000
Self-Fullfilment	-0,37072	**0,52935**	0,24510	20,265	0,000
Social Needs	-0,45790	0,36119	**0,37910**	17,849	0,000
New Experiences	-0,55088	-0,10737	**1,01812**	70,029	0,000

Table 3. K-means cluster analysis results. Source: authors' calculation

The first cluster, called Personal Growth Oriented, represented 48% of the sample and was characterized by high ratings for Personal Growth. This segment mostly consisted of trek and trail race runners who come from Central Croatia and are middle-aged (40-50 years old), come to races of this type at least ten times a year (44%) and mostly travel individually (56%), arrive shortly

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before the race and leave immediately after it (55%). They try to minimize their costs, but in addition to the costs of travel and participation, they usually spend money on food, drinks and the like (58%), which is usually less than 500 HRK (59%).

The second cluster, called Self-Fullfilment Oriented, represented 27% of the sample and was characterized by high ratings for Self-fullfilment. This segment mostly consisted of runners who come from Central Croatia and are middle-aged (40-50 years old), with a monthly family income of more than 12000 HRK (39%). They come to these types of races at least ten times a year (40%), mostly travel individually (52%), use individual accommodation (42%) and spend 500 to 1000 HRK per race (46%).

The third cluster, called Additional Content Oriented, represented 25% of the sample and valued Touristic Offer, Social Needs and New Experiences factors greater than other factors. This segment mostly consisted of runners who come from Central Croatia and are younger (30-40 years old), with a monthly family income between 4000 and 8000 HRK (45%). They participate in those races that are easiest for them to reach (for financial reasons or proximity to the event) (43%), arrive mostly individually (64%) the day before the race and stay until all race-related events are over (52%). Members of this segment also try to minimize costs, but in addition to travel and participation costs usually spend on food, drinks and the like (50%), which is usually less than 500 HRK per race (51%).

Discussion

The results of the research pointed to several conclusions and provided answers to the research hypotheses raised. Firstly, factors of trek and trail race runners' motives and behavior were successfully extracted, thus confirming the first hypothesis. Five extracted factors were: Tourist Offer, Personal Growth, Self-Fullfilment, Social Needs and New Experiences.

Based on the aforementioned factors, cluster analysis was conducted that resulted in three segments of trek and trail race runners, thus confirming the second hypothesis. Extracted segments were named Personal Growth Oriented, Self-Fullfilment Oriented and Additional Content Oriented. Personal Growth Oriented members are driven by competition, their need to overcome their own challenges, but also their need to grow and evolve as runners. They come to the race to gain the sense of achievement and for building confidence. Respondents who are Self-Fullfilment Oriented indicated that their primary motives for participating centered around a desire to improve their health and feel happy. Members of this segment are also motivated to participate in order to show themselves and others that they can succeed. The third segment, Additional Content Oriented, exhibits more interest in the festivities and touristic attractions than the other two segments. The members of this segment prefer satisfying their social needs by socializing with

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other participants and their own family at a race. This segment is also characterized by its members participating out of curiosity and not being a determined participant of these kind of small-scale sporting events.

Points on how to attract members of different segments to a trek or trail race can be made based on the results of the conducted research. Event organizers may choose to build their marketing strategies, plans and advertising appeals for Personal Growth Oriented segment, since they seem to be the largest segment of trek and trail race runners in Croatia. The marketing campaign attracting members of this segment should appeal to the competitive aspects of a race and promote the possibility for self-improvement. Relying on oneself to overcome obstacles and succeed in completing a challenge may prove to be efficient marketing appeals as well. The special offer for this segment should contain the courses and instructions on how to be a consistent and career trek and trail race runner.

When addressing the Self-Fullfilment Oriented segment, organizers should highlight the positive influences of a race on phisical and mental wellbeing of an individual. In building a marketing campaign using marketing appeals that promote health benefits would be advised. In addition, marketing campaigns should portrait the beautiful, calming and peaceful scenery one would encounter while on a race. The special offer for this segment should contain healthy local food and beverages options, and also courses on a healthier lifestyle.

If an organizer of a trek and trail race chooses to build a marketing campaign to attract members of the Additional Content Oriented, promotional material should include appeals to family life, by showing family members enjoying exploring nature and running together. Also, showing people having fun and hanging out during such events may prove to be encouraging to this segment. In addition, since they have proven to be interested in touristic elements of a race, organizers should cooperate with local enterprises and tourist boards to develop and offer more attractive product choices and local sights visits designed for specific races. When marketing an event to this segment, organizers must acknowledge participants' desire to explore a destination's offerings by disseminating information pertaining to local attractions or activities that may enhance a consumer's overall visit. Since some members of this segment are not as familiarized with the trek and trail races, it could be advised to dispense information on the races themselves, the terrain and sport specificities, destination characteristics, advantages of participation in a race etc.

Conclusion

The aim of this paper was building on the literature of active sport tourists by analyzing the motives and behavior of trek and trail race runners and using them as a basis for their segmentation. The empirical research conducted on a sample of trek and trail race runners from the Republic of Croatia resulted in extracting five motivational and

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behavioral factors as well as three statistically significantly different segments, thus confirming the research hypotheses.

Despite the presented advantages of this research, it is possible and necessary to point out some of its disadvantages and limitations. Specifically, research was carried out on a smaller sample and future research should be conducted on a larger sample in order to obtain a more complete picture. Furthermore, a survey should be conducted on samples of trek and trail race runners from different countries to compare and ascertain a better understanding of trek and trail race runners as a specific niche of active sport tourists. In addition, the research instrument was adapted to the research presented, but it might not be applicable to different aspects of trek and trail race runners' research. Therefore, it can be recommended that the research instrument should be further enriched and adapted by adding specific questions or removing some claims as needed.

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Category: review paper

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Contract of Sale According to Kosovo Legislation

Abstract:

The contract of sale represents one of the most important contracts on internal and external circulation of goods. This contract is considered one of the oldest and it has the same purpose in all the countries worldwide. With this contract, the seller is obliged to deliver the goods he sells to the buyer, in order for him to gain the right of ownership, whereas the buyer is obliged to pay the price as per the contract. validity conditions, resolution and consequences of resolution, etc. In some occasions, the contracts are subjects of different conflicts which reach the only solution through courts. Given the fact that there are different types of the contracts of sale, it is important that we make efforts in order to study them, difficulties we encounter with regards to the circulation of goods and money.

Keywords:

Contract on sale; seller; buyer; circulation; goods; characteristics; solution

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Introduction

The contract is the main and the most important source of liability relationships. A contract is an agreement between two or more persons, which intends to create, modify or terminate a legal obligational relationship.

Contracting obligation may consist of giving, action, inaction or patience. Obligation must be possible, permissible and definite.

Historical aspect of the contract of sale

The influence of the Roman Law in the modern world has been tremendous as it forms the historical basis of many legal systems worldwide. The Roman Law did not consider every agreement between the parties a contract. Only the agreements associated with the right to sue were considered contracts.

According to Roman Law when the creditor and the debtor agreed upon the sale of a particular item, new rights and obligations between the creditor and debtor arise thus there will be new rights for the creditor and debtor who may ask for actions to be taken thus obligations for both: the creditor and the debtor arise [1, p. 305]. Adjustment of wills of the subject matter of the contract was called conventio [2, pp. 343-349]. The contract of sale (emptio venditio), is a consesual, bilateral contract that arises by simple agreement between the seller and the buyer so that the seller delivers the goods in unimpeded possession to the buyer and the buyer pays the price set to the seller. The sale was a bilateral or mutual contract which means that rights and obligations arise for both the seller and the buyer [2, pp. 343-349]. This further suggests that, according to the Roman Law on signing a contract of sale, there should first of all be an agreement between the seller and the buyer for the sale of the particular item which is valid as soon as the contract is signed and some of the following conditions must be met: adjustment of the will of the parties, legal capacity and action, the form of the contract and the object (particular item) for which the parties create rights and obligations arising from the contract of sale according to which the creditor asks the debtor to buy and take particular item under his/her possession which, in fact, is the object of the contract, whereas the debtor asks from the creditor to pay the price for the item sold.

Understanding the contract of sale

The contract is the main and the most important source of liability relationships. A contract is an agreement between two or more persons, which intends to establish, change or terminate a legal obligational relationship. Law on Obligational Relationship has not defined the notion of the contract but in the Article 26 it states that the contract is concluded when the parties have agreed on the essential elements [3, p. 17]. The contract of sale exists when the seller takes on the responsibility of delivering the item sold to the buyer so that the latter gains the right of ownership, whereas the buyer takes on the

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responsibility to pay the price agreed upon. [4, pp. 131-140]

Characteristics of the contract of sale

The contract of sale is informal (the legal form is defined for the contract of sale of real estate) namely, obligatory for both the parties, with charge, causes, cummutation, with liabilities on immediate execution or duration and specific content as per the agreement or access. [5, p. 366]

Elements of the contract of sale

Elements of contract of sale are: goods and price. The sale in the contract of sale is valid even when the price has not been set because the law provides for the manner of setting the price. [6, p. article 445]

Goods are a fundamental element of the contract. In many instances, in the literature the term item is used. In our legislation, the contract of sale can have as subject: electricity, gas, solar energy, etc. The following are considered items: movable items, immovable property and non-physical rights [7, p. article 8]. According to the provision of the article 34 para 2 of LOR, it can be any item and right in legal circulation, except from the item which, according to law, is out of circulation. The right may be an element of this contract if it is the transferable property right (the right to property, usufruct, copyright, etc.). [8, p. 545]

Price

Price is the monetary equivalence that the seller sells to the buyer. Price is to be expressed in money [4, pp. 131-140]. Price is the amount of money that the buyer is obliged to pay to the seller in return for the item or the right that he has bought from the seller [8, p. 545]. If the price is not set in the contract of sale, and the contract does not contain sufficient data that could set the price, the contract has no legal effect [6, p. article 445].

When the price is contracted higher than that for the certain type of items determined by the competent body, the buyer owes only the amount of the set price: if the contracted price has been paid, the buyer has the right to request the returrn for the difference [6, p. article 446].

As a rule, the contract price is decisive or the contract contains the sufficient data with the help of which the price (fixed price) can be set. [5, p. 366]

Obligations of the parties in the contract of sale

Obligations of the seller

In the contract of sale, the seller has the following basic obligations: a) to send the sold goods to the buyer, b) transfer to him the right to ownership; c) protect the buyer from legal-material deficiencies, as a defect of the goods.

In civil law, for the realization of the property right, sending is distinguished from the delivery (tradition). With the conclusion of the contract for

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sale, in civil law, an obligatory relationship is created between the seller and the buyer which is the basis (title) for the realization of the property right, for things or any other right. In economic law, the delivery of goods has, in the first place, a legal-obligatory character, while in civil law it has a legal character. The buyer, to whom the goods have been delivered, as a rule exercises the property right over it. However, it may happen that the goods have been sent and not delivered to the buyer, thus not enabling him to acquire the right of ownership. [4, pp. 131-140]

Manner of delivery of goods

Delivery of goods is characterized by its physical delivery owned by the buyer accompanied by the symbolic delivery of documentation to the buyer based on which the buyer can possess the goods as well as the delivery of a part or in various ways of marking things which means their delivery, for example with the delivery of the warehouse keys, the delivery of the goods documentation, the warehouse documentation, the loading list, the accompanying documentation or the fictious delivery, when the delivery is done with the declaration of the will of the contracting parties, which changes the basis for holding the goods [5, p. 366].

Delivery of goods can be done first hand (tradition brevimanu), if the buyer keeps the goods, for example: as a deposit or tenant of the business space where he buys the goods, eg as a deposit or tenant of the business space where he buys the goods and acquires the right of ownership at the moment of concluding the contract [4, pp. 131-140].

Acquisition of ownership of a movable item requires a valid legal work between the transferor and the acquirer of the property as well as the delivery of the item to the acquirer of the ownership. [7, p. article 21]

While the acquisition of ownership in real estate requires a valid legal work between the alienator and the winner as a legal basis and the registration of the change of ownership in the Register of Immovable Property Rights. [7, p. article 36].

Place of delivery of goods

The seller has the duty to deliver the item to the buyer at the time and place provided by the contract. The seller has in principle fulfilled the obligation of delivery to the buyer, when he (the seller) delivers the item to the buyer or delivers the document with which the item can be obtained. [6, p. article 450].

Unless something else is contracted, or something other than the nature of the work itself, the seller has a duty to deliver the item to the buyer in good condition along with its accessory parts. Fruits and other benefits from the item belong to the buyer from the moment when the seller had the duty to deliver it to him. [6, p. article 458].

The chosen place where the delivery of goods should take place is a place determined by contract. The seller, who has the obligation to deliver the goods to the buyer, must, in a regular manner and under normal conditions, enter into a contract for the transport of the goods to the designated place and deliver it to the buyer at the time provided by the contract. [4, pp. 131-140]

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Liability for defects

1. The seller is responsible for the material defects of the item, which he had at the moment of passing the risk to the buyer, regardless of whether the seller was aware or not of the defects of the item.
2. The seller is also liable for those material defects, which appear after the transfer of risk to the buyer, if they are a consequence of the causes which have existed before.
3. Insignificant material defect is not taken into account. [6, p. article 461].

Visible and invisible defects of the goods

Visible defects of the goods are those defects which, the caring person with average knowledge and experience of the person from that profession, as a buyer, has been able to notice with an ordinary look of the goods. The visible defects in this way are determined objectively according to the premeditated average buyer and not based on the care of the concrete average buyer. [9, p. 140]
The seller is not liable for defects which appear after six (6) months have passed from the delivery of the item, unless a longer term is stipulated in the contract. [6, p. article 465]

The rights, authorizations and obligations of the buyer

The buyer who has notified the seller in a timely and orderly manner of the defect may: 1. Ask the seller to eliminate the defect, or to deliver the other item without defects (fulfillment of the contract), 2. Request a price reduction, 3. Declare the termination of the contract. [6, p. article 471]
The buyer, who due to the defects of the goods has suffered damage (regardless of whether or not he has requested fulfillment of obligations from the contract or price reduction and breach of contract) is entitled to compensation for damage. [4, pp. 131-140]
If the buyer does not obtain the required fulfillment of the contract within a reasonable time, he retains the right to terminate the contract or reduce the price. [6, p. article 472]

Guarantee for the proper functioning of the item sold

When the seller of a car, engine, apparatus, or other items such as these belongings to the so-called " technical goods", has submitted to the buyer a guarantee sheet with which the manufacturer guarantees the proper operation of the item for a certain period of time calculating from its delivery, the buyer may, if the item does not function properly, request from both the seller and the manufacturer that the item be repaired within a reasonable time or, if they do not do so, or instead replace it, hand over the item which functions properly. [6, p. article 484]

Liability for legal deficiencies

The seller is liable if there is a third party right in the sold item which excludes, reduces or restricts the buyer's right, and the buyer has not been notified of its existence, nor has he given his consent to take the item, charged with this right.
If in public registers any rights have been registered or any of the third parties, which in

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reality does not exist, the seller is obliged at his own expense to deregister that right. [10]

Obligations of the buyer

The buyer is obliged to pay the price at the time and place specified in the contract. If the price does not have to be paid at the time of delivery, payment is made at the place of residence, respectively at the seller's main office. [6, p. article 499]

Interest in case of sale on credit-If the item sold on credit gives usufruct or other benefits the buyer debits interest from the moment the item is delivered to him regardless of whether the obligation to pay the price has arisen or not. [6, p. article 500]

The buyer who does not want to accept the item that was sent to him at the place of destination and that was left there at his disposal, has the duty to take over on behalf of the seller, if he is not present at the place of destination, nor that there is someone who had to take over the thing for him, provided that this is possible without paying the price and without great complications or excessive expenses. [6, p. article 504]

Joint obligations of the contracting parties

One party may suspend the fulfillment of its obligations if after the conclusion of the contract, it becomes clear that the other party will not fulfill the essential part of its obligations, as a result: 1. Of a severe impossibility in his ability to accomplish it or in his working ability. 2. Of the manner in which it is prepared to start or continue the implementation of the contract. [11, p. article 740]

Termination of contract of sale by the seller

If the buyer without any reasonable cause refuses to take the item, the delivery of which has been offered to him in a contracted or usual manner and on time the seller may declare that he terminates the contract, if there is a reasonable reason to doubt that the buyer will not pay the price.

Termination of the contract of sale by the buyer

The buyer can terminate the contract only if he has previously given the seller a reasonable additional deadline for fulfilling the contract. The buyer can terminate the contract even without leaving the new additional term if the seller after notifying the defects has informed him that he will not fulfill the contract or if from the circumstances of the concrete case it is clear that the seller will not be able to fulfill the contract even in the additional term. [6, p. article 473]

Consequences of termination of the contract of sale

When the sale is terminated due to breach of contract by one of the contracting parties the other party is entitled to compensation for the damage,

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he suffers for this according to the general rules for compensation for the damage caused by breach of contact. [6, p. article 506]

When the sale is terminated due to breach of contract by one of the contracting parties, while the item had a current price, the other party may claim the difference between the contract price and the current price on the day of termination of the contract in the market of the country where the work is done. [6, p. article 507]

Types of contracts of sale

Sale with the right of pre-purchase

The contractual provision on the right of pre-purchase obliges the buyer to inform the seller on the sale of the item he intends to make to the designated person, as well as on the terms of this sale and to offer him to buy the item at the same price. [6, p. article 510]

The right of pre-purchase can be created through law or through contract. The contractual right of pre-purchase is created through an agreement between the owner of the immovable property and the person who has the right of pre-purchase. The right of pre-purchase becomes valid against third parties, if it is registered in the Register of Immovable Property Rights. [7, p. article 44]

The seller has the duty to notify the buyer safely of his decision to use the right of pre-purchase within a period of thirty (30) days counting from the day when the seller has notified the seller that he intends to make the sale to the third person.

Simultaneously with the statement that he buys the item, the seller has the duty to pay the notified price to the third person or to deposit it in court. [6, p. article 511]

Purchase on test

When it is contracted for the buyer to take the item on condition that he tests it and that it responds to his wish, the buyer has the duty to inform the seller within the term specified in the contract or according to the docs whether he sticks to the contract and if there is not such a thing then within the reasonable time which the seller would have assigned to him, otherwise it is considered that he has given up the contract.

If the item has been delivered to the buyer to prove it by the deadline and he does not return it by deadline or does not declare to the seller that he withdraws from the contract, it is considered that he has remained close to the contact. [6, p. article 517]

Sale by model

In the case of sale by sample or model, in contracts between entrepreneurs if the item which the seller has delivered to the buyer is not the same as the sample or model, the seller is liable under the provisions for the seller's liability for material defects of the item, while in other cases, the seller is liable under the provisions on liability for non-fulfillment of the obligation.

Sale with specification

If the contract reserves the right for the buyer to determine later the form, measure or any other characteristic of the item, and the buyer does not perform this specification by the contracted date,

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or until a reasonable time has elapsed, calculating at the request of the seller to do so, the seller may declare that he terminates the contract or make the specification according to what he is aware of with regards to the needs of the buyer.
If the buyer does not take advantage of this opportunity, the specification made by the seller remains mandatory. [6, p. article 522]

Conditional sale

The seller of a certain movable item may, through a special provision in the contract, retain the right of ownership over the item given to the buyer until the buyer pays the sale price. The preservation of the property right has effect for the creditor of the buyer only if the signing of the contract containing the provision of the preservation of the property right is notarized before the bankruptcy of the buyer or the attachment to the movable property. [6, p. article 523]

Installment sale

Under the installment contract, the seller is obliged to deliver to the buyer a special moveable item before the purchase price is paid in full, and the buyer is obliged to pay in installments within a certain time period.

Sale through letters of credit

If there is an agreement that the payment be made by letter of credit, the buyer is obliged to ensure at his own expense within a reasonable time that the first bank installment opens a letter of credit that is in accordance with the contract of sale.

The letter of credit must be valid for a sufficient time after the seller's obligation has been fulfilled so that the seller can collect and submit the documents to the bank. [6, p. article 530]

Order of sale

The contract of sale order obliges the recipient of the order to sell the certain movable item given to him by the ordering party, at a certain price in the specified term or to return it to the ordering party within that term. The sales order cannot be revoked [6, p. article 531]
The item delivered to the order recipient remains in the ownership of the ordering party and he bears the risk of its accidental destruction or damage but he cannot possess it until it is returned to him. [6, p. article 532]

Conclusion

The contract of sale has a great importance not only within our country but also in different countries of the world as it serves for the internal and external circulation of goods.
International contracts of sale are defined by the United Nations Convention on Contracts for the International Sale of Goods, otherwise known as the Vienna Convention on Sales. When looking to buy a property, it is very important to know what the contract of sale is, what its effect and its role in this agreement is, we should also be aware of the legal procedures.
The contract of sale contains the following characteristics: It is legal- that is, it is legally enforceable, it is a bilateral contract - it sets the

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agreement between a seller to sell and a buyer to buy at an agreed price, it is communicative - given the fact that benefits are determined and are certain when the contract is executed, it is a formal and consensual contract -the contract is a voluntary agreement between the parties and those parties must be legally competent to make a formal agreement. Before signing the contract, we must make sure to read the document carefully and ask questions to the other party to clarify the points of the contract. We must be careful not to make mistakes in names, addresses, as well as in the amount of money and consult each other about legal terms and other procedures.

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Category: review paper

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LEGAL AND ORGANIZATIONAL SITUATION IN AGRICULTURE OF THE VIROVITICA COUNTY AND THE CITY OF OSIJEK IN THE SECOND HALF OF THE 18TH CENTURY

Abstract:

The Treaty of Karlowitz signed in 1699 concluded the rule of the Ottoman Empire in most parts of Central and Eastern Europe. Liberation of Osijek in 1687, and consequently of whole Slavonia in 1699 brought a new era of freedom and prosperity to its citizens. At least for a short time, since the Habsburg Monarchy re-established their rule over the country by bringing feudal laws and regulations back into force.

Austrian empress and Hungarian-Croatian Queen Maria Theresa united Slavonia with Croatia, and re-established the counties of Virovitica, Požega and Syrmia, meaning that the regional administration of Slavonia was completely relinquished to the civil authorities.

Keywords:

legal history; agriculture; Virovitica County; Osijek, 18th century

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Introduction

In the Great Turkish War, the Ottoman Empire was defeated after having occupied the most of Central European areas for more than 150 years. After signing of the Treaty of Karlowitz in 1699, Slavonia was liberated from the Ottoman rule. However, after the liberation, administrative status of counties and other areas was unregulated until 1745, when Austrian empress and Hungarian-Croatian Queen Maria Theresa united Slavonia with Croatia, and re-established the counties of Virovitica, Požega and Syrmia, while Slavonian Posavina was converted into a Military frontier. Upon completion of the neo-aquistic administration of Slavonia and the establishment of counties, regional administration of Slavonia was completely relinquished to civil authorities [4].

After having regulated political system and legal issues in the Virovitica County, from the middle of the 18th century onward, feudal lords engaged their serfs into crop production, while the citizens of Osijek were mainly focused on some crafts and trade. In a larger city area, there was also some arable land cultivated and livestock was produced. Although the agricultural land was not bringing much profit, it was still providing its owners some kind of steady income and security that others did not have.

Establishment of the Virovitica County and its status during the second half of the 18th century

At the first general session of the Virovitica County Assembly held on 9th December 1745, the county area was divided into three districts - Virovitica, Osijek and Đakovo. The re-established Virovitica County spread on a larger area than in the past, and included the estates of Virovitica, Voćin, Orahovica, Našice, Valpovo, Đakovo, Retfala and the Chamber city of Osijek together with its sub-districts of Aljmaš, Dalj and Erdut. The new expanded area stretched from Virovitica to Osijek, from the river Drava to the south, to the middle of the Slavonian mountains, then descended to the Đakovo District, and north to Osijek all the way to Dalj, as well as to the east to the Syrmia County with its capital in Vukovar [18].

In 1785, Joseph II abolished the county organization established by his mother Maria Theresa, and divided Hungary and Croatia into ten districts (circulus), each district consisting of several counties. The Assembly did not meet, yet the councils did. The great prefect, elected by the king, was subordinate to the king's trustee and carried out the king's orders. The deputy prefect was appointed by the district president. At that time, Slavonia and Baranya counties formed one district with the center in Pécs [1], and the Požega County joined with the Zagreb district. All districts were under the authority of the Royal Hungarian Council of Governors. After the death of Joseph II in 1790, counties were re-organized according to the original structure from the middle of the 18th century.

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Legal relations between landlords and serfs in the Virovitica County

In the feudal era, agriculture was a main industry of all countries, and almost all available workforce was engaged in food production. Upon establishment of civil administration of the Virovitica County, many irregularities occurred between serfs and their feudal lords. Settling of such irregularities and disputes by feudal lords was always detrimental to serfs. Serfs had to pay state tax, as well as county tax (domesticum). According to the needs of the county, usually between 15 and 30 denars would be added to each tax forint in favor of county treasury (cassae domesticae). This treasury also included indirect taxes (iuudi extraordinarii), which were paid by millers, brandy distillers, domestic and foreign traders, craftsmen, fishermen, butchers, brewers, boatmen, potters and others. Before the Urbarium amendments, the serf-landlord gave his feudal lord 12 forints for the land, 8 forints for the forced work reluctance and 3 forints for census, with the addition of 12 days of forced work per year [18]. Also, the serf had to give lodging to the army, supply garrisons and military brickyards with wood (regulation adopted on 11th May 1728), supply material for the construction of 10 barracks, be prepared for the army in transit and give a lot more, whatever the feudal lords, their administrators and county officials came up with [2].

Since the serfs could not bear the burden of such heavy taxes, they started a rebellion on Virovitica fiefdom, about which the baron Marko Pejačević informed Queen Maria Theresa in his letter dated 7th October 1754. Soon, this rebellion spread to the bordering fiefdoms, but without proper leadership and organization, it ended up as nothing more than a pillage and drunkenness without any casualties [2].

In order to define rules and relations between feudal lords and their serfs, rulers engaged in writing of legal books called urbariums (in Croatian: urbari) to legally regulate mutual rights and obligations of landlords and serfs. Urbariums of Charles VI and Maria Theresa greatly improved the position of serfs in relations to their feudal lords, yet in some aspects, the status of serfs was also worsened. The first urbarium for Slavonia was prescribed by Charles VI in 1737 (Carolina urbarialis regulatio), however, that urbarium never entered into force. Queen Maria Theresa prescribed the Slavonian Urbarium in 1756, and the Croatian Urbarium in 1780. It is important to note that in 1755, Queen Maria Theresa issued a temporary urbarium for Croatia, which was also never exercised in practice [8].

Theresiana Urbarialis Regulation

On 7th November 1749, Queen Maria Theresa wrote a letter to the Virovitica County prefect, saying that she had been informed that the county's feudal lords had expressed a wish to create a document that would organize serfs' obligations and payments, and that she was looking forward to document of that kind. She ordered County's

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Assembly to create a basic draft of urbarium and report back to her as soon as possible. On 20th April 1750, the County elected a special urbarial committee to draw up a draft of the urbarium. That committee had 6 months to do the work and to present the draft urbarium to the Assembly, where it would be discussed and finally submitted to the Queen. The committee finished its work earlier, and already on 3rd August 1750 submitted its draft urbarium to the Assembly. Since they did not send anything to the Queen, Maria Theresa reminded them in 1754. Only then, the County took on its work more seriously. At the Assembly on 21st August 1754, a conclusion was reached that the urbarial committee should examine the arrangements related to urbarial issues in the neighbouring counties of Baranya, Zala and Tolna. After having collected the material and opinions from all sides, the county elected a new urbarial committee at the Assembly on 9th December 1754. This committee completed the work in 8 months and handed it over to the County, which discussed it and accepted it at its Assembly on 21st July 1755. On that same day, "Idea Urbarialis" was handed over to the Royal Commission, which happened to arrive in Virovitica for some other reasons [2].

On 15th March 1756, Queen Maria Teresa proclaimed Slavonian Urbarium as a joint urbarium for Požega, Virovitica and Syrmia counties [3]. With Slavonian Urbarium, obligations of serfs and feudal lords were officially regulated to facilitate undisturbed agricultural work of serfs on feudal lords' land.

Less than a century later, in 1848, feudalism was abolished in Croatia, thus making all urbarium provisions void.

Regulamentum domaniale

As Slavonian Urbarium did not regulate all spheres of feudal relations, some landlords devised their own additional rules and regulations to exploit their land more efficiently and to make more profit. One of such individual rulebooks is Regulamentum domaniale or How the feudal land is ruled. It was an agricultural manual written by the nobleman Ivan Kapistran Adamović in 1774 for his foreman working on his estate of St. Helen. The manual dealt with techniques and economics of production, the maintenance of property, livestock, roads, buildings and tools, the organization of work, issuing of orders, and even with punishments for people who caused some damage. The manual was divided in 14 chapters with a total of 420 paragraphs [3].

In the manual, Adamović regulated all economic activities carried out on his estate, so that it is an excellent source of information for the reconstruction of economic activities of the past. Emphasis was put on those business segments that were the most profitable for Adamović. In the manual, he made clear that the most profit was made by selling wine. The data contained therein revealed the estate structure devised according to market characteristics. The value of this manual is not only economic but also linguistic, because it is written in Kajkavian dialect of Croatian language. The importance of this manual for Croatian economic thought lies in the fact that it represents a unique view on the functioning of a late feudal and early capitalist estate. Therefore, Adamović

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can be considered as the first Croatian economist to write his work in the Croatian language [10].

Importance of agroecological conditions of the Virovitica County

Agroecological conditions in the Virovitica County were influenced by its geographical position, since the west part of the county was located in a lowland area surrounded by the Bilogora hills on one side [7]. On the north, there was a plain to the Drava River, so winds were coming mostly from the Drava valley in the north. Very cold winds from both east and west blew during the winter months, making winter seasons even colder [12].

The territory of the Virovitica County was characterized by humidity of the low Podravina plain. The soil formation in this area was largely influenced by the two large rivers - Drava and Sava [19]. The soil in the territory of the Virovitica County was mostly colluvium glazed and unglazed, or clayey, but there was also alluvial-colluvial glazed and clayey Hypogley [14].

Just as cold and windy winter days made life of the Virovitica County residents more difficult, so did hot summer days, since hot weather without a breath of wind was not easy to tolerate [5]. Such climate conditions made agricultural work very difficult. During hot summer days, while the sun burned relentlessly, sudden weather changes and summer storms were frequent. For agricultural crops, sudden destructive winds and occurrence of hail were particularly dangerous. Fortunately, the Virovitica County was rarely hit by such storms [20]. It could take several years without weather disasters devastating this area, which was favourable for development of agriculture [15].

The Virovitica County was also rich in wood. Many areas were covered with woods of beech trees (Fagus sylvatica L.), oaks (Quercus spp.), beech (Fagus spp.), ash (Fraxinus spp.), birch (Betula spp.) or poplar and aspen (Populus spp.), so county inhabitants were also engaged in wood trading and carpentry [11].

The structure and organization of the Virovitica County estates

In 1745/1746, in the area of the Virovitica County (without Čepin), there were 6,637 landowners with 2,445 adult brothers, and 381 widows with property. There were 26,033 acres of arable land, plum orchards spread on an area of 551 2/8 acres. There were 14,440 scythes of meadows and 3,823 1/2 hoes of vineyards. Referring to animals, there were 4,726 horses, 6,192 oxen, 6,474 cows, 296 foals, 4,336 heifers, 20,355 pigs, 3,173 sheep and goats, and 2,644 beehives. The whole County made tax contribution in the amount of 29,647.66 2/8 forints. Each married man with an estate had to pay 1.40 forints (for.), adult brothers living in the family or in the cooperative contributed with 1 for., each independent widow gave 0.20 for. Each acre of arable land was levied by 0.20 for., each acre of orchard by 0.75. The tax for each scythe of meadow was 0.18, for each hoe of vineyard 0.15, for each yoke of oxen 0.40, for each hoarse 0.30, for each dairy cow 0.25, for each heifer 0.20, for each foal 0.15, for

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each hog 0.10, for each sheep and goat 0.10, and for each beehive 0.10 [2].

In the middle of the 18th century, there were many medium-sized estates in the Virovitica County, the owners of which usually disposed of 1 to 5 acres of arable land, and some owners had even less than 1 acre [13]. The structure of Slavonian estates and the number of villages in the 18th century is shown in Table 1. It is evident that the area was developing in economic and demographic terms, as there were larger estates and more villages appearing about two decades later.

	1726		1745	
Size of Estates	Number of estates	Number of villages in	Number of estates	Number of villages in
10 - 50	7	166	8	242
51 - 150	14	1.185	16	1.380
151 - 300	11	2.323	8	1.694
Over 300	2	1.126	2	870

Table 1. Structure of estates in Slavonia - comparison of 1726 and 1745 [9]

Wheat, maize and oats were common cereals cultivated in the Virovitica County. As stated in the Jesuit chronicles, the most common crop usually planted on their estate in Aljmaš was oat [16], since oat was used as a basic livestock feed because of its high content of fat and other nutritional elements. Next to maize [16], the most common crop grown for human consumption was wheat. Since straw was a leftover of wheat, farmers and field workers used to burn the fields to destroy straw. Since military was in need of straw for their horses and other uses, on 8th May 1747, the Virovitica County assembly forbid its population to burn the straw and ordered to collect and store it for military needs instead [18].

Most of the crops, livestock or agricultural products were sold on fairs. During the 18th century, some of the oldest-known fairs in the Virovitica County (and in whole Croatia and Slavonia) were organized in Osijek (1713), Đakovo (1724), Virovitica (1754), Orahovica (1795) and Podgorač (1799) [6].

In 1753, the city of Osijek disposed of 1,100 property entities and tax liabilities. These entities were irreplaceable factors of the city's economic prosperity. Their contributions differed, as presented by the data on land distribution in the city of Osijek in 1753 (Table 2) [17].

	acre of arable land	scythe of meadow	hoe of vineyard
Inner Town	316	-	-
Upper Town	295	550	3
Lower Town	640	652	234,5
Total	1.251	1.202	237,5

Table 2. Land distribution in the city of Osijek in 1753 [17]

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As presented in the Table above, in the area of Osijek Inner Town, there were no meadows or vineyards, while in the Upper Town, there were more meadows than arable land. The land of the Lower Town was evenly distributed. The citizens of Osijek did not have much use of their land, as the soil fertility was generally poor. The land was of poor quality and often flooded, not so much from the Drava River, but from the Vuka River in the south of the city. Frequent floods decreased the soil fertility, as pointed out in the available records. It should be noted that almost 50% of all city households, i.e. 541 of them, did not own any arable land. The most of households owned 1-2 acres of land, while landowners disposed of arable land of 1 to 4 acres in size [17].

The division of hayfields (meadows) and vineyards exhibited even greater differences. The Upper Town disposed of 550 scythes of meadows, which were divided among 165 landowners (38%) out of 428 landowners. The Lower Town disposed of 652 scythes of meadows, which were distributed among 208 landowners (37%) out of total 562 of them. There were 234 hoes of vineyards divided among 96 (17%) households. Therefore, in the middle of the 18th century, the distribution of land in Osijek was unbalanced.

There were also many serfs with no possession of land. They were usually employed by landowners and worked for a salary wherever they were needed. In order to avoid the arbitrariness of individual employers, who used to ignore the average wages and often paid their workers less than deserved, on 21st May 1776, the Virovitica County Assembly decided to set the price of daily wages of the workers in order to stop the exploitation of workers [21].

Although the land was not bringing much profit, it was still providing its owners some kind of income and security that others did not have. Over the years, the land in the city of Osijek was gaining on its value, yet it brought also tax liabilities to its owners. Admission to the city of Osijek Chamber was conditioned by the ownership of land, as it was considered a steady source of income [17].

Groups of arable land in acres	Inner Town	Upper Town	Lower Town	Total	%
	Number of land owners				
0-1/2	29	287	225	541	49,19
1/2-1	-	12	16	28	2,54
1-2	1	50	153	204	18,55
2-3	6	39	98	143	13,00
3-4	32	25	43	100	9,09
4-5	26	-	15	48	4,37
5-6	12	3	5	20	1,81
6-7	1	2	3	6	-
7-8	2	1	1	4	-
8-9	1	-	-	1	-

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9-10	-	1	-	1	1,45
10-11	-	1	1	2	-
11-12	-	-	-	-	-
12-13	-	-	2	2	-
Total	110	428	562	1.100	100

Table 3. Division of land among citizens of Osijek in 1753 [17]

As presented in the Table 3, the total area of arable land in the city of Osijek was not sufficient to provide for living of the Osijek citizens, so they had to look for other sources of income. At that time, total land fund could provide for only 1/3 of around 5,000-6,000 citizens of Osijek. Agriculture as an economy branch could not provide for existence of growing Osijek population, since agriculture was of low profitability until 20th century. Therefore, the development of the city of Osijek was limited by its land resources, so apart of agriculture, its citizens engaged in crafts, trade, construction, provision of services and other economic activities [17].

Cattle breeding was a popular agricultural activity in the city of Osijek. During 1745-1746, the distribution of horses and livestock was proportional to the number of serfs. In the Virovitica County, the village of Voćin was disposing of the most pigs, precisely 5,011 of them. It was followed by the city of Virovitica with 3,506 pigs, Valpovo with 3,934 pigs, Orahovica with 2,862 pigs, and Đakovo with 2,129 pigs. Besides pigs, inhabitants of the Virovitica County bred other livestock, as overviewed in the Table 4. Due to the urbanization of cities, trade, crafts and other activities, the number of livestock units in cities decreased. For example, in Osijek at the beginning of the 18th century, there were about 20% more livestock, then half a century later (Table 5). The Osijek Lower Town disposed of more meadows than other city parts, so people used to keep livestock on pastures. For that reason, Lower Town of Osijek maintained its rural way of life longer than the Upper Town. The number of cattle recorded in 1753 is shown in the Table 4.

Municipality	Oxen		Cow and calf		Horses and mares		Sheep and goats		Pigs	
	NF	LS	NF	LS	NF	LS	NF	LS	NF	LS
Inner Town	2	7	15	40	12	41	-	-	1	4
Upper town	42	103	198	288	120	215	-	-	2	13
Lower town	27	58	191	248	152	209	16	699	13	17
Total	71	168	404	576	284	465	16	699	16	34

*NF - Number of farmers; LS - Livestock unit

Table 4. Distribution of cattle in the Osijek city parts in 1753 [17].

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Out of total 1,100 Osijek households, 536 were engaged in cattle breeding, of which 18 households were located in the Inner Town (3%), 249 in the Upper Town (47%), and 269 in the Lower Town (50%). Those data show that in 1753, more than half of Osijek's households did not own any cattle, which indicates the progress of urbanization. Still, back in 1753, there was a considerable number of "farmers" that kept cattle as an additional source of income [17].

Type of cattle	Inner Town		Upper Town		Lower Town		Total	
	1702	1753	1702	1753	1702	1753	1702	1753
Oxen	26	7	60	103	52	58	138	168
Cows	52	40	304	288	107	248	463	576
Calves	37	-	63	-	100	-	200	-
Heifers	-	-	90	-	43	-	133	-
Horses	66	41	82	215	68	209	216	465
Foals	-	9	-	9	-	-	-	18
Beehives	21	-	92	13	83	11	196	24
Sheep	53	-	2	-	-	669	55	669
Goats	22	-	1	-	18	-	41	-
Goatlings	-	-	-	-	9	-	9	-
Hogs	54	-	26	-	83	-	163	-
Pigs	-	4	20	13	51	17	71	34
Total	331	92	749	632	623	1.212	1.703	1.936

Table 5. Number of cattle in Osijek in 1702 and 1753 [17]

As of the records on the number of cattle kept in Osijek, it is seen that the number of cattle kept in Inner Town decreased from 331 heads in 1702 to only 92 heads in 1753. This decrease was caused by the urbanization processes, within which the citizens of Osijek turned to trading and crafts [17].

In 1753, the number of cattle kept in the Upper Town also decreased by 16%, whereas in the Lower Town, its number was almost double than in 1702. The increase in the number of cattle by 95% reflected the rural characteristics of this part of the city, since there were many good pastures, meadows and arable land. When referring to the whole area of the city of Osijek, there were 233 heads of cattle, or 20% more cattle in 1753 than in 1702. However, this increase was modest in relation to the increase in population. When observing numbers of individual types of cattle, there were 200 pigs less in 1753 than in 1702. Sheep and goats disappeared from the Inner Town and the Upper Town, while their number in the Lower Town grew to such extent to cause an increase in the total number of cattle kept in Osijek. Several farmers kept hundreds of sheep on the meadow of Klisa to produce meet for city butcheries. Yet, the production of meet was not sufficient for the city

demand, so cattle were also imported from more distant areas to provide for city supplies. Insufficient production of cattle in the city of Osijek was caused not only by urbanization and orientation of citizens to trade and crafts, but also by unavailability of pastures, meadows and arable land. Moreover, infectious diseases also destroyed herds of cattle at that time. Cattle were usually kept for household needs, sometimes for commercial purposes. Reduced area under pastures led to the decrease in number of cattle [17].

Conclusion

After the Ottoman occupation of Slavonia, Queen Maria Theresa re-established old Slavonian counties of Virovitica, Požega and Syrmia in 1745. By restoring the civil administration, old feudal obligations came back into force as well. With the introduction of the Slavonian Urbarium in 1756, most of the disputes between serfs and feudal lords were resolved, so the situation on the estates became favourable for development of agriculture. Having all disputes settled and the legal framework for agriculture determined, feudal lords and their serfs became significantly engaged in agricultural activity in the second half of the 18th century onward. In the middle of the 18th century, there were many medium-sized estates in the Virovitica County, the owners of which disposed of arable land, mostly from 1 to 5 acres, and some owners had even less than 1 acre. The yield of crops was mostly given to house cooperatives of larger feudal estates and the rest was sold on fairs in different towns. Legal and political reforms directly affected agriculture development, so crop production was significantly increased in the Virovitica County. However, social position of serfs and peasants was not improved much by those reforms. Many of the feudal lords took the arable land from peasants and exchanged it for uncultivated land in return. In that case, peasants needed to clean the given land from trees, bushes or weeds to make it useful for agricultural activity.

At that time, the citizens of Osijek were mainly engaged in crafts or trade. Due to the urbanization process, there was not enough arable land at disposal for significant agricultural undertakings and for extensive livestock production. Agricultural activity was not bringing much profit, yet it was still providing the landowners some kind of income and security that other citizens did not have. Over the years, the land in the city of Osijek was gaining on its value, yet it brought also tax liabilities to its owners. Admission to the city of Osijek Chamber was conditioned by the ownership of land, as it was considered a steady source of income.

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Category: review paper

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The Determination of the European Union in the International Promotion of Human Rights

Abstract:

This paper aims to explain the legal, political and moral obligation of the European Union institutions in the promotion, advancement, respect, and implementation of human rights and freedoms as a universal value, and above all as binding legal- political principles during their efforts in relations with actors both inside and outside the EU.

This research work simultaneously analyzes and interprets international legal rules that regulate human rights.

Moreover, the cases and means in promoting the human rights used by the European Union in different cultural regions have been compared and analyzed as well as the possibility of changing the approach of EU policy towards countries where the highest level of resistance exist in the accepting of such values.

Keywords:

European Union; Human Rights; Promotion; Cultures; Challenges

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Introduction

The European Union, which is located right in the heart of the European continent, was created on the fundamental values of solidarity and tolerance, with a common determination to promote peace, stability and build a world based on respect for human rights, democracy, and the rule of law.

This paper provides an analytical overview of the challenges in promoting human rights around the globe by EU institutions with specific focus on addressing the following hypothesis:

The different cultural societies in the globe are crucial challenges for the European Union in exporting its own values.

Incorporation of Human Rights within The European Union legislation

Human rights, which are also proclaimed as universal rights and concern (recognition of the innate dignity, equality and inalienable rights of all members of the human family), are also considered to be foundation for the freedom, justice, and peace in the world. Disrespect and contempt vis-à-vis human rights have often led to barbaric acts and insults toward the human consciousness. Thus, the observance and implementation of these rights by all countries aim to create a world in which people will enjoy their natural rights including freedom of speech, religion, and freedom from fear and poverty. This is also considered to be the highest aspiration of every human being on earth [1].

Historically, for more than two hundred years, Europe has been characterized by continuous efforts to protect fundamental rights, starting with the declarations of civil and human rights, to the present day, when these rights are highly ranked and incorporated within the national legal systems of EU countries, considered to be the most civilized nation's nowdays [2].

The EU, as a core western European creation was build tipically on the fundamental values of solidarity and tolerance [3], with a common determination to promote peace, stability, and the construction of the societies based on respect for human rights, democracy and the rule of law. These rights were acquired since the 1950s on legal-political principles, upon which supports the domestic and foreign political actions are supported [4]. Moreover for this reason this supranational organization is considered to be a pioneer in the international arena regarding the regional integrations [5], and above all an example for the other regions in the globe.

The incorporation of these rights described in Article 21 of the Treaty on European Union reaffirm and acknowledge t where are reaffirmed and acknowledged the determination of the EU to promote human rights and democracy in all its abroad actions. This legislation explicitly specifies the basic construction for respecting the human dignity, freedom, democracy, equality, rule of law as well as including the minorities' rights. These values are accepted as common principles for member states in a societies in which pluralism,

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non-discrimination, tolerance, justice, solidarity and equality between men and women prevails [6]. In accordance with the above- mentioned article, the Copenhagen criteria for the admission of countries aspiring to join the EU have been set where for "Membership requires that the candidate country has achieved stability of institutions guaranteeing democracy, rule of law, human rights and respect for and protection of minorities" [7].

The implementation of the European Union Charter of Fundamental Rights, and the prospect of accepting the jurisdiction of the European Court of Human Rights through its accession to the European Convention on Human Rights, underscore that the EU's commitment for human rights in all areas is very present. Within their borders, the EU and its member states are committed vividly to set an example in ensuring respect for human values, while similarly outside their borders, they act accordingly by promoting and spreading democracy around the globe [8].

The EU Treaty officially refers to the Charter of Fundamental Rights as a binding form. This makes this act as legally binding and like wise establishes and specifies the applicability of fundamental rights in Union Law. Exceptionally, this is not the case for Poland and the United Kingdom, (before BREXIT) as these two states were not willing, to approve the fundamental rights system under the charter, as they felt they would be obliged to submit or at least change certain national attitudes dealing with religious issues or the treatment of minorities.Therefore, they are not bound by the fundamental rights of this charter, but they are bound by the case law of the Court of Justice [9].

Undoubtedly, the EU is considered to one of the most special "organizations" in history, where it serves as an example and leader for other organizations in other regions in the implementation of legislation regarding human rigjhts.

Diplomatic means of exporting human rights by the european union

De jure human rights and democracy are proclaimed and accepted as universal values and rights by almost all countries; however, in reality, their observance and implementation cannot be taken for granted anywhere and anytime [10]. What makes these values difficult to implement in practice is, above all, their universal nature, which is called into question due to global cultural differences. On the one hand, the momentum of information development and modern technological communication has facilitated the free exchange of information between individuals, but on the other hand, the coercive power of authoritarian states or the resistance power of their implementation in practice has also increased massively [11].

The EU, as the flag bearer and promoter of these rights throughout the international system, is vey aware of these challenges and determined to strengthen and step up its efforts to ensure that human rights are realized for all and everywhere. It continues to support with all authority the

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defenders of freedom, democracy and human rights around the world, of all human rights, whether they are civil, political or economic, social and cultural one [12].

The EU also calls on all states to implement the provisions of the Universal Declaration of Human Rights, ratify it and to implement the key international human rights treaties, including labor rights conventions, as well as regional instruments of human values. This "organization" has not been silent or seems to be determined not to be silent on any attempt to undermine respect for the universality of human rights, as confirmed by the joint statement of the High Representative of the European Commission and the EU of Foreign Affairs and Security Policy that "Human rights and democracy are at the heart of the EU's foreign action". The EU has taken action to influence foreign policy by proposing designated areas for further action, all of which can be seen as a valuable and welcome contribution to the development of an EU human rights strategy to promote these goals through its external action [13].

In its relations with the wider world, the European Union supports and promotes its values and interests and contributes to the protection of its citizens. It contributes to peace, security, sustainable development of the Earth, solidarity and mutual respect between peoples, free and fair trade, the eradication of poverty and the protection of human rights, in particular the rights of the child, as well as respect for strict and development of international law, including adherence to the principles of the Charter of the United Nations. This promotion is applicable through various economic donation including various diplomatic and political means [14].

Of all these mentioned above, more specifically in the framework of the Common Foreign and Security Policy, restrictive measures in pursuit of specific objectives of this policy, as defined in the Treaty on European Union, through sanctions has imposed in recent years, either on an EU autonomous basis or in the implementation of binding UN Security Council Resolutions. These sanctions are instruments of diplomatic or economic nature, they requires a change in actions, or behavior, towards state policies, who violates the international law or human rights, or against state policies that do not respect the rule of law or democratic principles. Restrictive measures imposed by the EU have usually targeted third country governments, or non-state entities and individuals (such as terrorist groups and terrorists). These measures have usually included, and may include in the future the embargo of arms and, other specific or general trade restrictions (import and export) such as, financial restrictions, admission restrictions (visa or travel bans), or other measures depend on what the case may be [15].

The EU not only seeks to prevent human rights violations worldwide, it also requires that when such violations occur, victims must be given access to justice and be compensated in appropriate manner in proportion with the damage caused to them and responsible persons must be held accountable. Up, until now, the EU has enhanced its efforts to promote human rights,

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democracy and the rule of law in all aspects of foreign efforts by strengthening its capacity through the creating of mechanisms for early warning and crisis prevention, which also lead to human rights violations. It is determined in its policy agenda to increase its cooperation with partner countries, international organizations and civil society, as well as to build new partnerships. The EU also strengthens its work with partners around the world to support democracy, in particular in developing the credibility of electoral processes and democratic and transparent representative institutions serving the citizen [16]. Furthermore, the EU has been consistent in its contribution to the prevention of social exclusion and discrimination, promoting social justice and protection, equality between women and men, solidarity between the generations and the protection of children's right. It promotes economic, social and territorial cohesion, and solidarity between member states. It also respects its rich cultural and linguistic diversity, and ensures that Europe's cultural heritage is preserved and expanded [17].

This promotion of human rights is specified and established as a basic principle in European law as a result of a more than half a century-long practice by the European Court of Justice, where human rights are included within the general principles of EU law. (Principles of human rights, guaranteed by international conventions, especially the European Convention on Human Rights, Equality and Equity) [18].

The main causes of the European Unions confrontations in the promotion of human rights are the cultural differences that exist between EU countries and other secular countries where these rights are exported as fundamental values. First of all, in religious countries the main factor where the promotion of these values encounters resistance or conflicts with religious principles. At the same time, these divisions are almost insurmountable, because what is considered value by the European Union, is considered profanity according to the principles of societies governed by religious laws.

The EU in its own Strategic Framework and Action Plan for Human Rights and Democracy, pledges to promote human rights in all areas of its external actions without exception. In particular, it has integrated the promotion of human rights into trade, investment, technology and telecommunications, the Internet, energy, the environment, as well as security and defense policy including counter-terrorism policy [19].

As the death penalty and other forms of physical persecution constitute serious violations of human rights and human dignity, the EU has been consistent in its campaign against encouraging the death penalty worldwide [20]. It has also campaigned vigorously against torture and cruel, inhuman and degrading treatment. The framework further specifies that fair and impartial administration of justice is essential to protect human rights. However, when faced with human rights violations, it has used and vowed to use the full range of instruments at his disposal, including sanctions. Working through multilateral institutions, the EU remains committed to a strong multilateral human rights system, which can

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impartially monitor the implementation of its legal norms [21].

The EU has opposed any attempts to call into question the universal implementation of human rights continues to advocate for human rights at the UN General Assembly, the Human Rights Council and in the International Labor Organization. The EU emphasizes the leading role of the Human Rights Council in dealing with urgent cases of human rights violations and strongly contribute to the effective functioning of the Council, as well as its willingness to cooperate with countries from all regions [22].

Welcoming the establishment of the Universal Periodic Review, the EU and its Member States are committed in raising the recommendations which have been accepted, as well as the recommendations of the monitoring bodies, treaties and special procedures of the United Nations, in bilateral relations. Member States are equally committed to ensure the implementation of such recommendations within their borders, where the EU will continue its commitment to the invaluable human rights work of the Council of Europe and the OSCE. It will work in partnership with regional and other organizations such as the African Union, ASEAN, SAARC, the Organization of American States, the Arab League, the Organization of Islamic Cooperation and the Pacific Islands Forum, with the aim of encouraging the consolidation of regional mechanisms in promoting and defending the human value [23].

In 2006, the European Instrument for Democracy and Human Rights, built on the basis of the Europe Initiative (2000-2006), aimed to provide support for the promotion of democracy and human rights abroad [24].

This instrument may provide assistance in the absence of established cooperation, and may intervene without the consent of third country governments. It can support groups or individuals within civil society that advocate for democracy, as well as intergovernmental organizations that implement international mechanisms for the protection of human rights [25].

Promotion of Human Rights by the Loma Convention

The primary objective of the European Union's development policy is also to help poor countries, especially those with historical ties to EU member states, to grow and develop economically, but without risking exposure to greater competition of its politically sensitive sectors. Most European Union agreements with developing countries contain conditional clauses linking trade concessions to improved human rights and governance standards [26].

One of the the most important EU development assistance instruments is still the Loma Convention, which was followed by the ACP-EU Agreement [27].

Following a series of negotiation, a privision was added with appropriate measures in case when the principles of human rights and democracy are violated (Article 5). Prior to the 1995 review, human rights were mentioned only in the preamble. For the first time concrete measures was articulated that

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concerned the respect of human rights, democratic principles and the rule of law, which have now become essential elements of the ACP-EU development partnership. Since then, ACP countries, which do not conform their government policies to these criteria, risk suspending EU funding. Suspensions are a severe blow to most countries because this assistance is typically provided for a period of five years, and this short-term assistance is difficult to obtain. In addition, the concept of "good governance" as a "fundamental element" was also introduced in the ACP - EU Agreement with Cotonou. After difficult negotiations and resistance from ACP states to introduce what was often considered a "foggy" concept, the Cotonou Agreement partners formulated an additional criterion for cooperation, namely"transparent and accountable governance". Thus the term "good governance" remains a "fundamental element", but not an "essential element for cooperation." [28].

Liberia was the first country to be summoned for "consultation" due to a perceived violation of good governance. This is also considered as the first case in which the Council of the EU considered a country to be involved in human rights violations towards neighboring country (Côte d'Ivoire and Guinea), and this has justified the taking of "appropriate measures" [29].

The European Commission has consistently monitored countries traditionally regarded to be conflicting countries, by stating that under Article 11 (4) of the Cotonou Agreement states that special attention will be paid to "preventing a diversion of funds" for oppressive purposes. A list of countries in conflict has been continuously maintained and revised, in line with the evolution of conflicts or peace efforts, as reflected in EU-adopted positions [30].

The Cotonou Agreement is considered the most comprehensive partnership agreement between developing countries and the EU.Almost two decades the framework for EU relations with dozens of countries from Africa, the Caribbean and the Pacific. Ten years ago, the European Commission and the African, Caribbean and Pacific Group completed the second revision of the Cotonou Partnership Agreement after a first revision in 2001. ACP-EU cooperation has adapted to new challenges, such as climate change, food security, regional integration, state fragility and aid efficiency [31].

From the agreements signed by the European Union, it is clear that the EU attaches importance to human rights by establishing conditionality clauses with third countries in respecting human rights.

Conclusion

As the EU values human rights and fundamental freedoms as universal and indivisible rights, it actively promotes these rights both within and outside its borders. The importance that the European Union attaches to these rights is best understood by the incorporation of these values within the legal acts of the European Union, which not only oblige the institutions of the EU to act in accordance with these acts. Often, these institutions themselves condition third countries

on the observance of these rights. European Union trade and cooperation agreements with third countries should contain a provision stipulating that human rights are an essential element in relations between the parties.

As a result of the above mentioned, an elaborate global system should be formed and developed continuously, through joint global conferences, which would include all state actors and key international organizations dealing with human rights, where the organizer of this conference would be the European Union itself.

In addition to public and multilateral diplomacy, the European Union should also practice active diplomacy, where the implementation of this active and innovative diplomacy will enable the EU to help change the direction of relations between the EU - and other countries that are reluctant to implement freedoms and human rights. The European Union as a dominant and world power, with "negotiations by power" must take the initiative and communicate directly with the leaders of totalitarian countries, demonstrating caution in its demands that it seriously seeks change in relations with states and that its purpose is to promote of human rights, not regime change. The EU must also take into account the beliefs of these regimes that the European Union wants regime change, while their main objective is to preserve their regimes.

The European Union needs to increase the scope of activities in order to increase the influence of governments in their aims to promote human rights at home and abroad, by partnering with multilateral institutions to achieve such a goal.

Important challenges for the EU in promoting human rights, however, remain legal norms. Moreover, countries continue to oppose the importance of civil and political rights over economic, social, and cultural ones. National governments sometimes resist adherence to international norms, perceiving them as contrary to local cultural or social values. Western countries, especially the US, oppose cooperation with the EU on many occasions, and on human rights concerns that such cooperation with the European Union could negatively affect its economic profits.

The main causes of the European Union's confrontations in the promotion of human rights are the cultural differences that exist between EU countries and other countries where these rights are exported as fundamental values. First of all, religion remains the main factor where the promotion of these values encounters resistance or conflicts with the principles of these rights with religious principles. At the same time, these divisions are almost insurmountable, because what is considered right and good, or as a value by the European Union, goes against the religious principles of certain governments and societies.

The European Union, together with other influential multilateral institutions, such as the World Bank (WB), the International Monetary Fund (IMF) and the World Trade Organization (WTO), must work tgether to support and promote human rights, and to do so. Indirectly, through poverty alleviation and other development and reconstruction projects

The European Union should provide more donations to NGOs, as necessary actors in the

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implementation of field-level capacity building, where successful capacity building forms the core of long-term efforts to improve human rights in places where these rights were violated.

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